# AVIAN ECOLOGICAL PROJECTS IN THE SAND RIDGE STATE FOREST AND THE CLEAR LAKE HERON COLONY

By Richard G. Bjorklund

## OBJECTIVES OF THE TWO PROJECTS

The objective of the project at the Sand Ridge Forest was to update my Annototed Field Checklist for Birds Observed while in the Sand Ridge Forest consistent with observations made since its last revision was published, and to revise the order of the list to conform to The A.O.U. Check-list of North American birds, Sixth Edition, 1983.

The project at the Clear Lake Heron Colony was intended to tag or replace lost or damaged tags of trees used as nest sites in order to continue long term monitoring of the productivity and status of the colony. The remarking was to be followed by a detailed ground census of active nests of each of the three species -- Great Blue Heron, Great Egret, and Black-crowned Night-Heron, present in the colony.

Because of dissimilar objectives at the two sites, this report will consist of two parts. Description of the area, methods, outcome, and my comments, will be presented first for the Sand Ridge Forest project, and then for the project at the Clear Lake Heron Colony. Some information will be included as appendices to the report. Appendix A consists of two maps of Sand Ridge Forest noting especially the summer 1985 location of several avian species of special interest. Appendix B displays photos relevant to avian observations made during the two investigations.

Because the west edge of Sand Ridge Forest is located within two miles of the Heron Colony,(four-miles round trip walking from the Club House of the Clear Lake Outing Club), it was sometimes possible to visit both sites on the same (long) day. On five occasions, the camping facilities at Sand Ridge Forest were used during two-day trips.

## SAND RIDGE FOREST PROJECT

Sand Ridge Forest, largest of the Illinois State Forests (7280 acres, 2950 hectares) is in Mason County, 25 airline miles southwest of Peoria. The forest is dedicated to the proper management of a forest-type environment under the "Multiple Use" concept. The Wisconsin glacial outwash which brought sand and gravel to Mason County accounts for the unusual ecology, eg. the cactus Opuntia , at Sand Ridge Forest. More detailed descriptions of the area are available from Glesenkamp (1980), Bjorklund (1981), and Bjorklund and Bjorklund, (1983).

## METHODS

In the course of this project, the following tasks were completed:

1. My 1981 report titled Avian Ecological Investigations in the Sand Ridge Forest (Bjorklund, 1981), served as one source for addition and modifications to the list of avian species breeding in the forest.

2. Using prescribed D.O.C methods, I censused transect sets C (stops 18-25) and D (stops 26-34, map Appendix A) once in late May and again in June to compare results obtained in 1981.

3. Using prescribed D.O.C methods the self-designed qualitative transect set designated F (stops 45-51) was run on three dates (1,6, and 16 June).

4. Using the method described in Bjorklund and Bjorklund (1983), the set "G" (nocturnal caprimulgid census) was run six times from May 25 through June 16.

5. An intensive qualitative check of the area around the Sand Ridge Fish Hatchery, which includes the first three legs of 1981 transect set "A", was made on four occasions - once in late May and three times in June.

6. The regenerating oak burn (major 1962 fire) and the site of a more recent small (10 hectacre) fire within the old burn, were checked especially carefully for the presence of Bewick's Wren and Prairie Warbler.

7. Eighteen competent to expert birders, known to visit the forest frequently, were contacted by mail (a copy of the 1980 checklist was enclosed), and asked to document recommendations for additions to or modifications of the list. Eight persons reponded with useful information. Prior records of my counts, censuses, and field notes were also checked for useful information.

The Sixth Edition of the A.O.U. Check-list of North American Birds (1983) served as the authority for rearranging the order of species comprising the list.

## OUTCOME

The revised checklist is enclosed under separate cover in camera ready format. A photocopy is appended to this report as Exhibit 1. I suggest that updated and annoted checklists are desirable for all significant D.O.C. land holdings and that such lists be made available to visitors at all major sites open to the general public.

The original forest checklist was published by the Forestry Division of the I.D.O.C. and included 142 species (Bjorklund and Deters, 1971). The 1980 revision included 165 species. The 1985 revision includes 187 species. The increase, especially from 1980 to 1985, is not simply the result of a greater

effort to record and determine the status of avian species on the forest. Consider also that despite regeneration of the 1962 burn and the severe winters of the late 1970's, both of which contributed to the reduction or elimination of some breeding species (still listed but with an annotation), developed sites, especially the Sand Ridge Fish Hatchery have increased forest use by migrant waterfowl and shorebirds as well as by certain breeding species (eg. swallows). The further development of campgrounds, wildlife food and cover plots, and addition of ponds, other than those around the hatchery, have also contributed by modifying habitat and increasing edge, thus creating more species niches. But excessive edge is not a desirable situation for interior forest inhabitants, especially neotropical migrants, a concern expressed in my 1981 report, which I will iterate in this report.

Although the frequency of censuses and the number of transect sets involved was significantly fewer in 1985 compared with 1981, the extent (largerly qualitative) of observation was virtually as diverse as in 1981 because I deliberately selected a diversity of sites. Thus, 1985 data provide reliable information on avian species that summered on the forest. Comparable information for other seasons can be obtained from the annotations on the updated checklist (Exhibit 1 following the literature cited portion of the report).

Table 1 lists the species observed on the Forest from May to July in 1981 and/or 1985, and reports their apparent status and estimated summer population comparing the 1985 observations with those submitted as part of the 1981 report (Bjorklund, 1981). The 1981 censuses began earlier in May and thus included several species of migrating warblers. In other repects the listing provides a reasonably reliable comparison for the two summers. The comparison points up the change in status of several swallows and the change in population size of several other summer residents.

Table 1.-Comparison of Status & Estimated Population Size of Avian Species Encountered on the Sand Ridge Forest During late-May through June 1985 compared with mid-May through June 1981.

| SPECIES IN A.O.U.ORDER | STATUS 1981 | STATUS 1985 | EST.BREEDING PAIRS 1981 | EST.BREEDING PAIRS 1985 | COMMENT |
|---|---|---|---|---|---|
| Great Blue Heron | VIS | VIS | | | from CL.LK.Colony |
| Canada Goose | VIS | VIS | | | breeds Fulton Co. |
| Wood Duck | SR | SR | 6-15 | 6-15 | ponds important |
| Mallard | SR | SR | 1-5 | 6-15 | more surface water |
| Blue-winged Teal | MIG | MIG | | | migrants at ponds |
| Turkey Vulture | SR | SR | (Individuals) 8-10 | 8-10 | Part of IL.River Valley population |
| Mississippi Kite | VIS | | 1 | | did not nest |
| Sharp-shinned Hawk | MIG | MIG | (Individuals) 1 | 1 | occasional SR |
| Cooper's Hawk | MIG | MIG | (Individuals) 1 | | rare SR |
| Red-tailed Hawk | SR | SR | 1-5 | 1-5 | |
| American Kestrel | SR | SR | 1-5 | ? | scarce 1985 |
| Ring-necked Pheasant | PR | PR | 16-50 | 6-15 | stocking (varies) |
| Northern Bobwhite | PR | PR | 16-50 | 16-50 | still recovering from decline |
| Killdeer | SR | SR | 1-5 | 1-5 | Hatching Influence |
| American Woodcock | SR | SR | 6-15 | 6-15 | courtship in Field #18, Spring '85 |
| Mourning Dove | SR | SR | >50 | >50 | much good habitat |
| Black-billed Cuckoo | SR | SR | 6-15 | 6-15 | closer to 6 in '85 |
| Yellow-billed Cuckoo | SR | SR | >50 | 16-50 | No caterpillar outbreak '85 |

| SPECIES IN A.O.U.ORDER | STATUS 1981 | STATUS 1985 | EST. BREEDING PAIRS 1981 | EST. BREEDING PAIRS 1985 | COMMENT |
|---|---|---|---|---|---|
| Great Horned Owl | PR | PR | detected | 1-5 | nocturnal calls MY-JU 1985 |
| Barred Owl | Spring Resident | | not detected | 1-5 | nocturnal calls MY 1985 |
| Common Nighthawk | SR | SR | 6-15 | 6-15 | display flight |
| Chuck-will's-widow | SR | SR | 1-5 | 1-5 | probably two pr. |
| Whip-poor-will | SR | SR | >50 | >50 | about 200 pr. |
| Chimney Swift | SR | SR | 1-5 | 6-15 | Hatchery & Forest City tract |
| Ruby-throated Hummingbird | SR | SR | 1-5 | 1-5 | Very rare on transects |
| Red-headed Woodpecker | SR | SR | 16-50 | 16-50 | |
| Red-bellied Woodpecker | PR | PR | 16-50 | 16-50 | |
| Downy Woodpecker | PR | PR | 16-50 | 16-50 | |
| Hairy Woodpecker | PR | PR | 6-15 | 6-15 | |
| Northern Flicker | SR | SR | 6-15 | 6-15 | slight increase 1985 |
| Pileated Woodpecker | not detected | VIS(one) SR(one pr.) | 1-5 | | one breeding territory |
| Eastern Wood-Pewee | SR | SR | 16-50 | 16-50 | |
| Alder Flycatcher | MIG | not detected | | | |
| Phoebe | SR? | not detected | | | |
| Great Crested Flycatcher | SR | SR | >50 | >50 | |
| Eastern Kingbird | SR | SR | 1-5 | 1-5 | |
| Horned Lark | PR | PR | 1-5 | 1-5 | |
| Purple Martin | SR | SR | 1-5 | a few more | Forest City Site Hatchery, May |

| SPECIES IN A.O.U. ORDER | STATUS 1981 | STATUS 1985 | EST. BREEDING PAIRS 1981 | EST. BREEDING PAIRS 1985 | COMMENT |
|---|---|---|---|---|---|
| Tree Swallow | SR | SR | 1-5 | 6-15 | established Hatchery |
| Northern Rough-winged Swallow | VI | SR | 0 | 1-5 | Hatchery |
| Barn Swallow | SR | SR | 1-5 | 16-50 | Hatchery & Hdqrs. |
| Blue Jay | PR | PR | >50 | >50 | |
| American Crow | PR | PR | 6-15 | 16-50 | <25 Higher winter |
| Black-capped Chickadee | PR | PR | 16-50 | 50 | approx. 50 both yrs. |
| Tufted Titmouse | PR | PR | >50 | >50 | |
| Red-breasted Nuthatch | SR | Occas. not detected | 1-5 | | |
| White-breasted Nuthatch | PR | PR | 16-50 | 16-50 | |
| House Wren | SR | SR | 1-5 | 1-5 | |
| Eastern Bluebird | SR | SR | 6-15 | 6-15 | closer to 6 in 1985 |
| Veery | MIG | Occas. SR | 1 territorial Male | | MA-JY, Bishop Rd. |
| Wood Thrush | SR | SR | 16-50 | 16-50 | |
| American Robin | SR | SR | >50 | >50 | |
| Gray Catbird | SR | SR | 6-15 | 6-15 | closer to 15 |
| Northern Mockingbird | SR | SR | 1-5 | 1-5 | scarce |
| Brown Thrasher | SR | SR | 16-50 | 16-50 | approx.50 |
| Cedar Waxwing | MIG | Irreg. SR | nonbreed | | to July '85 |
| Europeon Starling | PR | PR | 6-15 | 16-50 | Hatchery & Dwellings |
| Solitary Vireo | Occas. SR | Occas. SR | MIG | not detected | nesting attempts 1979-80 |

| SPECIES IN A.O.U. ORDER | STATUS 1981 | STATUS 1985 | EST. BREEDING PAIRS 1981 | EST. BREEDING PAIRS 1985 | COMMENT |
|---|---|---|---|---|---|
| Yellow-throated Vireo | SR | SR | 1 | 1 | same territory as 1981 |
| Red-eyed Vireo | SR | SR | 16-50 | 16-50 | |
| Tennessee Warbler | MIG | not detected | | | mid-May '81 versus late May '85 |
| Nashville Warbler | MIG | not detected | | | |
| Yellow Warbler | Occas. SR | not detected | | | |
| Magnolia Warbler | MIG | not detected | | | |
| Pine Warbler | MIG | Occas. SR | | Prob. MIG | nest? |
| Prairie Warbler | SR | not detected | two territ.males | | pines tailer & burn regen. |
| Ovenbird | SR | SR | 16-50 | 16-50 | Increase, more mesic habitat |
| Kentucky Warbler | SR | SR | 1 | 1-5 | two territ. males '85 |
| Common Yellowthroat | SR | SR | 1-5 | 6-15 | |
| Hooded Warbler | over-MIG | not detected | 1 | | temporary territ., '81 |
| Summer Tanager | SR | SR | 16-50 | 6-15 | declining 1985 |
| Scarlet Tanager | SR | SR | 1-5 | 1-5 | more restrict-ive habitat |
| Northern Cardinal | PR | PR | >50 | >50 | |
| Rose-breasted Grosbeak | SR | SR | 16-50 | 16-50 | |
| Blue Grosbeak | SR | SR | 1-5 | 1-5 | Gleason & Hdqrs., 1985 |
| Indigo Bunting | SR | SR | >50 | >50 | |
| Dickcissel | SR | SR | 1-5 | 1-5 | Gleason Esp. |

| SPECIES IN A.O.U. ORDER | STATUS 1981 | STATUS 1985 | EST. BREEDING PAIRS 1981 | EST. BREEDING PAIRS 1985 | COMMENTS |
|---|---|---|---|---|---|
| Rufous-sided Towhee | SR | SR | >50 | >50 | |
| Chipping Sparrow | SR | SR | 16-50 | 16-50 | |
| Field Sparrow | SR | SR | >50 | >50 | |
| Vesper Sparrow | SR | SR | 1-5 | 1-5 | food & cover plots |
| Lark Sparrow | SR | SR | 16-50 | 50 | fire breaking & food plots |
| Grasshopper Sparrow | SR | SR | 6-15 | 6-15 | |
| Song Sparrow | SR | SR | 1-5 | 1-5 | |
| Red-winged Blackbird | SR | SR | 6-15 | 16-50 | More ponds with vegetation |
| Eastern Meadowlark | SR | SR | 6-15 | 6-15 | |
| Common Grackle | SR | SR | 16-50 | 50 | more at developed areas |
| Brown-headed Cowbird | SR | SR | >50 | >50 | |
| Orchard Oriole | Occas. SR | Occas. SR | 1-5 | not detected | |
| Northern Oriole | SR | SR | 16-50 | 16-50 | |
| Red Grossbill | Irreg. SR | Not detected | 1-5 | | breeds occasionally |
| American Goldfinch | SR | SR | 16-50 | 16-50 | |
| House Sparrow | PR | PR | 6-15 | 16-50 | increased Hatchery & Hdqrs. |

## Anecdotal Species Accounts

Species accounts are grouped by family, and follow the A.O.U. sequence (see Exhibit 1).

GREBE

The Pied-billed Grebe, new to the forest list, has been noted several times (spring and fall) at hatchery ponds.

HERON

Herons, notably Great Blue Heron, are visiting the forest in greater numbers, expecially around the hatchery equalization pond.

GOOSE

Canada Geese have been using the hatchery solar pond during migration.

DUCK

The presence of the hatchery ponds has brought at least eight species of ducks, not previously observed on the forest, to the hatchery area during migration. The larger deeper ponds are responsible for the appearance of diving ducks - Redhead, Ring-necked, Lesser Scaup, Common Goldeneye, Bufflehead, and for the presence of the three species of Mergansers frequenting our flyway.

VULTURE

Eight to ten Turkey Vultures appear virtually daily over the Forest during their summer residency as part of a population of up to 40 birds resident in and along the Illinois River Valley (Spring Lk., Clear Lk., Lk. Chautauqua). Much of this population roosts near the Clear Lake Heron Colony. All individuals seen from May - July 1985 were adults.

HAWK

Osprey visit the hatchery area regularly during migration. The Mississippi Kites observed in 1981 have not reappeared, but on May 8, 1982, a Swallow-tailed Kite was observed flying over the forest, only the second record since 1917 for the species in Illinois. Other that the Red-tailed Hawk and an occasional Kestrel, few species of hawks can be found year round on the forest. Kestrels are seen more often in adjacent agricultural fields along roads with telephone wires. Numbers of wintering Northern Harrier appear to vary with the frequency of plowed fields, fallow fields being favored. Winter resident, Rough-legged Hawks declined with farm expansion and clean farming practices in the 70s, when many of the favorite observation and roost trees in scattered sites near the edge of the forest were removed.

UPLAND GAME

Habitat alteration (clean farming) and severe winters have been hard on upland game in recent years. Assessment of the natural success of the Ring-necked Pheasant is difficult because of stocking proctices involving "put-and-take" management. The Mason county pheasant population was decimated by severe winters in the late 1970s. Increasing the resident breeding population of pheasant would likely be prohibitively expensive and adverse to a "systems view" in establishing management priorities. The Northern Bobwhite is showing signs of recovery in the Forest. Unusually severe winters during the post decade have likely limited population size more than has food quality, which is improving with the development of food and cover plots.

COOT

Coot, new to the forest list, can be seen at the hatchery ponds during migration.

PLOVER

My 1981 predicton that the fish hatchery would bring more shore birds to the

forest has been confirmed. Though Killdeer are not new to the list, breeding was unusual until the gravels around the hatchery ponds provided cryptic habitat for their nest scrapes. On April 12, 1985, I observed a nest with four eggs on the hatchery gravel.

SANDPIPER

Greater and Lesser Yellowlegs and Least and Pectoral Sandpipers are new to the list, having been recorded at the hatchery equalization pond during migration. Spotted Sandpipers, which summered at nearby Clear Lake in 1985, are no longer rare. In contrast, the Upland Sandpiper has not been recorded on the forest in the 1980's even though likely areas, such as the moist portion of the Gleason Preserve, have been checked annually. American Woodcock, which are holding their own, are seen most frequently along hedgerows near food and cover plots. In May 1985, a male was observed in courtship flights over field number 18 which has been a peenting ground for this species for several years.

GULLS

Gulls have not yet been reported on hatchery ponds, though both Herring and Ring-billed Gulls are seen flying at the northwest edge of the forest. Incidentally, a substantial number of Ring-billed Gulls appear to have summered in the Illinois River Valley in 1985, as they were present at Peoria until late June, and I saw approximately 200 adults at Clear Lake on 6 July feasting on dying and dead fish stranded by receding water (no "need" to visit the hatchery).

DOVES

Flocking young were again common in open areas by mid-June indicating that local breeding continues to be successful.

CUCKOO

Neither the Yellow nor Black-billed Cuckoos were as common in 1985 as in years of severe catterpillar outbreaks on the forest (eg. 1979). In "normal" years the Black-billed Cuckoo is seldom seen, but in catterpillar years it is detected often.

OWL

Unsolicited calling from both Great Horned (May-June) and Barred Owl (May) was noted. One Great Horned Owl has occupied a particular summer roost in a stand of pitch pine for several years. The Barred Owl was present near the Pine Campground in May. Eastern Screech Owls remain fairly common in the forest, but are seldom heard spontaeously during the summer.

GOATSUCKER

Display flights of the Common Nighthawk were observed at more sites than in 1981. As detailed in Bjorklund and Bjorklund (1984), an aggressive nighthawk continues to worry a pair of Chuck-will's-widows residing near the Pine Campground.

Calling males of Chuck-will's-widow were detected in two new sites (1) near the Gleason Preserve, and (2) at station 25 of Transect Set C, as well as in two established sites -- "the arena" south of the Pine Campground and near the east edge of the forest (Map, Appendix "A"). However, only the two pair at the established sites are likely to have nested. The calling at other sites was likely from one or more additional males heard at the arena site in May. There is insufficient evidence to suggest successful breeding for the latter males. I intend to continue to monitor the status of this small breeding population.

Whip-poor-wills were censused by the method described in Bjorklund and Bjorklund (1983). The breeding population trend since 1981, as reflected in established territories, is shown in Table 2.

Table 2. Number of Whip-poor-will territories estimated from standardized nocturnal calling counts, Sand Ridge Forest 1981-1985.

| Year | Ave. Calls Per Stop | Territories |
|---|---|---|
| 1981 | 4.3 | 202 |
| 1983 | 3.3 | 158 |
| 1984 | 3.7 | 174 |
| 1985 | 4.1 | 193 |

SWIFT

The Chimney Swift continues to be seen around dwellings - forest headquarters, hatchery, and the Forest city tract being used as a city park. Development involving buildings increases breeding population.

HUMMINGBIRD

The only Ruby-throated Hummingbird seen in 1985 was observed near dwellings at the northwest edge of the Forest. Fewer red flowers around Headquarters reduced any chance of observation there.

KINGFISHER

Hatchery personnel advise that the Belted Kingfisher is no longer rare on the Forest. Though I did not observe it around the hatchery, its status has been altered to "uncommon" during the spring and summer. It continues to be rare elsewhere on the Forest.

WOODPECKER

Breeding populations of most woodpeckers do not appear to have changed since 1981, although the nesting frequency of the Northern Flicker may be increasing; but the conspicuousness of this ground-frequenting species in such developed areas as campgrounds and hatchery may be misleading.

One new woodpecker species was added to the list in 1985. One breeding territory and a second partial territory (visitor range) of the Pileated Woodpecker were noted. The possible breeding site is the wet area at or just off the south edge of the forest near Bishop Road. The species was first detected by Sigurd Bjorklund during the Spring Bird Count and confirmed independently by several observers, including myself, later in May and also in June. Other observers, in addition to myself, noted that at least one Pileated Woodpecker, apparently a visitor from the riverbottom forest near Clear Lake,visited the northwest portion of the forest during the spring and summer. Continued use and residency by this species will likely depend upon avoidance of fragmentation of the more mature dense mesic portion of woodland.

FLYCATCHER

Great Crested Flycatchers continue to be noted most often. The Eastern Wood-Pewee is the only other flycatcher commonly encountered as a summer resident. Nesting of the Phoebe remains unconfirmed.

LARK

Horned Larks are uncommon in the food and cover plots, though they are common in the agriculture areas surrounding the forest boundary.

SWALLOW

The development of the Sand Ridge Fish Hatchery has increased nesting of

swallows. Tree and Rough-winged Swallows are now summer residents, rather than occasional visitors, and the Barn Swallow population has increased. Though a dead female Purple Martin was found on the hatchery roadway in May, and several adults were seen near the hatchery at that time, the species was not observed in June. (The female Martin was unsuited to salvage).

JAY

The Blue Jay is a permanent resident distributed widely over all kinds of forest habitats.

CROW

The summering population of the American Crow continues to be small when contrasted with the wintering flocks of hundreds seen on or near the forest.

CHICKADEE

Black-capped Chickadees continue to be common permanent residents encountered throughout all kinds of woodlands on the forest.

TITMOUSE

The Tufted Titmouse is a common permanent resident which is often territorial on sloping ground in oak woodlands.

NUTHATCH

Winter residents and spring migrants of the Red-breasted Nuthatch were scarce in 1985. This species did not summer on the Forest in 1985, although a few do (nesting suspected) in some years. In contrast, the White-breated Nuthatch is a common permanent resident of the forest.

CREEPER

The Brown Creeper, a fairly common winter resident was not detected during summer 1985.

WREN

The Carolina Wren continues to be very rare following its 1977 decline. Bewick's Wren, formerly common in the regenerating oak burn (1962 fire) and formerly a nesting species territorial even at forest headquaters, has not been detected on the Forest in the 1980's. Natural habitat alteration (post-burn successional recovery) can not fully explain the disappearance, since all other former sites are also devoid of this species. Severe winters may also have affected it adversely. The status and population size of the House and Winter Wren do not appear to have changed significantly.

KINGLET AND GNATCATCHER

The occurrence and status of the two kinglets (golden crowned and ruby-crowned) and the Blue-grey Gnatcatcher are essentially unchanged from 1981.

THRUSH

The nest boxes around headquarters intended for the Eastern Bluebird are no longer being used by that species. For several years the former Site Superintendent held the House Sparrow population in check by trapping them, permitting the bluebirds to use the nest boxes for up to three broods in a season. The few bluebirds encountered in 1985 were using natural cavities as nest sites. I have included a photograph (Appendix B) of the nest site of a bluebird - a knot hole in an old osage orange fence post on private land near the east edge of the forest. I have observed similar nest sites in old fence posts on formerly private tracts now within the Forest. Inasmuch as both osage orange hedges and wooden fence posts are becoming scarce, I urge that old posts be preserved, even if no longer useful for fencing, expecially when located away from buildings and dwellings which inevitabley introduce House Sparrows to a site.

The occurrence and status of other Thrushes observed in prior years appears unchanged except for the Veery. In 1985, Veeries were first detected in the dense mesic forest along Bishop Road during the May 4 Spring Count. A male established a territory in this area (see site photo, appendix "B") and vocalized spontaneouslly through the third week in June. Thereafter, (to second week in July), vocalization could be solicited by using a tape player. In an earlier observation at the same site, Birkenholz (1978) reported a summering Veery. In my 1981 censuses, I did not use a tape player and Veeries were not heard after the usual migration period. But in view of Graber and Graber (1973) finding Veeries nesting in Lee and Iroquois Counties and the earlier observations of Birkenholz for central Illinois, I suggest recognizing southward range expansion for this species in Illinois. This finding provides further reason for Master Planning which avoids excessive fragmentation in the Forest. Although we are properly concerned about the impact of clearing tropical forests on neotropical migrants, destruction of breeding habitat in the United States is also a threat.

MOCKINGBIRD AND THRASHER

The Northern Mockingbird still has not returned to the population levels observed on and around the forest prior to the severe winters of the late 1970s. Gray Catbird and Brown Thrasher populations appear stable.

WAXWING

Cedar Waxwings are irregularly present on the Forest. In 1985, small flocks were seen throughout May and June.

SHRIKE

The Logghead Shrike is another species which declined on the forest during the 1970's, and has not recovered.

STARLING

Abundant around buildings, the addition of the hatchery generated further niches for the European Starling.

VIREO

The Red-eyed Vireo continues to be the only vireo encountered commonly as a summer resident. The nesting attempts of the Solitary Vireo Bjorklund (1980a), apparently have not been repeated. In June 1985, a Yellow-throated Vireo sang regularly from the same tall oak near a pond where a territorial male was heard in 1981.

WARBLER

The Common Yellowthroat and the Ovenbird are the only summer resident Warblers heard in several parts of the forest. More mesic areas with shrubs have provided favored habitat for the Yellowthroat, while mesic conditions in several parts of the forest have increased understory, and ground cover accounting for success of the Ovenbird. Despite an increased number of ponds, the Yellow Warbler remains a rare summer resident and the Pine Warbler remains an enigma. Though heard regularly during spring migration, no breeding has been confirmed despite careful checks by several competent birders. The territorial male Prairie Warblers which, in 1981, summered in and around a pine plantation within a large regenerating oak burn (1962 fire) have not been observed since 1982. The pines are growing rapidly, and habitat alteration may be a factor in the disappearance; but the precise reason is unclear. The Yellow-breasted Chat is still detected occasionally in thickets at forest edge.

For several years in May and June, a Kentucky Warbler has been heard in territorial song in dense oak woodland with well developed understory along Bishop Road. In 1985, two males were heard in territorial song in this area. This is an area sensitive species and the limited suitable habitat will prohibit a significant increase in breeding population.

TANAGER

The Summer Tanager appeared to be in decline in 1985. In 1981, it was detected on nearly one-third of the census stops and legs. Observations in 1985 were limited and less quantitative than in 1981; nevertheless, my observation that there were fewer summer Tanagers on the forest this year is consistent with the subjective observations of several persons who bird in the forest, and regularly visit the oak woodlands on drier sites favored by this species.

The Scarlet Tanger breeds far less widely on the forest. It continues to occupy the same restricted habitat as in the past - dense mesic oak stands with a well developed understory, along Bishop Road. The relatively small number of territories possible for this species makes detection of a population trend difficult. In any case, while avian ecologists continue to speculate and debate the effect of tropical deforestation on Tanagers, Warblers, and Thrushes, we must not lose sight of the need to protect the breeding habitat of these species (see comment on forest fragmentation below).

CARDINAL, GROSBEAKS, AND ALLIES

No significant change to report here. Two pair of Blue Grosbeaks occupied territories at the brushy forest edge of the Gleason Nature Preseve and another pair located at the forest edge north of headquarters. Other species in this group are among the most abundant breeding birds on the Forest (Exhibit 1 and Table 1).

SPARROW

No signigicant change in the listing of resident sparrows was made, although Song Sparrows are encountered more frequently as suitable semi-open brushy habitat develops around ponds.

BLACKBIRD AND ALLIES

The resident Red-winged Blackbird population is increasing consistent with the development and maturation of ponds having suitable cover vegetation such as cattails. In other respects, no significant changes from my 1981 report are in order.

CARDUELINE FINCHES

Red Crossbills have been more irregular since 1981, at one point not being seen on the forest for twenty-three months. Though seen in virtually every month of some years, Red Crossbills apparently did not summer on the Forest in 1985. Both Red Crossbills and White-winged Crossbills were winter residents in 1984-85.

WEAVER FINCH

House Sparrows are on the increase around both forest headquarters and the fish hatchery. (See comment above, under Thrush with regard to effect on Eastern Bluebird nesting at headquarters).

## COMMENT ON EXCESSIVE FOREST FRAGMENTATION

I would be remiss if I did not once more urge master planning for the Forest that avoids excessive fragmentaion and edge-effect. In 1981 I recommended "--if possible, a diversity of habitats while avoiding excessive fragmentation detrimental to area-sensitive species (Bjorklund, 1981, p.43)." I also urged that "developments which induce excessive fragmentation of the Forest must be avoided because of the many insectivorous songbird species that winter in the tropics and are dependent upon relatively large, unbroken tracts of forest during the breeding season (Bjorklund, 1981, p.44)." In my opinion, we have reached the point in development of Sand Ridge Forest where further local habitat diversity will begin to favor avian "weedy edge" species (low area requirements and high edge affinities) over species least tolerant of forest fragmentation--neotropical migrants, forest interior specialists, open nesters (as opposed to cavity nesters) and/or ground nesters (Whitcomb, et al, 1981). Several of my anecdotal accounts in this report suggest that we are nearing that situation at Sand Ridge Forest.

In the absence of the ideal--a regional landscape approach to maintain diversity (gamma diversity of Noss, 1983), I urge careful examination of the Forest as a management unit to avoid overemphasizing diversity (beta diversity of Noss, 1983) which gives widespread and opportunistic species advantages over more sensitive species in ecological evaluation and the design and management of preserves. Whatever the final plan, those who must make the decisions ought to read and digest Whitcomb et al (1981) and Noss (1983) before finalizing plans so that decisions are not made in ignorance of probable ecological consequences.

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## CLEAR LAKE HERON COLONY PROJECT

The Clear Lake Heron Colony is located on an Illinois River floodplain forest in extreme northwest Mason County (T.23 N.,R7 W.,S 19). The colony currently encompasses about ten acres (four hectares) of a floodplain which has been subjected to frequent flooding, especially in recent years. Examination of Corps of Engineers records dating back to 1844 reveals that of the eighteen most severe floods at Peoria, as ranked by the Corps, nine have occurred since 1970. The 1985 flood ranks #3 overall; the 1979 flood #2. The flooding, together with shading and bird excretement inhibits development of an understory (photo, Appendix "B"). Dominant tree species are cottonwood, Populus deltoids (especially on "higher" ground which consists of a low natural levee paralleling the Illinois River), silver maple, Acer saccharinum, and black willow, Salix nigra (an extensive stand which continues east to Clear Lake and is seldom used for nesting). Scattered sycamore, Platanus occidentalis, a small number of green ash, Fraxinus pennsylvanica, and an occasional slippery elm, Ulmus fulva, are located in the contral and eastern parts of the area. The green ash and slippery elm have not been used as nest sites in recent years because the nesting population of Black-crowned Night-Heron which had used them declined. The other two nesting occupants of the colony--Great Blue Heron and Great Egret show a preference for cottonwood. The Black-crowneds now occupy mostly silver maple.

The entire colony and all surrounding land is part of the Clear Lake Outing Club (estate of the late Tony Hulman). Access is by boat or, at normal water level, by walking the levees from the Clubhouse, a four-mile round trip.

### METHODS

I began monitoring the breeding population of the colony in 1962. I began detailed censusing in 1968 when trees used for nesting were first marked with numbered metal tags. For the past ten years I have visited the colony a maximum of four times per nesting season -- enough to obtain a detailed ground census. The Buckley and Buckley (1976) guidelines for the study of nesting colonial waterbirds have been observed and disturbance by me has been minimal. In 1985, it was necessary to alter this practice, nine visits being necessary to complete this project. On the first visit, 22 May, my son Eric accompanied me; on all others I worked alone, completing my tasks on 22 July.

Tasks completed were (1) marking of trees, (2) detailed census of nesting birds by tree, and (3) notes on fledging success in order to estimate productivity.

Over 150 trees, most of them with occupied nests, were marked (no tag or tag lost) or remarked (tag damaged or illegible) with numbered sheet aluminum tags. In instances where the tag was lost or illegible, a new number, with the prefix 85 to indicate the year, was assigned. In the portion of the colony abandoned since the peak populations of 1968-69 declined, no remarking was done. Should that portion of the site be reoccupied, trees will be marked with numbers prefixed with the years of reoccupation. I have been using the prefix system and aluminum tags since 1978, nailing them securely but allowing

for some growth in diameter of the trees (most have been slow growing in recent years).

Censusing of active nests was completed on three visits from June 13-19. Observations were time consuming. If no adult was present at the nest and young could not be determined by species, then feathers, egg shells, and dead nestlings below the nest and well as size of nest were used as evidence of the occupant. Droppings (whitewash) on the ground below nest sites were especially useful in detecting nests in the crowns of trees at the edge of the colony. In many cases a particular tree was checked more than once. My movements were slow and deliberate in order to minimize disturbance. Fledging counts were also time consuming. My counts are only an index of fledging success, since without a tower or other elevated position, it is impossible to monitor nests from hatching of eggs to actual fledging in this colony. As used in this report, individuals and family groups out on limbs or the edge of the nest which were at or nearing full juvenile plumage and size, "exercising" wings or making short flights or hops were noted as "at fledge". Many trees and nests were checked more than once, even so, only a few data were obtained from Black-crowned Night-Heron. Fledging counts were made between 19 June (mostly Great Blue Heron) and 22 July when a few Black-crowned Night-Heron remained.

## OUTCOME

### MARKING

As indicated above, the marking task was completed as planned. Experience since 1978 with the aluminum tags indicates that even with continued frequent flooding and ice action (flood water rises above the tags), the aluminum tag system should be adequate for five to seven years with only occasional replacement of damaged tags necessary.

### CENSUSING

Table 1 displays some details of the breeding population at the Clear lake colony from 1982 through 1985. Occupied nests of both the Great Blue Heron and Great Egret rose significantly in 1985 while the Black-crowned Night-Heron breeding population remained low.

Figure 1 is a graphic display of breeding population trends at the now abandoned Worley Lake Colony, linegraph (Bjorklund, 1975), and at the Clear Lake colony. The bar histogram representing the Clear Lake Colony shows the marked decline of the endangered Black-crowned Night-Heron (top portion of each bar) and the partial recovery in 1985 of the Great Egret, (darkened middle portions of each bar) which in earlier years approximated the nesting population of the Great Blue Heron.

Two other items in figure 1 are noteworthy. The nesting population at Clear Lake in 1968 and 1969 almost certainly exceeded the carrying capacity of the area. It was probably occasioned by an influx of birds which had been nesting at the Worley Lake Colony (note the sharp decline at Worley Lake, twenty air miles to the north of Clear Lake). Note also that at the bottom of the graph, I have included recent flooding records of the Illinois River. Frequent and protracted flooding of these sites is not only silting in the

TABLE 1. NESTING PAIRS OF HERONS AND EGRETS, CLEAR LAKE COLONY, 1982-85.

| YEAR | OCCUPIED NESTS | GREAT BLUE HERON | GREAT EGRET | BLACK-CROWNED NIGHT-HERON | TREES WITH NESTS | AVE. NESTS PER TREE |
|---|---|---|---|---|---|---|
| 1982 | 379 | 170 | 61 | 148 | 198 | 1.9 |
| 1983 | 252 | 152 | 58 | 42 | 130 | 1.9 |
| 1984 | 264 | 171 | 49 | 44 | 129 | 2.0 |
| 1985 | 380 | 241 | 102 | 37 | 171 | 2.2 |

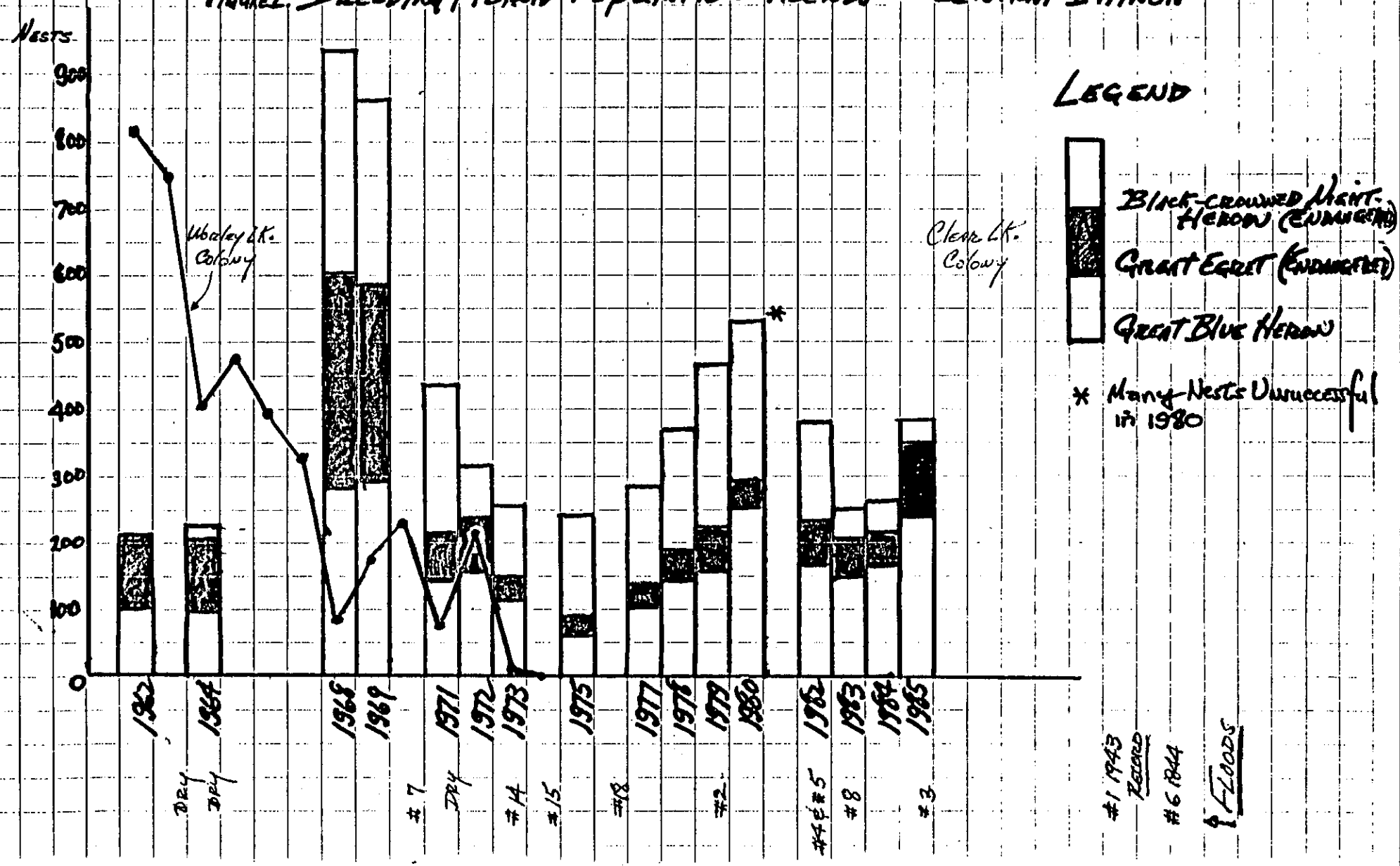


Figure 1 - Breeding Heron Population Trends — Central Illinois

flood plain Lakes which provide feeding habitat for colonies along the Illinois River -- it is also beginning to kill more of the most desired nest trees of the larger herons. Table 2 shows the numbers of trees, by species, used as nest sites for herons in 1985, indicating the importance of cottonwoods to this colony. Even more impressive, of 380 active nests of all species of herons in 1985, only 49 were located in other than cottonwood trees.

My own records show that in most years the colony loses 1-3 cottonwood trees which had been used as nest sites (tagged trees). In 1985, no fewer than seven large dead or dying Cottonwood trees were observed (see photo Appendix "B"). While defoliation makes censusing easier, it also points to developing instability which can be traced to excessive flooding (and in a few cases lightning strikes). Even more ominous is the observation that at least four younger cottonwoods (9"-12" DBH) on the immediate colony site are dead or dying. Potential replacements are scarce, very few young cottonwoods being available on the site.

FLEDGING

Fledging data for 1985 are displayed in Table 3. Data for the Black-crowned Night-Heron are too few to be reliable. In any case, the data represent only successful nests and should not be used to extrapolate production data for the entire colony. As Pratt and Winkler (1985) showed in a colony where close detailed observation of nest is possible, only abut one-half of the Great Egret nests fledged young successfully. In Pratt and winkler's study, 2.2 Great Blue Heron and 2.05 Great Egret were fledged from successful nests. Because I was unable to observe individual nests and follow all birds to a fully flighted condition, my higher figures for the Great Egrets at Clear lake may reflect an incomplete accounting of mortality at fledging rather than greater productivity. Several fledglings were found dead after a windstorm in early July, but could not be related to a particular brood. Thus, my using criteria for fledging several broods in the relatively small sample may have been exaggerated as to fledging success.

TABLE 2. NUMBER OF TREES, BY SPECIES USED BY HERONS AS NEST SITES, CLEAR LAKE COLONY, 1985.

| AVIAN SPECIES USING | COTTONWOOD | SILVER MAPLE | BLACK WILLOW | SYCAMORE | GREEN ASH & SLIPPERY ELM |
|---|---|---|---|---|---|
| Great Blue Heron | 129 | 2 | 2 | 2 | |
| Great Egret | 64 | 7 | | | |
| Black-Crowned Night-Heron | 1 | 32 | | | |
| Totals*(Unadjusted) | 194* | 41* | 2 | 2 | |
| Totals Adjusted | 129 | 38 | 2 | 2 | |

*Unadjusted exceeds the 171 trees used in 1985 because of multiple species occupancy of some trees

TABLE 3
FLEDGING DATA FROM A SAMPLE OF
SUCCESSFUL NESTS AT THE CLEAR LAKE
HERON COLONY, 1985

| Frequency of Brood Size | Great Blue Heron | Great Egret | Black-crowned Night-Heron |
|---|---|---|---|
| 4 | - | 2 | 0 |
| 3 | 9 | 4 | 0 |
| 2 | 25 | 10 | 3 |
| 1 | 2 | 1 | 0 |
| Total Fledged | 79 | 41 | 6 |
| Ave/Nest | 2.2 | 2.4 | 2.0 |

## CONCLUSIONS

Frequent and protracted flooding is presently the greatest threat to the stability and integrity of the area. Predation by owls plays a very minor role, while the activities of the Turkey Vultures which roost in the area are generally confined to feeding on dead nestlings and adults. Vultures may occasionally feed on dying dislodged nestlings hurt in falling from their nests. Despite the increase in nesting population in 1985, I was unable to find a live dislodged nestling to band. Without exception, the 35-40 nestlings found during the nine visits had been "picked clean".

Finally, one might speculate on the reason(s) for the sudden increase in nesting of the Great Egret at Clear Lake. I do not think it is recruitment from other nesting sites, now rare in the Illinois River Valley, which is responsible. The many apparently non-breeding egrets which I had observed in the river valley in recent years were absent from their usual dispersed sites, such as the Interstate 474 bridge backwater area near Peoria in 1985. But why the sudden urge to breed is unclear to me. In any case, I did not observe any of the sibling rivalry which can have fatal consequences for Great Egret chicks (Mock, 1985). Where mortality could be documented in herons and egrets two or three chicks, rather than single dead chicks were observed most often.

Overall, it was a successful breeding season for both the Great Blue Heron and the Great Egret at Clear Lake.

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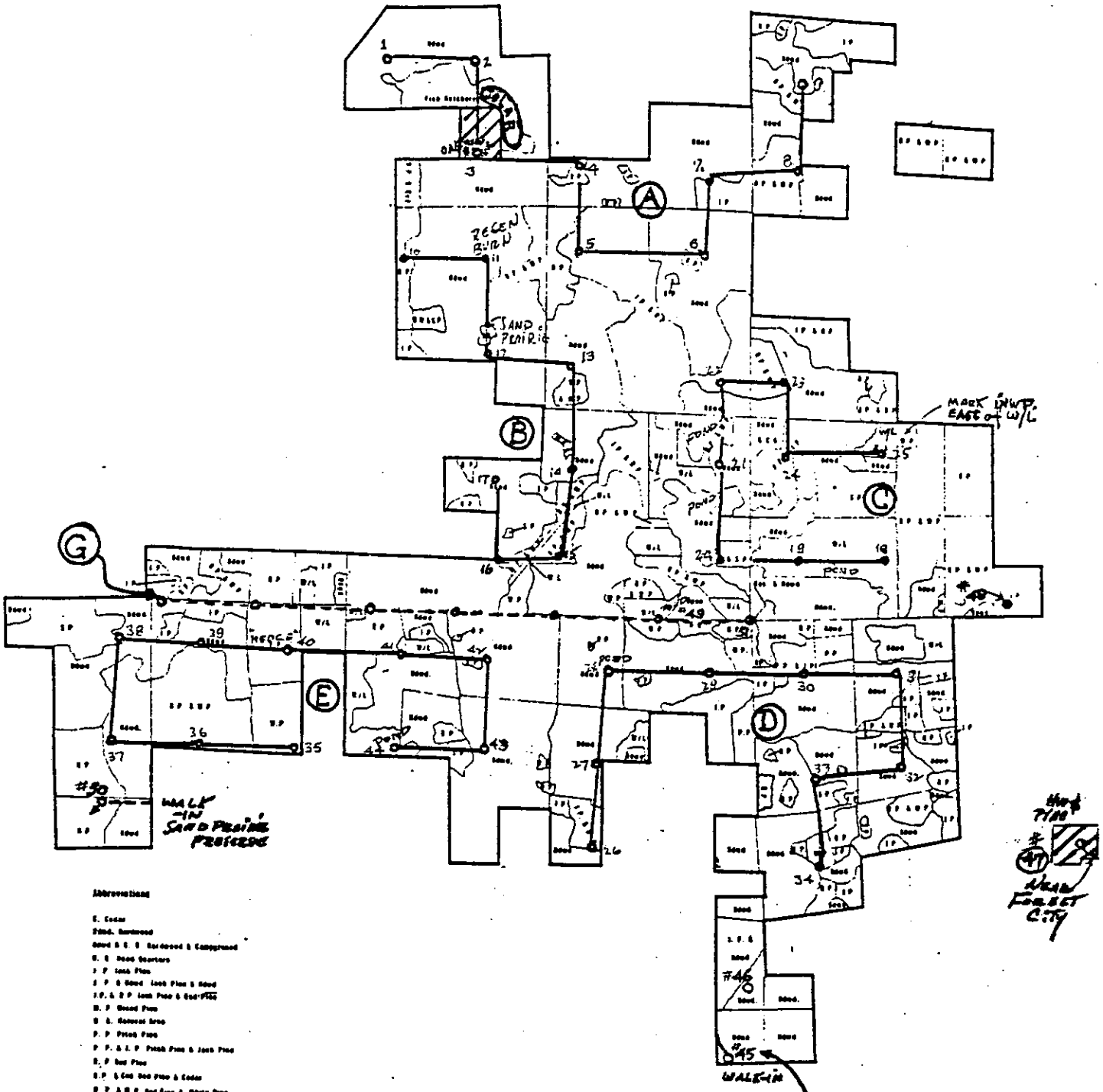
# APPENDICES

APPENDIX A. - MAP OF TRANSECTS IN SAND RIDGE FOREST
AND MAP LOCATING UNUSUAL BIRD SIGHTINGS
IN LAKE AREA, SUMMER 1985.

APPENDIX B. - PHOTOGRAPHS
Figures 1 and 2, Sand Ridge Forest
Figures 3 -7, Clear Lake Heron Colony and Nearby

# APPENDIX A




Abbreviations

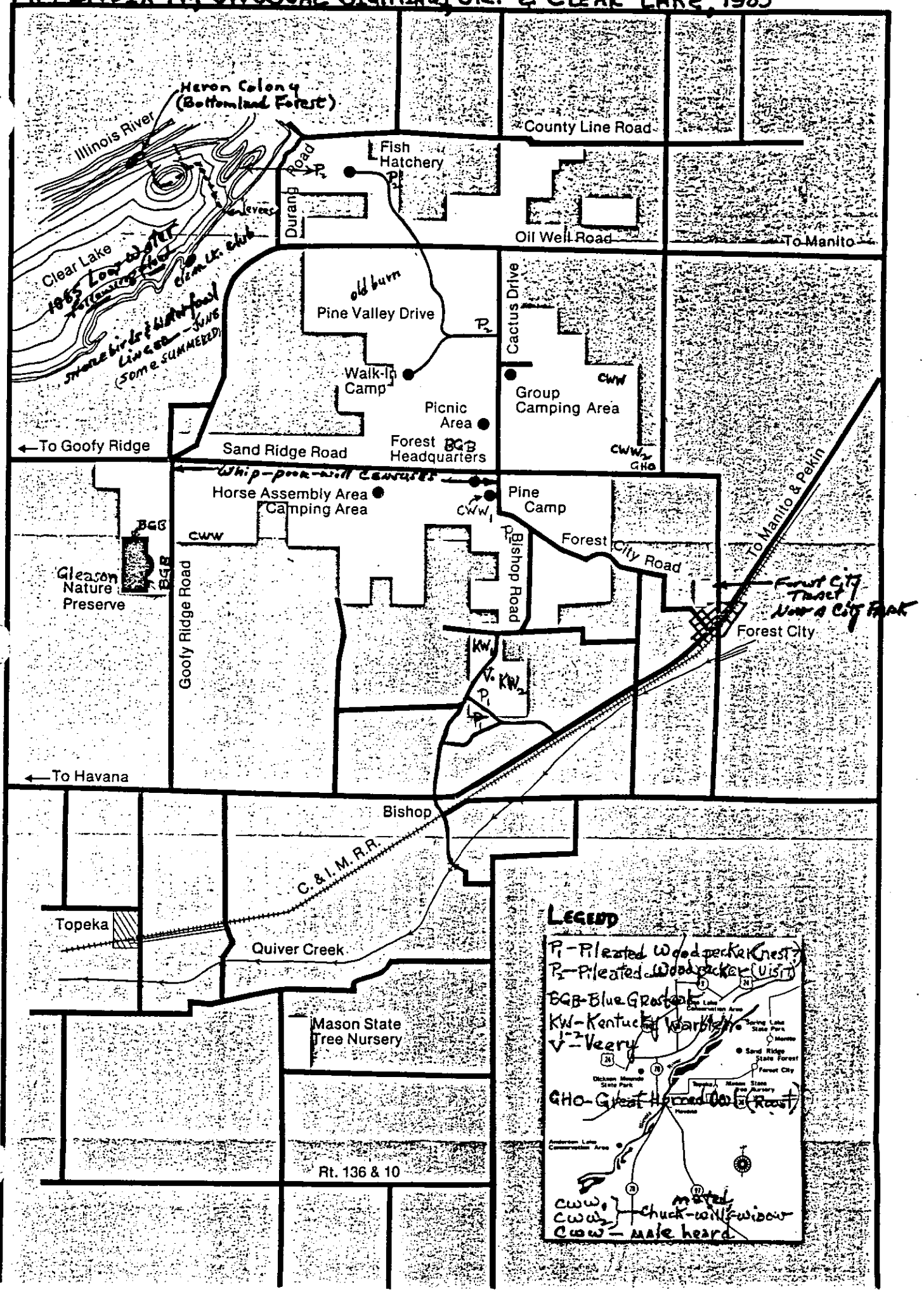
E. Cedar
Dbwd. Hardwood
Dbwd S. E. G Hardwood & Campground
S. G Pond Scarters
J. P Jack Pine
J P & Dbwd Jack Pine & Hdwd
J.P. & S P Jack Pine & Red Pine
W. P White Pine
W. L. Natural Area
P. P Pitch Pine
P P. & J. P Pitch Pine & Jack Pine
R. P Red Pine
R.P & Ced Red Pine & Cedar
R P & W P Red Pine & White Pine
R P & S P Red Pine & Scotch Pine
Dbw & Hdwd Hardwood & Hardwood
S P Scotch Pine
V P. Virginia Pine
W/C G Walk in Campground
W P. White Pine
W L Wildlife Area
W C G Walk in Campground

**TRANSECTS**
Sand Ridge State Forest
Land Cover
Scale 1:12,500 approx.
Date of Photography 3-26-74

NOTES

1. #45-51 SELF-DESIGNED QUALITATIVE SET (F)
2. ORIGINAL MAP WAS DISTORTED (LOWER PORTION)
3. GOATTUCKER CONSULT ROUTE (G)

# APPENDIX A., UNUSUAL SIGHTINGS SRF & CLEAR LAKE, 1985



# APPENDIX B

Figures 1 and 2, Sand Ridge Forest

Figures 3 - 7, Clear Lake Heron Colony and Nearby

Figure 1 -- Site of territorial Veery, May-July 1985 along Bishop Road (see Maitorial Veery, May-July 1985 along Bishop Road (see Map Appendix "A"). The view is west where vegetation is less dense (allowing color photo) than on side of road from which photo was taken. Veery's territory included both sides of road, but more time was spent in the cooler dense understory on the side of road from which this photo was taken. Wood thrush, Scarlet Tanager, Ovenbird and the Kentucky Warbler nest in the area. Forest fragmentation threatens such species. Clip board at base of a black oak tree provides a size referent.

Figure 2 -- Both osage orange fence posts and the bluebirds utilizing them for nest cavities are disappearing in Mason County. Though this fence is located on private land just east of the forest, I have seen similar bluebird nest sites in old fence posts remaining on the forest. Old posts having knotholes should be left standing, even if no longer being used for fencing, as they provide nest sites for bluebirds that are less likely to be invaded by house sparrows than are nest boxes put up near buildings, as at forest headquarters.

Figure 1. Veery territorial habitat, Bishop Road, Sand Ridge Forest. See comment, opposite page.

Figure 2. Entrance to the nest cavity of an Eastern Bluebird is located just below the top of the thick osage orange post in the middle of photo. See comment, opposite page.

Figure 3. This view of tree #8500 (prefix 85 indicates tree was newly marked in 1985) looks south along the highest ground into the Clear Lake Colony. Though relief between "low" and "high" ground is scarcely more than a meter, this natural levee is sufficient to permit dominance of cottonwood trees on the levee. Cottonwoods are preferred by both the Great Blue Heron and the Great Egret as nesting sites. Note paucity of understory vegetation. Paper on clip board measures 8 1/2 x 11 inches.

Figure 4. Although both Great Blue Heron and Great Egret may nest in the same tree, Great Blue Heron arrive first in the spring and tend to claim sites for their nests in the largest cottonwoods. A comparison of this figure with figure 5 shows that Great Blue Heron nests shown here ordinarily are substantially larger than those of the Great Egret which nests more peripherally in the crown of cottonwood trees or in smaller cottonwoods, and sometimes, in silver maple. Most of the broods from these nests had already fledged when this photo was taken on 6 July, 1985.

Figure 3. Marked cottonwood tree, north edge of Clear Lake Heron Colony. See Comment, opposite page.

Figure 4. Nests of the Great Blue Heron in cottonwood trees. See comment, opposite page.

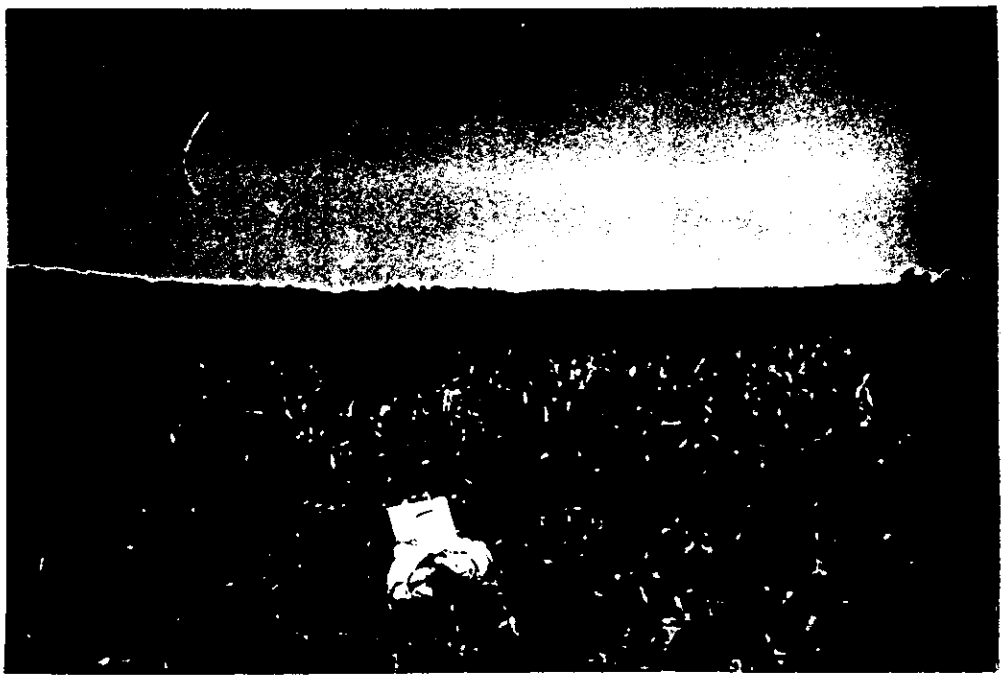
Figure 5. Several broods of Great Egrets at or near fledge and one brood of Great Blue Heron, large nest top center, were raised successfully in these two dead cottonwoods. The trees died during the winter of 1984-85, but several persistent nests apparently stimulated both herons and egrets to utilize the site again. Both species arrive on the site in advance of leaf out. Severe and protracted flooding by the Illinois River is accelerating loss of cottonwoods at the Clear Lake site.

Figure 6. Shows Clear Lake during the very low water of summer 1985, following the near record flooding which occurred in March. The Wing and Feather Club which is responsible for maintaining a levee at the south end of the lake is reported to have set a conduit lower than usual accounting for the extremely low water. Fish were concentrated in the shallow water, a boon to heron and egrets who expended less energy than usual in obtaining food for themselves and for nestlings. The white specks visible in the reflection crossing the water surface are Great Egrets. More than 200 Great Blue Herons, including many newly fledged birds, were feeding at the south end (left off photo) of the lake when this photo was taken on 6 July, 1985.

Figure 7. The Clear Lake Club planted a considerable acreage in corn to the right of this photo which looks south across marshy lake bottom toward the site from which photo for figure 6 was taken. Natural food, eg. Sagittaria (duck potato, arrowhead) was also plentiful, so ducks should be attracted to the area. Ditches (not shown) beside each levee provided persistent waterways even though the Clear Lake receded, and resulted in exceptional summer usage of the marsh by herons, egrets, shorebirds, and waterfowl.

Figure 6. - Westerly view from Clear Lake Outing Club, 6 July, 1985. Clear Lake Heronry is located in trees at skyline, right edge of photo. See comment, opposite page.

Figure 7. - View looking back at site from which the photo for figure 6 was taken. Clubhouse, not visible, is left of the dead, drowned timber in the left background. See comment, opposite page.



85-17

BRADLEY UNIVERSITY

DEPARTMENT OF BIOLOGY

12 August 1985

Carl N. Becker, Manager
Natural Heritage Section
Forest Resources and Natural Heritage
Illinois Department of Conservation
Lincoln Tower Plaza
Springfield, Illinois 62701-1787

Dear Carl:

Please find enclosed a report titled "Avian Ecological Projects in the Sand Ridge State Forest and the Clear Lake Heron Colony" together with a camera-ready revision of my "Annotated Field Checklist for Birds Observed While in the Sand Ridge Forest." I'm assuming that Vernon Kleen will be involved in the review process for this report and the checklist, particularly since his recent indication of the Department's interest in developing bird checklists for D.O.C. landholdings, a suggestion I also made in my report.

Should the Department want to quote from the report, please indicate the source is unpublished information from my report. If warranted by further supporting evidence, I intend to publish information on population trends, fledging, etc. at some future date.

As soon as all bills for preparation of the report and checklist as well as my field expenses are in, I will be sending a summary of same, together with receipts, to the Bradley University Business Office which office is handling an agency account (#5-23166) for the projects.

Sincerely yours,

Richard G. Björklund

Richard G. Björklund
Professor of Biology

RGB:bw

Enc.

Copy: Vernon Kleen

PEORIA, ILLINOIS / 61625 / 309-676-7611