

CONSERVATION PLAN

March 15, 2004

Kirtland's Snake (*Clonophis kirtlandii*)

**Potential Impacts form Sangchris Lake State Park's
Boat Access Rehabilitation Project
(DNR File # 4-03-003, CDB# 102-435-024)**

1A BACKGROUND/PROJECT DESCRIPTION

Located at the northern end of the east arm of Sangchris Lake, the existing East Harbor Boat Access Area serves as the major access point to the 2,162 acre lake. Existing facilities include: a 2-lane concrete boat ramp & maneuvering area, 6 floating boat dock sections, a visitor parking lot accommodating approximately 30 autos and 50-60 auto/trailer units, two single unit vault toilets, multipurpose building, overflow parking lot, and utilities (water, electric, sewer, etc).

The existing ramp is in poor condition, is oriented to shallow water, and does not provide adequate access at less than normal pool. Due to siltation, there is inadequate water depth to/from the boat ramp. There is inadequate hydrological and siltation data that will require documentation. The existing boat docks, aggregate sidewalks, vault toilets, and water service are not accessible, are in poor condition, and have outlived their useful service life. In addition, there are no fish cleaning facilities at this site.

This project provides for the overall improvement of the East Harbor Boat Access Area facility and will include: hydrological and siltation study, mechanical silt removal to assure adequate water depth between the new ramp and deeper water, new accessible two-lane concrete boat ramp and maneuvering area reoriented toward deeper water, new accessible floating boat docks, new accessible double unit vault toilet, new accessible water hydrant, and new accessible fish cleaning station adjacent to the existing overflow parking lot. Other associated construction items include: site grading and drainage improvements, existing facility demolition and removal, fill material, riprap, site amenities, site/security lighting, utility trenching, concrete sidewalks, low level stone retaining walls, vehicular and pedestrian signage, the seeding and mulching of disturbed areas, and landscaping.

This project will be submitted for federal reimbursement from the boating fund and will be subject to federal review and approval prior to bidding. Any mitigation items, if required, will be included as part of the overall project cost.

1B BIOLOGICAL DESCRIPTION OF AFFECTED SPECIES

The Kirtland's Water Snake (*Clonophis kirtlandii*; referred to as *Natrix kirtlandi* in older literature; Collins, 1990) was discovered near Chicago in 1856 by Robert Kennicott who named it in honor of Jared Kirtland (the Kirtland's Warbler is also named in his honor), a physician, naturalist, founding member of both the medical branch of Case Western Reserve University and the Cleveland Museum of Natural History. This least aquatic of the water snakes prefers the wet meadows and open swamp forests of the upper Midwest, within the lower Great Lakes and the Ohio River valley.

This species can be identified due to its 19 rows of keeled upper-body scales that are gray to reddish-brown, with two rows of alternating small and large diffuse dark blotches along the midline and a generally darker head with a whitish chin, throat and scales around the mouth. The most distinguishing feature is a reddish belly with a row of black spots along each margin and a divided anal plate. The snake grows to be about 2 feet in length. Juveniles are generally darker on the back and sides, and may appear less conspicuously blotched (Bavetz, 1994; Phillips et al., 1999).

The Kirtland's snake prefer prairie wetlands, wet meadows, and grassy edges of creeks, ditches, and ponds, usually in association with crayfish burrows. This species has been found within remnant habitats within vacant lots of urban settings. Individuals will emerge from hibernation in late March or April with mating occurring in May. Live young (4-6 inches in length) are born in August in litters ranging from 4 to 15. Females are known to breed when they are about half their eventual length, while males may before that length is obtained (Conant, 1943; Minton 1972; Tucker, 1976; Mierzwa, 1985; Martin, 1986). The species diet consists mostly of earthworms, slugs, other softer bodied macro-invertebrates, amphibians and minnows (Conant, 1943; Minton, 1972; Wilsmann and Sellers, 1988; Tucker, 1993). The species is secretive and nocturnal and shelters beneath logs, other surface debris, or in crayfish burrows, by day

throughout the summer. Crawfish holes are also known to serve as hibernating sites for this species from late October until late March. When threatened, it flattens itself into a ribbon and remains motionless unless disturbed when it may make a few feeble attempts to strike.

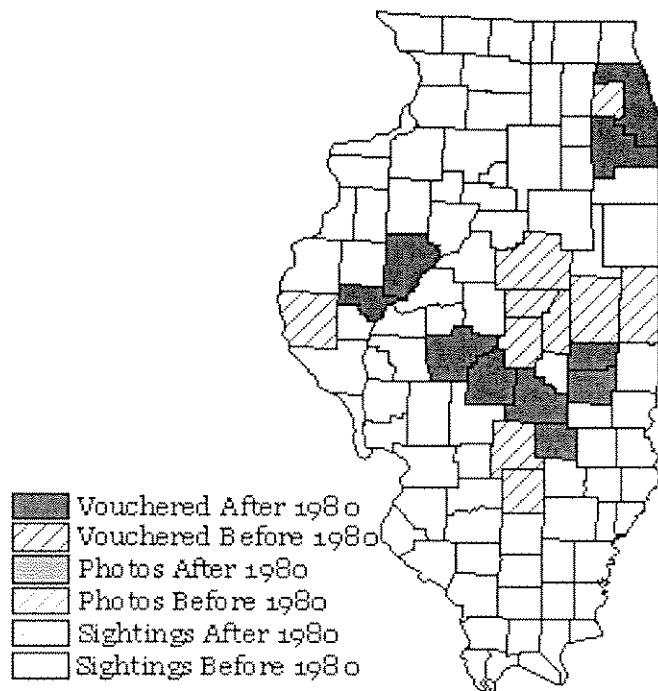


Figure 1. Distribution of Kirtland's snake in Illinois (Phillips et al., 1999)

In Illinois and west-central Indiana, populations require unsaturated soil with a high subsurface water table (NatureServe. 2003) and are therefore most often found on mollisols, soils that develop under grasslands that have excellent water retaining abilities (Wilsmann and Sellers 1988). However, open grassy habitats may harbor populations that are relatively difficult to detect and document due to the secretive nature and that they are often below ground (NatureServe. 2003). This species commonly uses chimney crayfish (*Cambarus diogenes*) burrows as cover and underground passageways because the

burrows provide moisture, less severe temperature extremes, and food resources (Wilsmann and Sellers 1988). This fossorial habit allows for the survival during prescribed fire. The species apparently hibernates underground, possibly using crayfish burrows, in or near the wetlands it inhabits the remainder of the year. However, live individuals have been found on the surface in every month (NatureServe. 2003), with basking occurring on warm winter days. Individuals usually emerges in early spring (Conant 1943; Minton 1972) with activity peaks in April and October. Individuals appear to have a small home ranges (Wilsmann and Sellers 1988). Potential predators include other snakes, birds, carnivorous mammals, and fish (Wilsmann and Sellers 1988).

The species is listed as Threatened in Illinois where it is known historically from 33 sites in 23 counties (Illinois Natural Heritage Database, 2003). Only 11 counties are known to have extant populations (Figure 1). Threats include drainage of wetlands, destruction of native prairie marshlands, and reduction of earthworm populations by herbicides and pesticides. The species has a Global Status Rank of G2 (NatureServe, 2003). With a range centered in Illinois, Indiana, and Ohio and peripheral populations in Kentucky, Michigan, Wisconsin, Missouri and Pennsylvania. The species is listed as endangered, threatened or extirpated in every state and has apparently declined in abundance over its entire range. Most records are clustered near the southern end of Lake Michigan in Illinois, northwestern Indiana; and southwestern Michigan and in Lucas County, Ohio (Harding 1997). The Kentucky distribution is along the Ohio River valley (Barbour 1971). Historically, the range included all of northeastern and central Illinois, most of Indiana and Ohio, north-central Kentucky, southern Michigan, western Pennsylvania, and extreme northeastern Missouri. In Wisconsin it is known from a single unsubstantiated report in 1883 (Hoy 1883, Vogt 1981). In Missouri it is known from a single record in 1964 (Jones 1967, Johnson 1987). Records from southeastern Wisconsin and from eastern Pennsylvania have been regarded as erroneous (Conant 1943). It was last recorded from Pennsylvania in 1965. Forty-eight occurrences have been documented in Illinois, Indiana, Kentucky, Ohio, and Michigan between 1980 and 1987 (Wilsmann and Sellers 1988).

Since this snake is difficult to detect, all occurrences may not have been documented and historical sites may not have been extirpated as suspected unless habitat destruction is the cause, there may be as many as 100 total occurrences within the current range. However, the Kirtland's snake was once known from more than 100 counties in eight states, but since 1980 it has only been observed in less than one quarter of those counties (Wilsmann and Sellers 1988).

In general, population size at a site is difficult to determine, even with a mark-and-recapture study, because these snakes are so secretive. Research suggests that local populations can sometimes be fairly large with reported numbers of 24 found along 20 feet of a state road in Washington County, Indiana (NatureServe, 2003) and Minton (1972) mentioned that some colonies near suburbs might be quite dense. However, it is not clear at what level is needed to sustain a population in the long term and high population densities may be necessary for normal population function.

The most important factor affecting this species has been loss of former habitat to agriculture (Wilsmann and Sellers 1988) as well as succession which allows grassy habitats to become more woody when surrounding land use patterns change. Many remnant populations inhabit small areas in urban or suburban areas which are highly vulnerable to extirpation by development. These colonies may thrive for a period of time but eventually will decline. Activities that negatively impact crayfishes and their burrows are considered detrimental. Collecting for the pet trade is a threat in urban populations (NatureServe, 2003) where large amounts of litter and debris increase the chances of finding these snakes (Wilsmann and Sellers 1988). Other potential threats to this species are disease, predation, competition, pesticide use, road kills, mowing and long-term climatic changes.

Remaining wet prairie habitats that have not been unchangeably altered can be used for restoration purposes but the species will utilize natural open areas, streams or ditches, upland hillsides that have subterranean refuges and managed open areas such as yards or parks. Within these last two areas, mowing schedules, foot and car traffic, potential environmental contaminants, hydrology, and ground cover need to be considered as the snakes may frequent these areas (NatureServe. 2003).

A study of Killdeer Plains Wildlife Area in Ohio, which is a state-owned remnant of prairie managed for Canada geese, reported snake mortality from mowing and vehicle traffic. During the fall hunting season when both factors were heavy, snake mortality was high. The study recommended rescheduling mowing operations to coincide with the snakes' periods of inactivity, and rerouting traffic, placing speed bumps and signs to caution motorists to avoid hitting snakes (Wilsmann and Sellers 1988).

Monitoring should be conducted during the prime seasonal, diel, and weather-related activity periods, with repeated visits to each site. Natural areas may be difficult to survey because of the lack of cover under which snakes may be easily found. Some monitoring techniques include overturning of natural and artificial covers, shining with flashlights, seining in streams, drift-fencing, and searching roadways for dead and injured snakes. Drift-fencing may be more successful earlier in the spring or fall when the snakes are moving to and from their hibernacula (Wilsmann and Sellers 1988).

Sangchris Lake State Park East Boat Dock

There are two occurrences of Kirtland's snake at Sangchris Lake State Park (Natural Heritage Database, 2003). Both occurrences were first observed in 1985. One occurrence, was observed again in 1992. This species has been traditionally hard to locate since it feeds predominantly at night and below ground and hides during the day below ground (in crawfish holes) or under debris. This species has been relocated at sites after not being seen for over 30 years because it is so secretive and sampling procedures have been inadequate for this species (Wilsmann and Sellers 1988). Continued existence at Sangchris Lake is probable even with the lack of consistent sightings.

1C DESCRIPTION OF ACTIVITIES/IMPACTS LIKELY TO RESULT FROM THE PROPOSED TAKING

The proposed boat dock improvement activities at the East Boat Dock at Sangchris Lake State Park will be changing the current state of condition where the state threatened Kirtland's snake is known to occur. The vault toilet replacement, the construction of the fish cleaning station and the other associated items have the likely hood of impacting 0.9 acres of suitable habitat (Figure 2) thus have the potential to result in "incidental takes" of the Kirtland's snake. This take may occur through direct construction related mortality and may occur within the breeding and/or non-breeding portions of the species life cycle.

conduct this survey but the results probably reflect correct habitat prioritization by the crawfish with actual density figures more than likely being greater during the warmer seasons. Density estimates for the three habitat types averaged 112.5 holes/acre for mowed lawn, 62.5 holes/acre for old field and 0 holes /acre for successional woodlands. Within the East Boat Dock area there is approximately 1.35 acres of mowed lawn, 5.35 acres of early successional woodland, 6 acres of old field and 4 acres of paved or built upon surfaces (Figure 4).

2A PLANS TO MINIMIZE AREA AFFECTED BY PROPOSED ACTION

Measures have been taken into consideration during design phase to avoid habitat intrusion and fragmentation although avoidance of all potential impact is not possible. To avoid further intrusion and fragmentation and creation of paved surfaces, during the vault toilet improvement to ADA standards, the toilet will be moved closer to the parking lot. All new construction activities will be adjacent to existing paved surfaces.

2B/C/F PLANS TO MANAGE AREA AFFECTED BY THE PROPOSED ACTION

Each impact site will be enclosed with drift fence at least 1 week prior to construction and remain enclosed until the project is completed. For 1 week prior to construction, nightly searches will be conducted during peak activity time for this species (to be determined depending upon time of the year). If individuals of this species are found they will be marked and removed from the impact site. If the drift fence is found to be permeable (underground connections via crawfish holes) through the capture of previously marked individuals, a trench will be dug around the impact site and the drift fence will be buried to a depth of two feet and be monitored for another 1 week period. If previously marked individuals are still being found within the construction zone after the drift fence has been buried, the Department of Natural Resources shall be consulted to determine a course of action. All construction activities and/or construction support activities will be limited to those enclosed areas or already paved surfaces. If the species is found within the enclosed areas, nightly monitoring will continue until no individuals of this species are found for ten consecutive nights or the Department of Natural Resources deems further searches unnecessary.

No specific mitigation for impacts to the 0.9 acres is being proposed. However, the entire East Boat Dock Area will be managed more holistically to actively benefit this species and it's habitat needs. Management considerations for this species will include mowing schedule alterations as well as habitat modifications. Mowing within the East Boat Dock area will be limited to between 10:00am and 4:00pm to coincide with the time of least activity for this species. Mowing guidelines will recommend mowing once every other week in March through May and again in September through October (if feasible and weather permitting). The old fields that are currently being impacted by woody intrusion and are being dominated by goldenrod will be restored to a short stature wet-mesic prairie mix with abundant forbs to keep the grass from becoming too thick and will be managed with fire to offset woody intrusion (Figure 3). The woodlands within the East Boat Dock area are currently dense with an understory of elm, ash, hackberry and bush honeysuckle with an overstory of predominantly cottonwood, sycamore, and

oaks (Figure 3). Portions of these woodlands will be thinned to 40-50% canopy cover and some limited mowing of understory will be allowed to facilitate crawfish usage. The woodlands will then be managed with fire in an attempt to keep the desired structure. All management / mitigation activities will be funded from the Sangchris Lake State Park farm lease program as monies become available. These activities will be phased in over a 10 year period to allow the species to become acclimated to new areas.

2D/E MONITORING MITIGATION AND ADAPTIVE MANAGEMENT PRACTICES

DNR will conduct searches for this species 1, 3, and 5 years post construction. If the species is not found in that time it will be considered extirpated from that particular site and reintroduction will be considered. Site staff will collect all dead snakes found within the east boat dock area for positive ID by the appropriate biologist. If dead individuals are found and mortality appears excessive, DNR will formulate plans to address the apparent cause of the mortality. Change in mowing strategy, further alteration of habitat or day use areas, posting of informative signs, change administrative rules to close site to snake harvest (currently allowed under definition of aquatic life with a limit of 8 per day) or restrict vehicular speed.

3 ALTERNATIVE ACTIONS CONSIDERED

No-action - The no-action alternative is defined as no change in the boat dock. This alternative was not considered due the needed dredging and reorientation of the boat dock to ensure continued access to the lake by boaters.

Design A - The Design A alternative is defined as improvements to the boat dock but no improvements to the vault toilet or the construction of the fish cleaning station. This alternative was not considered because of the need to improve the current vault toilet to ensure ADA compliance. Currently the toilet vault is in a low lying area and fills with water that leaks out gradually after heavy episodic rains.

Design B - The Design B alternative is defined as improvements to the boat dock and the improvements and moving of the vault toilet but no construction of the fish cleaning station. This is not the preferred alternative because of the general need and desire to construct a sanitary fish cleaning station at the site.

Design C (Preferred Alternative) - The Design C alternative is defined as the proposed improvements to the boat dock alignment, the upgrade and relocation of the vault toilet and the construction of a fish cleaning station.

4 AFFECTS ON SPECIES SURVIVAL AND RECOVERY

The project will not jeopardize and is likely to enhance, the long term survival and recovery of the Kirtland's snake. The active management of the East Boat Dock Area will result in more

preferred and stable habitat for this species.

5 IMPLEMENTING AGREEMENT

DNR Regional, Site, and District Staff will be responsible for: periodic inspections of the drift fence enclosure to insure integrity and compliance with the IT stipulations, overseeing of all monitoring, mitigation, and the adaptive management efforts identified within the Conservation Plan.

The District Natural Heritage Biologist (or District Wildlife Biologist in his absence) will have approval over acceptance of individual responsible for surveying for and the marking of individual Kirtland's snakes for the purpose of compliance with the Incidental Take.

The successful contractor will be responsible for erecting and maintaining drift fence prior to and during completion of the project as well as providing a suitable individual to conduct the nightly surveys for the snake during the week prior to the start of construction and if the Kirtland's snakes are found, throughout the stipulated time frame or until the Department of Natural Resources deems further searches unnecessary. Results of each nightly survey will be reported to the Site Superintendent at Sangchris Lake State Park or his designee the following morning.

Glen Kruse and Joe A. Kath, Program Manager and Project Manger, respectively, Office of Resource Conservation, Illinois Department of Natural Resources, are responsible for reviewing this Conservation Plan. They are also responsible for the issuance of the Illinois Department of Natural Resources Incidental Take Authorization

References

- Barbour, R. W. 1971. Amphibians and reptiles of Kentucky. Univ. Press of Kentucky, Lexington. x + 334 pp.
- Bavetz, M. 1994. Geographic variation, status, and distribution of Kirtland's snake (*Clonophis kirtlandii*) in Illinois. *Transactions of the Illinois State Academy of Science* 87(3-4):151-163.
- Collins, J. T. 1990. Standard common and current scientific names for North American amphibians and reptiles. 3rd ed. Society for the Study of Amphibians and Reptiles. *Herpetological Circular No.* 19. 41 pp.
- Conant, R. 1943. Studies on North American water snakes-I: *NATRIX KIRTLANDII* (Kennicott). *American Midland Naturalist* 29(2):313-341.
- Evers, D. C. 1992. A guide to Michigan's endangered wildlife. Univ. Michigan Press, Ann Arbor. viii + 103 pp.
- Harding, J. H. 1997. Amphibians and reptiles of the Great Lakes region. University of Michigan Press, Ann Arbor. xvi + 378 pp.
- Hoy, P. R. 1883. Catalogue of the cold-blooded vertebrates of Wisconsin. *Geological Survey of Wisconsin* 1(2):422-426.
- Illinois Natural Heritage Database. 2003. Biological and Conservation Database. Illinois Department of Natural Resources, Springfield IL.
- Johnson, T. R. 1987. The amphibians and reptiles of Missouri. Missouri Department of Conservation, Jefferson City. 368 pp.
- Jones, J. M. 1967. A western extension of the known range of Kirtland's watersnake. *Herpetologica* 23:66-67.
- Martin, N. 1986. 1986 Kirtland's report. Unpublished report submitted to the Michigan Department of Natural Resources. 18 pp.
- Mierzwa, K. S. 1985. Report on a population of Kirtland's snake, *CLONOPHIS KIRTLANDII*, near the type locality in Cook County, Illinois. Unpublished report submitted to the Cook County Forest Preserve District. 15 pp.
- Minton, S. A., Jr. 1972. Amphibians and reptiles of Indiana. *Indiana Academy Science Monographs* 3. v + 346 pp.
- NatureServe. 2003. NatureServe Explorer: An online encyclopedia of life [web application]. Version 1.8. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: January 26, 2004).
- Phillips, C. A., R. A. Brandon, and E. O. Moll. 1999. Field guide to amphibians and reptiles of Illinois. *Illinois Natural History Survey Manual* 8. xv + 282 pp.
- Tucker, J. K. 1976. Birth of a brood of Kirtland's water snake. *Journal of Herpetology* 10(1):53-54.
- Tucker, J. K. 1977. Notes on the food habits of Kirtland's water snake, *CLONOPHIS KIRTLANDII*. *Bull. Maryland Herpetol. Soc.* 13(3):193-195.
- Vogt, R. C. 1981. Natural history of amphibians and reptiles of Wisconsin. Milwaukee Public Museum. 205 pp.
- Wilsmann, L. A., and M. A. Sellers, Jr. 1988. *CLONOPHIS KIRTLANDII* rangewide survey. Final Report submitted to U. S. Fish & Wildlife Service Region 3, Office of Endangered Species, Twin Cities, MN. 43 pp.

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USGS 130 km NE of St. Louis, Missouri, United States 11 Apr 1998

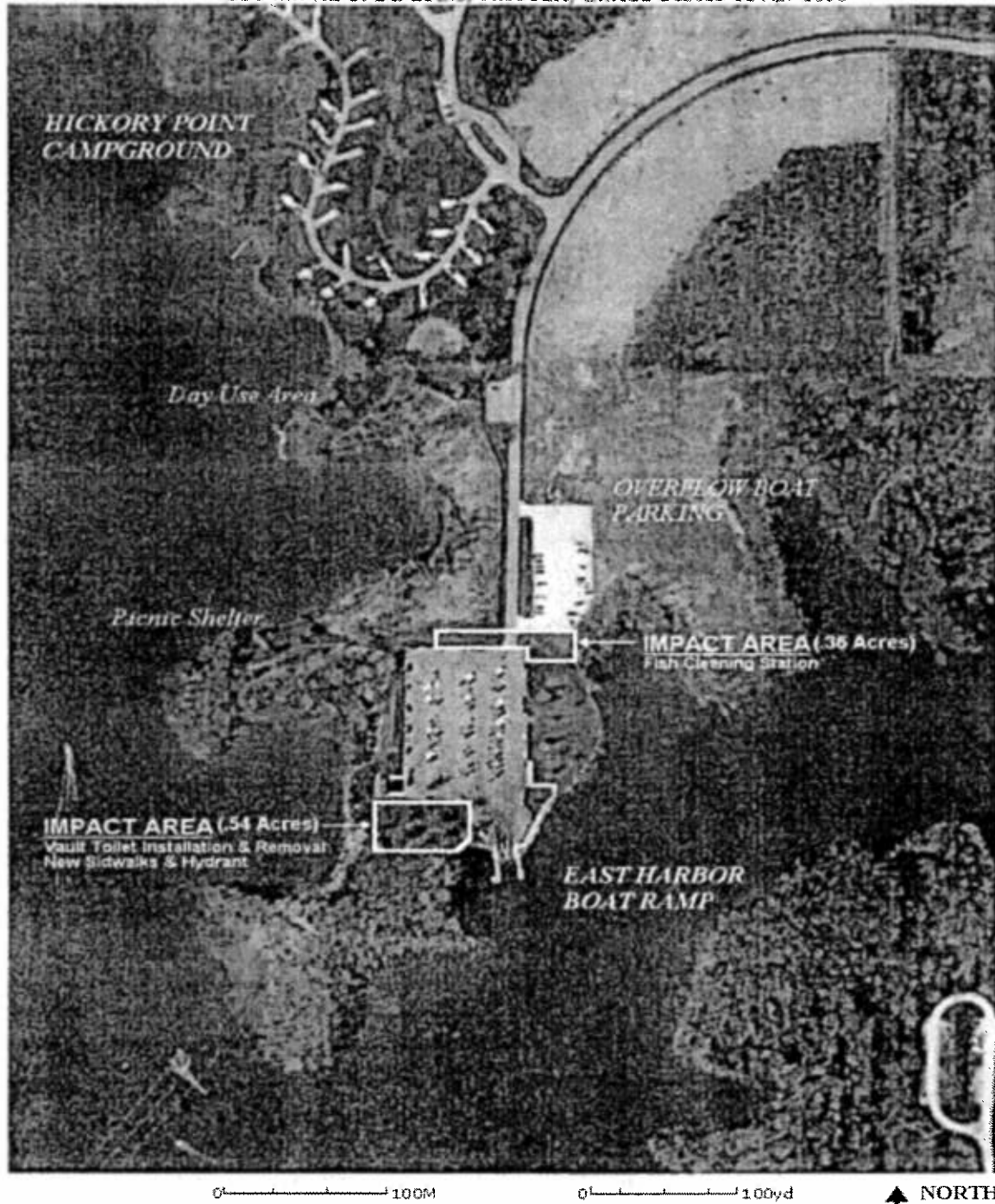
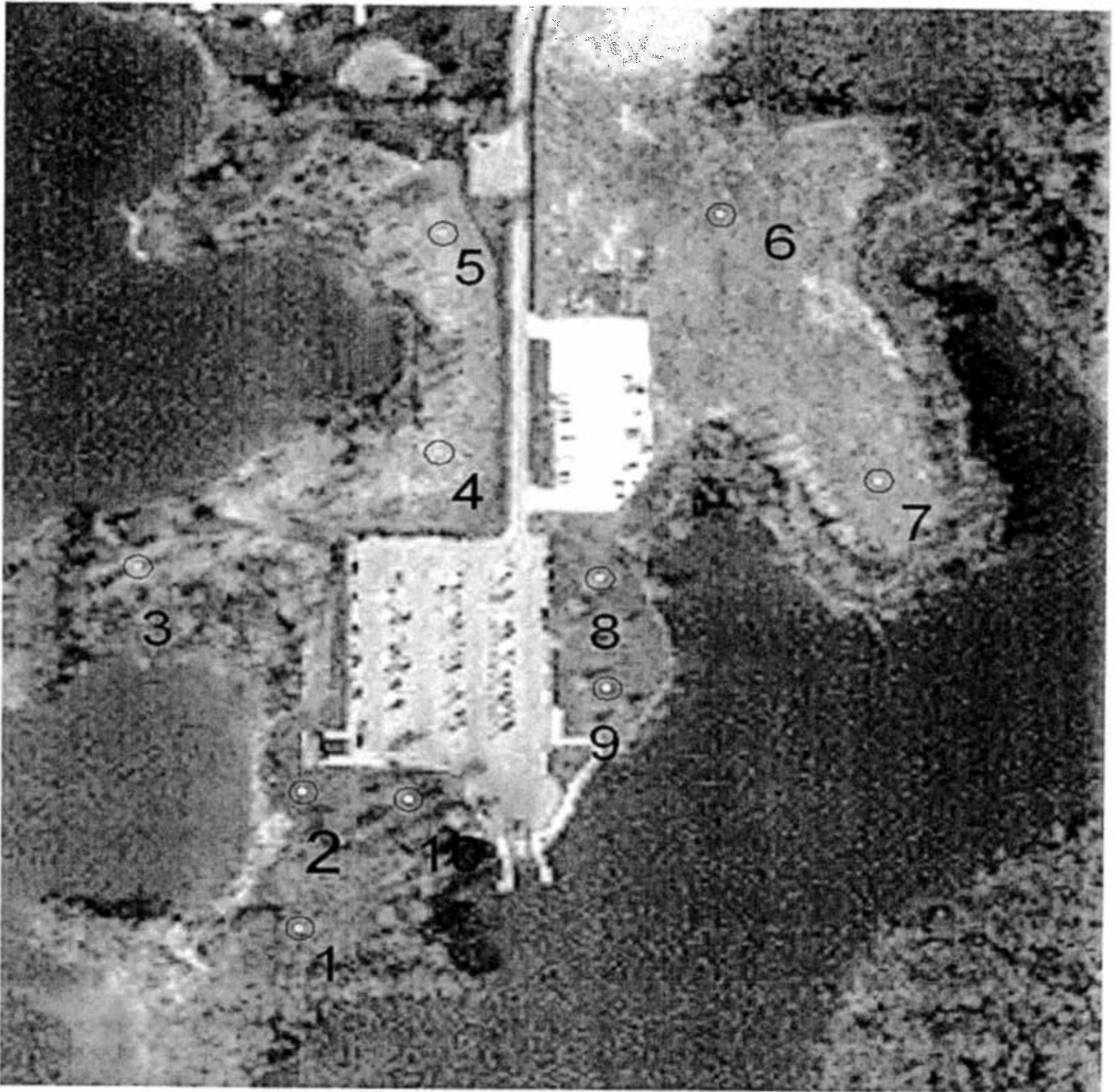


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Sangchris Lake State Park East Side Use Areas

Figure 2. Identified impact areas at Sangchris Lake State Park, East Boat Dock Area showing general layout and acreage estimates for the vault toilet improvements and fish cleaning station construction.

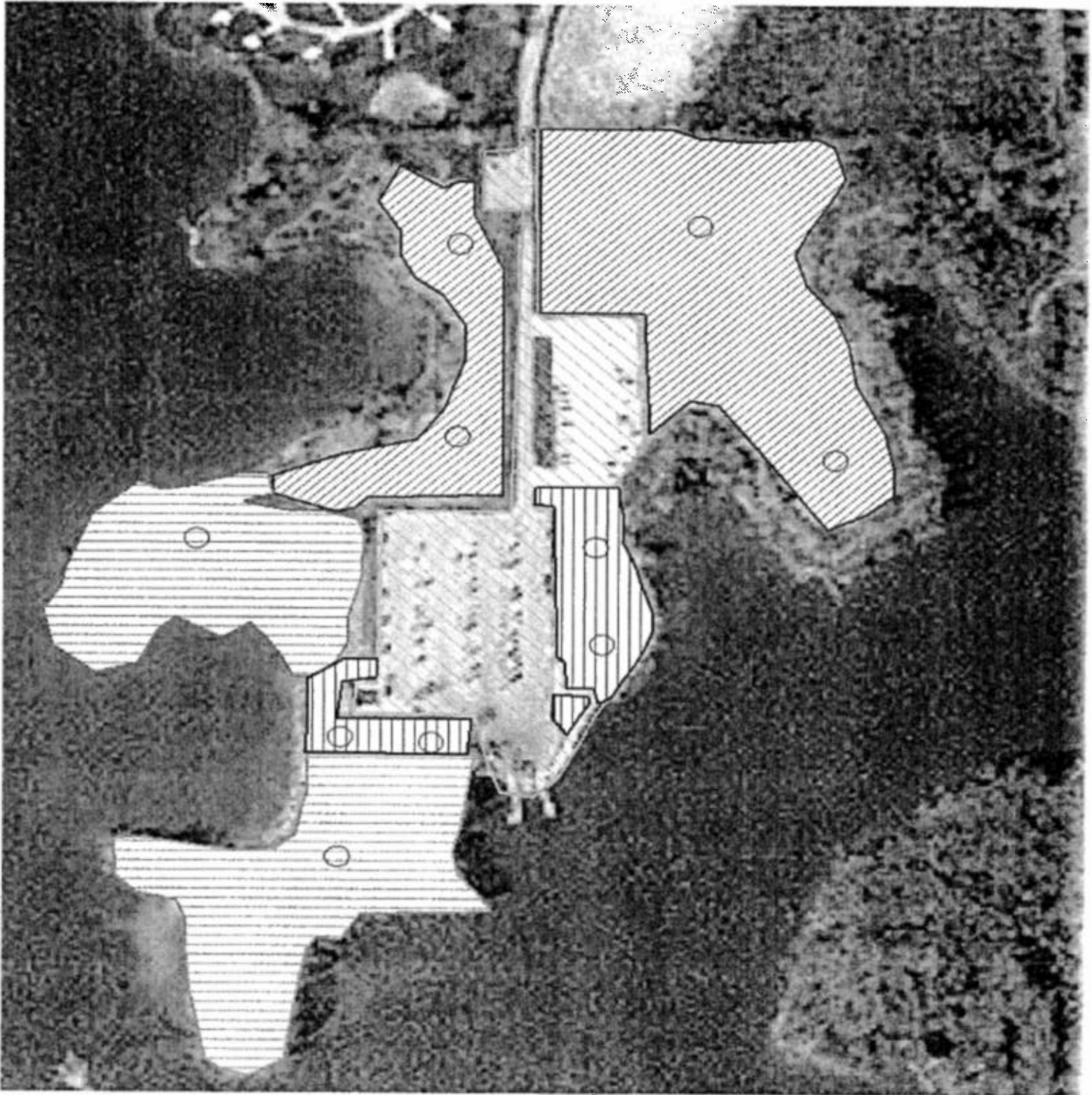


Sangchris East Boat Dock Sample Locations





300 0 300 600 Feet



Figure 3. Sample locations used to determine the densities of crawfish holes at the various habitat types at Sangchris Lake State Park East Boat Dock.



Sangchris East Boat Dock Management Blocks

-  Old fields
 -  Currently developed
-  Mowed ground
 -  Early successional woods

0 200 400 Feet



Figure 4. Habitat types at Sangchris Lake State Park East Boat Dock.

PUBLIC NOTICE

The Illinois Department of Natural Resources (IDNR) has applied for an incidental take authorization regarding the Kirtland's Snake (*Clonophis kirtlandii*). The application is based upon potential impacts from the East Boat Dock Improvement project within the Sangchris Lake State Park property located approximately 3 miles south west of Edinburg, Illinois, in Christian County.

1. The mailing address of the Illinois Department of Natural Resources, is One Natural Resources Way, Springfield, Illinois 62702-1271.
2. The project is located within the east central portion of Sangchris Lake State Park at the East Boat Dock. United States Geological Quadrangle map reference: Edinburg Quadrangles, T14N, R3W, Section 29. (See Attached Project Location Map)
3. Authorization is being requested for incidental take of the above mentioned species due to construction activities required to improve the alignment and depth of the boat dock, to upgrade the current vault toilet to comply with ADA standards and to construct a fish cleaning station.
4. Significant measures that will be taken to minimize and mitigate the effects of an incidental taking include: drift fencing around construction zones with appropriate searches for the species, and the holistic management of the East Boat Dock Area to ensure habitat suitability and stability for needs of this species.
5. A copy of the Conservation Plan is available for review at Illinois Department of Natural Resources, Office of Resource Conservation, One Natural Resources Way, Springfield, Illinois 62702-1271; the Taylorville Public Library, 121 W Vine St, Taylorville, 62531; Sangchris Lake State Park, Site Office, 9898 Cascade Road, Rochester, Illinois 62563; and the Illinois Department of Natural Resources, Region IV Office, 4521 Alton Commerce Parkway, Alton, Illinois 62002.
6. Comments from the public can be mailed to the Illinois Department of Natural Resources, Office of Resource Conservation, One Natural Resources Way, Springfield, Illinois 62702-1271.
7. Any comments made by the public must be received by the Illinois Department of Natural Resources in Springfield by (Month, Day, 2004).

This notice is being published in the Breeze Courier, a daily newspaper in Christian County, Illinois, once a week for three consecutive weeks (Month, Days, 2004) and is being published in the Edwardsville Intelligencer, the official State newspaper (Date, Days, 2004).