Proposal for Campus Natural Area and Outdoor Teaching Laboratory

Prepared by CNA planning group (see signature page)

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Summary. A 35-acre tract in the southwest corner of campus should be designated as a campus natural area and be managed to facilitate its use in educating students and the public about ecology and biotic diversity. The area is well-suited to maintaining the major ecosystems of well-drained sites in north peninsular Florida--viz., *hammock*, *high pine*, and *stages of old-field succession*. Principal users of the area will be Liberal Arts and Science (Botany and Zoology Departments), Agriculture and Natural Resources (Forestry, Wildlife and Range Sciences and Entomology and Nematology Departments), and Florida Museum of Natural History (Interpretation Department). A committee representing the major user groups should administer the use and management of the area.

The site

The proposed campus natural area (CNA) is about 35 acres in the southwest corner of campus (Fig. 1). Its limits are as follows:

> On the south and west its boundaries are those of the campus. Its east boundary follows the west edge of the road into the surge area and the south and west limits of the surge area until it passes Building 831. Then it proceeds due north until it reaches the east-west road that is immediately north of Building 794. There it turns east to the paved road and then north along that road's western edge ending at the north end of the retention pond. The northern boundary proposed for the CNA follows the north and west margins of the retention pond until it turns due west along the south border of the site of the Performing Arts Center.

The area between the sites of the Performing Arts Center and the Florida Museum of Natural History Exhibits Center (hatched area in Fig. 1) should provide public access from the grounds of the Exhibits Center to the CNA. (A picnic area for Museum visitors has been proposed.)

Principal ecosystems on the site

The proposed CNA is divided almost evenly among three major habitat types, as shown in Fig. 2. (See Appendix A for more about these ecosystems.)

Hammock. The southeast third of the CNA has no history of farming, burning, or logging. Consequently it is dominated by a mixture of large hardwoods. The few mature loblolly pines presumably mark where large trees were wind felled. This type of forest is considered the climax community of north peninsular Florida. A peninsula of hammock, including a small pond and the sink into which it drains, lies between the surge area and Archer Road.

High pine. The southwest third of the CNA has no history of farming and as recently as 1966 was an open stand of large longleaf pines. Except for the pines being not as old or as large as those cut from the site 100 years earlier, the ecosystem was pretty much in its pre-Columbian state. However, high pine is fire-maintained and the natural fires that had periodically renewed the high pine ecosystem had been excluded by the recent construction of SW 34th Street. Without fire to suppress them, hardwoods have grown unchecked for at least 25 years, and no young longleaf pines are to be found. In pioneer times, high pine was the principal ecosystem on well-drained sites in north peninsular Florida. This community once covered nearly half of Alachua County. With proper intervention, an example of this ecosystem can be restored and maintained as part of the CNA.

Disturbed. The northern third of the CNA was once cleared and farmed and has since been used in a variety of ways that have disrupted or reinitiated normal secondary succession. For example, sand was removed and added, clay from the Health Center site was spread over a portion of the area, a large retention pond to receive storm water from nearby building and parking sites was dug, and trees were planted for research on fence posts and forest insects. In secondary succession in north Florida, characteristic biotic communities successively occupy a

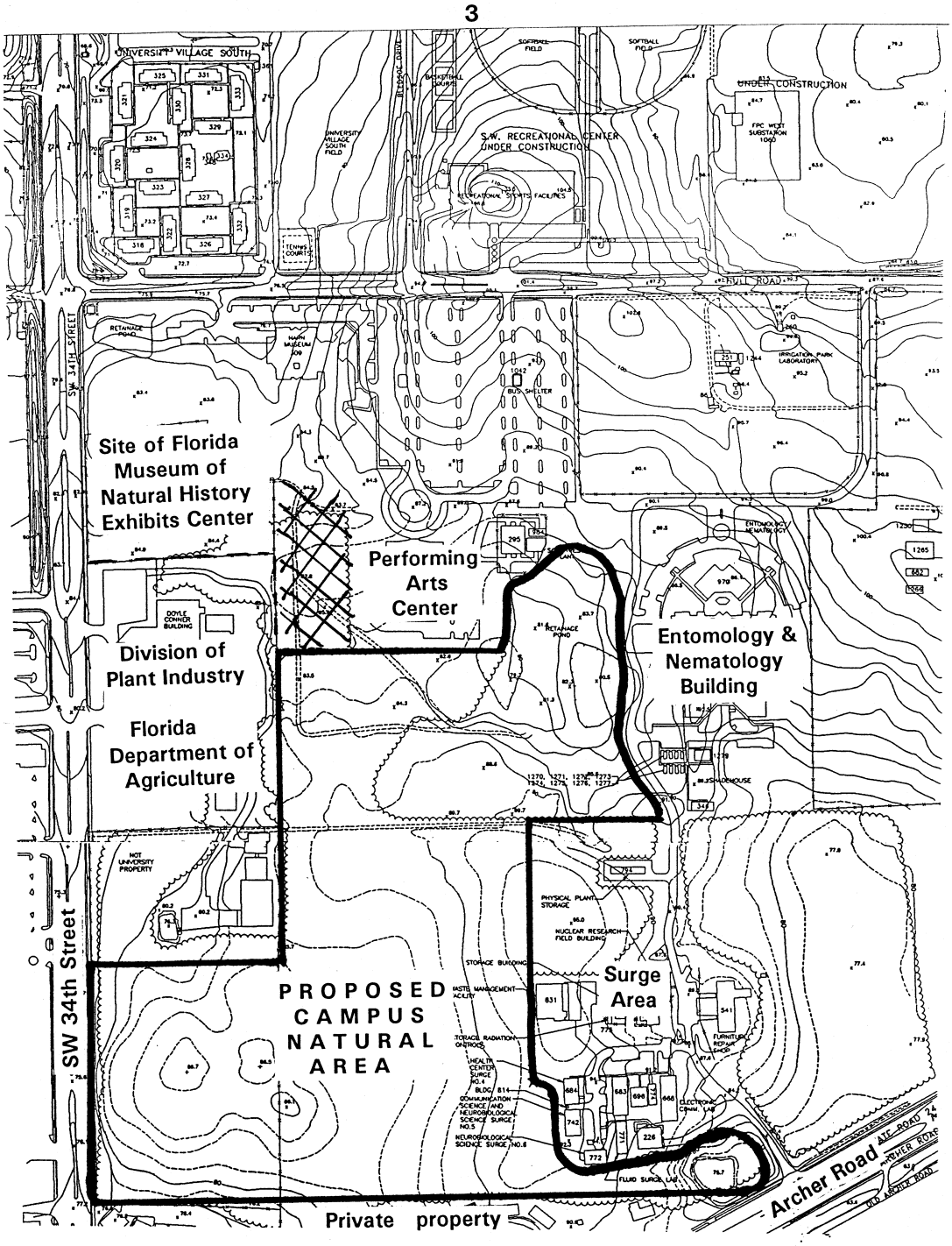

Fig. 1. Topographic map showing boundaries of proposed Campus Natural Area and surrounding uses. Hatched area is the access from the Florida Museum of Natural History Exhibits Center.

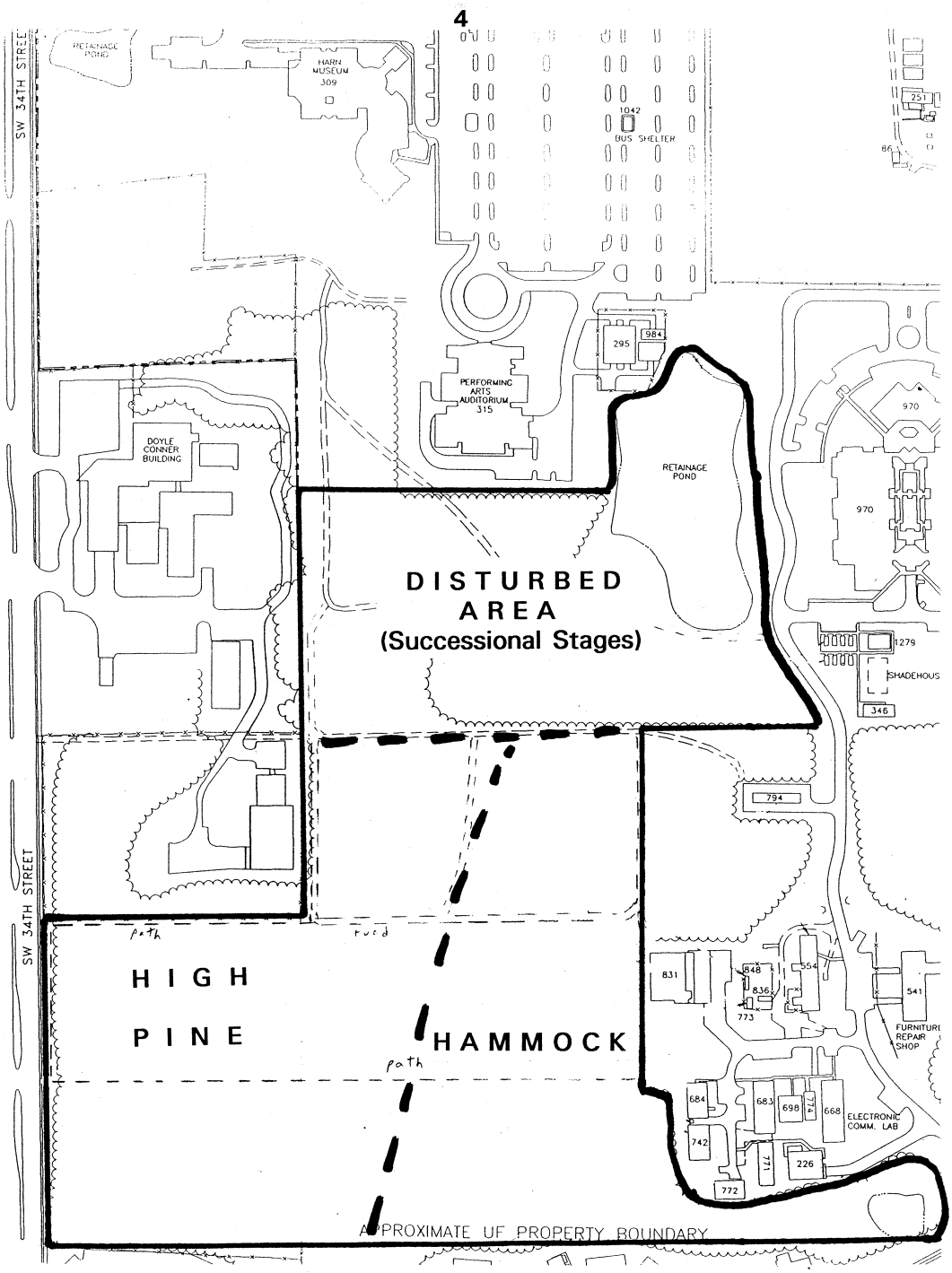

Fig. 2. Map showing the locations of the three major habitat types in the proposed Campus Natural Area.

site as it changes from cultivated ground to hammock or high pine. Succession is an important feature of natural communities and the plant and animal diversity is greater during the first 20 years of succession than it is in the self-perpetuating communities of hammock or high pine. Representative successional stages should be maintained on this portion of the CNA by re-disturbing subplots in a fixed, long-term rotation.

Uniqueness and suitability of this site

This site is well suited and well situated to become a campus natural area and outdoor teaching laboratory--

- One of the largest undeveloped sites on campus.
- Not planned for other functions.
- Not well located for other functions--campus should not have another entrance, and 34th Street should not have another traffic generator.
- Most ecologically diverse area on campus--incorporates three of the most prevalent north peninsular Florida ecosystems and has the highest wildlife diversity of five upland wooded sites on campus studied from spring 1990 to winter 1991-92.
- Only high pine community within the 2,000 acre campus.
- The only other high pine communities that are protected on public property within Alachua County are small acreages found on Paynes Prairie and San Felasco Hammock state preserves.
- The Florida Department of Natural Resources (biologist Dan Pearson) stressed the importance of this site as a seed source to maintain genetic diversity of the other high pine communities in this region.
- Three distinctive ecosystems found on this site provide many unique demonstration and teaching opportunities.
- Easily accessible from the site of the soon-to-be-built Exhibits Center of the Florida Museum of Natural History. The Center is expected to serve 350,000-400,000 visitors annually. The location and configuration of the ecosystems in the proposed CNA are well-suited to the programs of the FlaMNH.
- Already used as outdoor teaching lab (see Appendix B).

Goal, objectives, and policies

Goal: *To designate the proposed site as a campus natural area where ecosystems representative of north peninsular Florida are maintained and where students and the interested public can experience these ecosystems and learn from them.*

Objective 1: *To protect the CNA from further fragmentation and degradation.*

(Achievement of this objective will be measured by relative indicators such as size of forested communities, and relative species diversity and richness.)

Policy 1.1. The University of Florida shall designate the proposed site as a campus natural area. This designation shall prevent further fragmentation and degradation from occurring on this site.

Policy 1.2 The University of Florida shall cease all disposal of organic and inorganic matter on site and remove recently deposited organic materials.

Objective 2: *To manage the CNA to enhance its ecological value and to maintain this value in perpetuity.*

(Achievement of this objective will be measured by data produced from the periodic survey and monitor activities proposed below.)

Policy 2.1. A survey and monitoring plan shall be developed for all taxa of flora and fauna. These activities are necessary to evaluate the success of the management activities designed to enhance and maintain ecological values of the various communities.

Policy 2.2. The most pressing enhancement is the restoration of the high pine habitat. Its characteristic plants and animals are being lost as the area changes to hammock. A management plan shall be developed by interested faculty with expertise in natural systems management.

Policy 2.3. Of a less pressing nature but of major importance is development of a plan to maintain the principal stages of secondary succession in the disturbed habitat. For example, the area could be divided into n subplots and disturbances rotated so as to always provide at least one plot in each of these categories 0-1, 2-3, 4-6, 7-10, 11-20, 21-40 years since clearing and disking.

Policy 2.4. A management plan shall be developed for the retention pond on the north-east end of the site. This plan shall focus on the creation of a wetland by using a variety of native plants and other features that will provide habitat needs for wildlife species that use wetlands.

Policy 2.5. A CNA Policy Committee (three members) shall be formed and shall have the responsibility for formulating policies and making management and usage decisions that are compatible with the sustained use of the CNA as an outdoor teaching laboratory. The three might be appointed by the Director of the Florida Museum of Natural History, the Dean of Liberal Arts and Sciences, and the Vice-President for Agriculture and Natural Resources, thus ensuring representation of the three divisions of the University that have the greatest stake in the CNA as an outdoor laboratory.

Policy 2.6 The University of Florida shall manage the area as specified within the management plans in perpetuity.

Objective 3: *To use the CNA as an outdoor teaching laboratory*.

(Achievement of this objective will be measured by recording use of the CNA for various teaching activities.)

Policy 3.1. Guidelines on using the CNA as a teaching laboratory shall be developed by UF faculty with expertise in this area. The CNA Policy Committee shall review and finalize these guidelines.

Policy 3.2. A nature trail shall be developed within the disturbed area and the northern portion of the high pine and hammock areas (Fig. 3). It shall originate where the CNA contacts the grounds of the Exhibits Building thus facilitating its use in conjunction with Museum activities and associated parking and possible picnic areas. The trail would include all major features of the CNA and would have signs that would maximize the educational value of the trail. Unsupervised public use of the main, southern portions of the high pine and hammock areas would be prohibited, but the public need not be aware of this if the trail going into that area is separate from the nature trail and originates on the eastern side of the disturbed areas. The trail system in the disturbed area should continue to facilitate foot traffic between the Entomology/Nematology building and the Doyle Conner building.

Policy 3.3 The southern portions of the high pine and hammock areas shall be used for supervised class field trips and exercises, student research projects, and other compatible, modest-impact uses.

Policy 3.4. Guidelines outlining activities such as camping, picnicing, snacking, littering, motor vehicles, bikes, pets, and pesticide research that are not compatible with the use of the CNA as an outdoor teaching laboratory shall be developed by UF faculty with expertise in this area. The CNA Policy Committee shall review and finalize these guidelines.

Policy 3.5. Management practices such as signs and fences shall be implemented to discourage prohibited uses (Fig. 4).

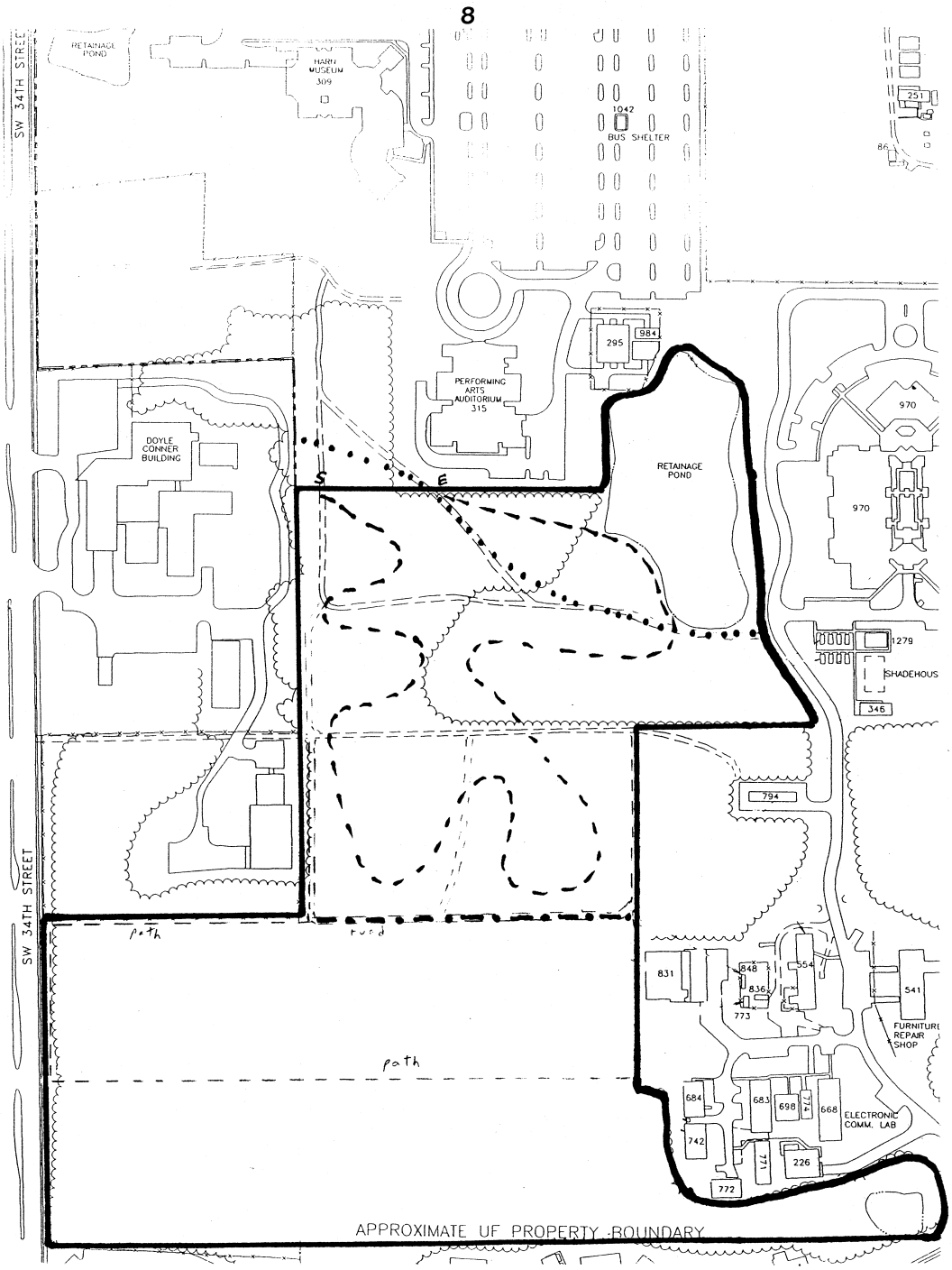

Fig. 3. Map showing how nature trail (dashed line) could access the CNA's three habitat types. Dotted line is a path to serve students and staff traveling between the Doyle Conner Building and the Entomology & Nematology building. Dashed and dotted line is the northern limit of the portion of the CNA that is to be less intensively used.

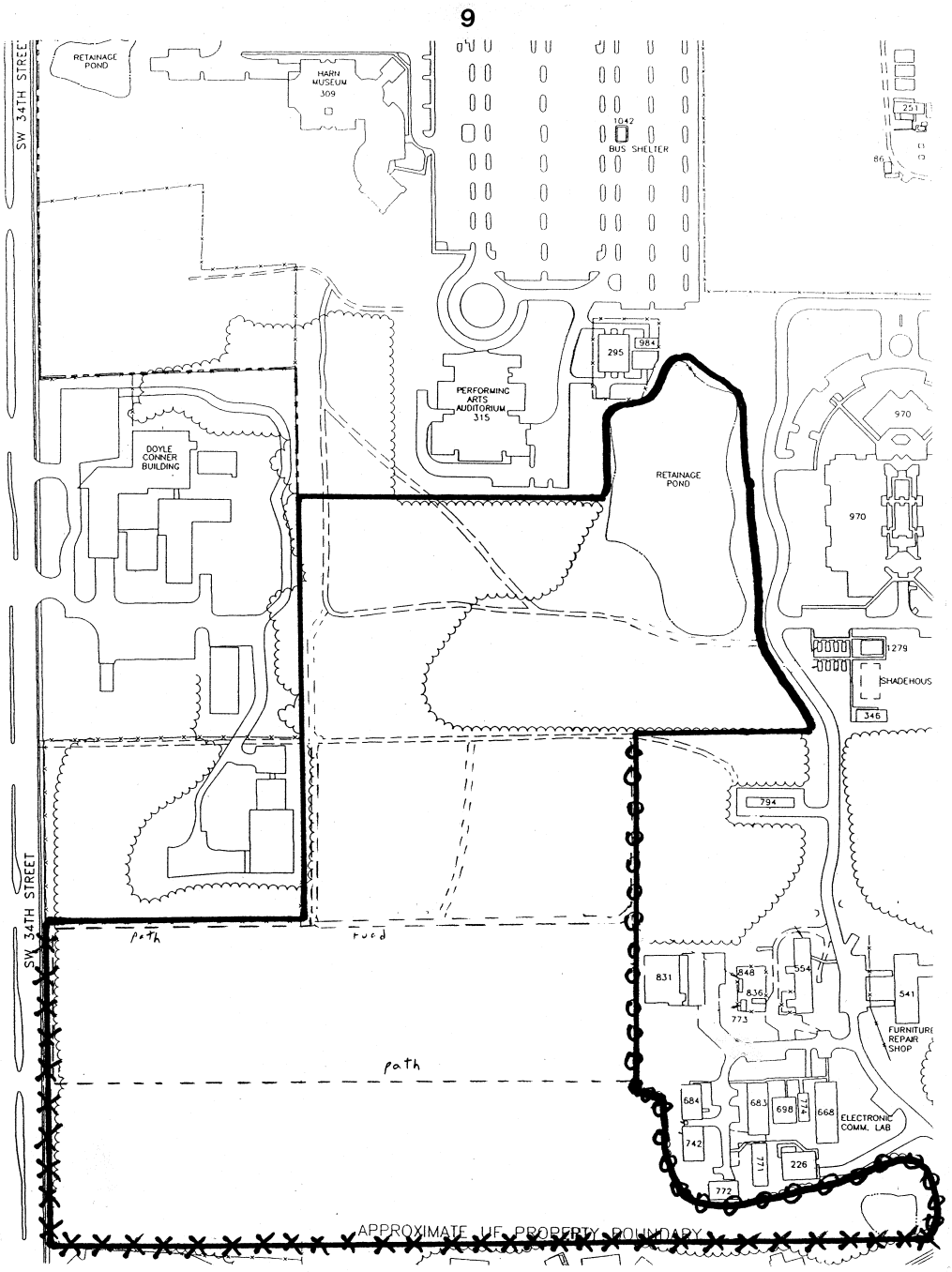

Fig. 4. Proposed security and access-restricting fences. X's indicate a high, nonclimbable fence that is needed for the security of those using the more restricted portion of the CNA. [Danny Rolling camped in this area, and others have camped there since.] O's indicate a farm fence that may be needed to discourage access from the surge area.

Appendices

Appendix A. Descriptions of Ecosystems

Hammock Ecosystem

Hammock ecosystems are among Florida's most diverse and are characterized by thick stands of shade tolerant hardwoods and few pines. Understory vegetation may be quite sparse in late successional stages. Hammocks occur commonly in north central Florida and sparingly in north and west Florida. The largest, historic hammock areas are found near Brooksville, Ocala and Gainesville.

Hammocks occur on rolling terrain. The soils are somewhat poorly to well drained and high in nutrients containing more organic material and litter than drier sites.

Some of the most common plants in this community are black cherry, flowering dogwood, laurel oak, live oak, pignut hickory, American beautyberry, sparkleberry, common greenbriar, wild grape, and blackberry. Animal species found here include southern flying squirrel, gray squirrel, gray fox, white-tailed deer, cardinal, summer tanager, turkey, and carolina wren.

By suppressing naturally-occurring fires, humans actually have caused many natural High Pine communities to succeed into Hammock communities. Hammock plants that invade adjacent High Pine are killed by fire. If fire is suppressed, the Hammock vegetation continues to grow and eventually shades out and replaces the High Pine plants.

Hardwood Hammocks that occur on some of the drier soils are often selected for a variety of human uses and may undergo considerable changes. These uses include residential and commercial developments, highways, cattle grazing, and forestry. When natural hammocks are converted to these other human-related uses, wildlife that are adapted to this community have fewer places to live. Some wildlife such as the eastern indigo and Florida brown snakes are in jeopardy of extinction due to alterations of habitats such as hammocks.

High Pine Ecosystem

The High Pine ecosystem, sometimes termed the Sandhill ecosystem, occurs on upland, well-drained sites. In its pristine state it is dominated by widely spaced longleaf pines with few understory shrubs and a dense ground cover of grasses and herbs. Other plants commonly occurring in this community are turkey oak, bluejack oak, liveoak, persimmon, gopher apple, and leadplant. Animal species found here include gopher tortoise, eastern fence lizard, red-bellied woodpecker, gray fox, fox squirrel, white-tailed deer, bobwhite, and cotton mouse.

This ecosystem occurs on the rolling hills in the panhandle and in north and central peninsular Florida. Fire is a dominant factor in the ecology of this community because it reduces hardwood encroachment and facilitates pine and wiregrass reproduction. Without fire, longleaf pine seeds cannot germinate and oaks and other hardwoods may become more numerous, shading out young pines, shrubs and other species. In the absence of frequent fires, this community succeeds to a

Hammock ecosystem. Historically, the natural fire frequency was about every 3 to 5 years. These fires usually were started by lightning strikes during summer thunderstorms. The thick bark of longleaf pines protects adult trees from fire damage. Even seedling trees, with their buds protected by a thick mass of needles, survive frequent, light ground fires. Because the trees are so widely spaced, wiregrass and pine needles provide most of the fuel to carry fire through this community. Implementation of an appropriate management strategy can successfully restore the ecology of this ecosystem in areas where fire has been suppressed and succession has proceeded toward a Hammock community.

The loose, well-drained soils of this community allow rapid downward movement of rainwater into groundwater supplies (aquifer recharge). Unfortunately, this characteristic also makes it a prime target for other uses. Most of the pristine High Pine in Florida has been converted to other uses such as residential and commercial development, agriculture, and forestry. As a result, wildlife adapted to natural High Pine forests have fewer places to live. The southeastern kestrel, red-cockaded woodpecker, blue-tailed mole skink, eastern indigo snake, and the short-tailed snake are all in jeopardy of extinction due to High Pine habitat conversion.

Ecosystems of Old Field Succession

When land has been cleared and farmed and then abandoned, a predictable sequence of communities will occupy the site as the original community is restored. Many species of plants and animals are characteristic of particular stages of succession, and the overall diversity is greater than in the self-perpetuating ecosystem that the site returns to. A typical old field succession in north Florida involves communities dominated successively by annual weeds, blackberry and sage grass, loblolly pine, and mixed hardwoods.

Appendix B. Some recent uses of the CNA.

BOT 3153 Local Flora: field trips and field tests.
ENY 3030 Insect Field Biology: more than half of the class is taught in the proposed CNA.
ENY, NSF Summer Science Institute (for middle-school, in-service science teachers): major resource for teaching teachers how to use insects in the field and classroom.

ENY 3005 General Entomology: field trips and insect collecting.
ENY 3541 Forest Insects: field work.
ENY 4161 Insect Classification: insect collecting.
ENY 6203 Insect Ecology: exercises with tent caterpillars; microclimate studies.
FNR 3131C Dendrology and Forest Plants: field work.

ENY, Faith Oi's PhD research on termites: field studies.
Florida Game and Fresh Water Fish Commission, research project funded to investigate wildlife species richness in isolated urban forests: one of 24 study sites.
Florida Department of Natural Resources, project to maintain genetic diversity in Upland Pine communities: seed source.
USDA, fireant research: field site.

Signature Page

The following persons read and approved this proposal:

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[Signatures photocopied from signatures on separate sheets. Originals on file with proposal co-ordinator.]

Dana Griffin, Joe Schaeffer, and Tom Walker (proposal co-ordinator) drafted this proposal on the basis of substantive input from many of the above. Questions about the proposal should be directed to the co-ordinator at 392-1901 ext. 125 or *TJW@IFASGNV* or *Room 2104, Entomology & Nematology Building.*