



University of Florida Conservation Area Land Management Plan  
**IFAS Dairy Research Unit**

## **Introduction**

The Dairy Research Unit is an 850 acre IFAS research unit that includes all aspects of dairy production. This unit is located in unincorporated Hague about 15 minutes north of the University's main campus. The dairy herd maintained at the unit consists of about 800 Holstein females (500 milking cows). Outside experimental facilities for feed processing, storage, and evaluation include two bunker silos of 1600-ton capacity each and a third of 1400 ton capacity.

The conservation portion of the unit lies in the northern half of the property and is characterized primarily as a bottlomland hardwood system. This 163 acre Conservation Area consists of mixed hardwood forest communities on the upland portions and bottomland wetlands in lower areas. Other isolated wetland areas, primarily cypress domes, are present on the unit and are maintained in their natural forested state.

## **Natural Areas Inventory**

### **Water Resources**

The Dairy Research Unit is located in the Santa Fe River Hydrologic Basin, where surface waters generally flow towards the river. However, the research unit is primarily in a stream to sink watershed (sub-basin) where surface waters drain underground through sinkholes (groundwater flows are still generally towards the Santa Fe River). These basins, or watersheds, are prevalent along the Cody Scarp, where the Northern Highlands physiographic region changes to the Gulf Coastal Lowlands. This escarpment marks the boundary between the clays of the highlands, which confine the Floridan aquifer, and the sands of the lowlands, which are primarily areas of unconfined Floridan aquifer.

The only natural surface water features present on the unit are associated with forested wetlands that form much of the Conservation Area. These forested wetlands' water table fluctuates frequently dependent upon rainfall. From site observations it appears that most water stays on site, recharging the surficial aquifer. However, some off-site drainage appears to occur along the northeast portion of the site during the rainy season when the water table is high and rain events frequent.

During a site visit by the Conservation Area Working Group, Dr. Mark Clark (Soil and Water Sciences) observed that the wetlands associated with Conservation Area had been undergoing oxidation, which indicates a drop in the amount of inundation that the wetland receives. The evidence was found in root clusters that show exposed roots that were previously moving horizontally, but have now changed direction and are moving sharply downward back into the ground. The reason for this decline in surface water level could be attributed to a number of potential causes, which could include, but are not limited to; localized or regional drawdown due to pumping, offsite changes that have reduced water coming onto the site, or variations in rainfall patterns that have led to dryer years.



Photo shows exposed roots in wetland, potentially indicating receding hydrologic regime.

### Natural Communities

This Conservation Area is comprised, primarily, of two major natural community types: bottomland hardwoods and mesic hammock.

#### Bottomland Hardwood Forest

The Beef Research Unit Conservation Area consists of 56 acres of Bottomland Forest the grades up from Hatchet Creek. Bottomland Forest is characterized as a low-lying, closed-canopy forest of tall, straight trees with either a dense shrubby understory and little ground cover, or an open understory and ground cover of ferns, herbs, and grasses. Bottomland Forest occurs on low-lying flatlands that usually border streams with distinct banks, such that water rarely overflows the stream channel to inundate the forest. They also occur in scattered low spots in basins and depressions that are rarely inundated, which allow typical upland species to survive. Soils are generally a mixture of clay and organic materials. The water table is high, but Bottomland Forests are inundated only during extreme floods or exceptionally heavy rains.

#### Plant Species

Typical plants include water oak, live oak, red maple, sweetgum, loblolly pine, white cedar, cabbage palm, diamond-leaf oak, southern magnolia, loblolly bay, swamp tupelo, spruce pine, American beech, dahoon holly, wax myrtle, swamp dogwood, Florida elm, stiff cornel dogwood, and American hornbeam.

#### Animal Species

Typical animals include marbled salamander, mole salamander, three-lined salamander, slimy salamander, five-lined skink, ringneck snake, gray rat snake, eastern king snake, cottonmouth, wood duck, red-tailed hawk, turkey, yellow-billed cuckoo, screech-owl, great-horned owl, ruby-throated hummingbird, acadian flycatcher, pileated woodpecker, hermit thrush, cedar waxwing, yellow-throated warbler, opossum, gray squirrel, flying squirrel, raccoon, mink, gray fox, bobcat, and white-tailed deer.

## Upland Mixed Forest / Mesic Hammock

Upland Mixed Forests are characterized as well-developed, closed-canopy forests of upland hardwoods on rolling hills. Upland Mixed Forests occur on rolling hills that often have limestone or phosphatic rock near the surface and occasionally as outcrops. Soils are generally sandy-clays or clayey sands with substantial organic and often calcareous components. The topography and clayey soils increase surface water runoff, although this is counterbalanced by the moisture retention properties of clays and by the often thick layer of leaf mulch which helps conserve soil moisture and create decidedly mesic conditions.

Plant Species - Common species of this community type include southern magnolia, pignut hickory, sweetgum, Florida maple, devil's walking stick, American hornbeam, redbud, flowering dogwood, Carolina holly, American holly, eastern hophornbeam, spruce pine, loblolly pine, live oak, and swamp chestnut oak, among others. Other typical plants include gum bumelia, hackberry, persimmon, red cedar, red mulberry, wild olive, redbay, laurel cherry, black cherry, bluff oak, water oak, cabbage palm, basswood, winged elm, Florida elm, sparkleberry, Hercules' club, slippery elm, beautyberry, partridgeberry, sarsaparilla vine, greenbrier, trilliums, beech drops, passion flower, bedstraw, strawberry bush, silverbell, caric sedges, fringe tree, horse sugar, white oak, and blackgum.

Animal Species - Typical animals species of the mesic system include slimy salamander, Cope's gray treefrog, bronze frog, box turtle, eastern glass lizard, green anole, broadhead skink, ground skink, red-bellied snake, gray rat snake, rough green snake, coral snake, woodcock, barred owl, pileated woodpecker, shrews, eastern mole, gray squirrel, wood rat, cotton mouse, gray fox, and white-tailed deer. The following species have been documented on site by the local chapter of Audubon, but not necessarily within the Conservation Area: sparrows, Eastern Bluebirds, Eastern Meadowlarks, Brown-headed Cowbirds, European Starlings, Cooper's Sharp-shinned Hawks, Merlin, Greater White-fronted Goose, Snow Goose, Eurasian Wigeon, Upland Sandpiper, White-rumped Sandpiper, White-winged Dove, Western Kingbird, Nashville Warbler, LeConte's Sparrow, Lincoln's Sparrow, Painted Bunting, Dickcissel, Yellow-headed Blackbird (annual), and Brewer's Blackbird

### Invasive, non-native species

A survey of invasive plants has not been done on the unit.

### Soil Inventory

The following soil information for on-site soils was gathered from the Soil Survey of Alachua County (1985).

#### Chipley

This soil consists of nearly level, somewhat poorly drained, deep sandy soils that formed in thick beds of sandy marine sediments. These soils are in broad areas of the flatwoods and along the lower slopes of the sandy uplands. Slopes range for 0 to 2 percent. The water table is from 20 to 40 inches for 2 to 4 months during most years. This soil is sand or fine sand to a depth of more than 80 inches.

#### Ft. Meade (0-5% slope)

The Fort Meade series consist of nearly level to gently sloping, well drained soils that have uniform sandy texture to a depth of 80 inches or more. Slopes of the gently rolling uplands are slightly convex to slightly concave. The water table is more than 72 inches below the surface.

#### Kanapaha Sand (0-5% slope)

This soil consists of nearly level to sloping, poorly drained soils that formed in thick beds of sandy and loamy marine deposits. The water table is at a depth of less than 10 inches for 1 to 3 months and at a depth of 10 to 40 inches for 3 to 4 months during most years. Natural fertility is low to medium. Organic matter content of the surface layer ranges from moderately low to moderate. The natural vegetation is chiefly slash and loblolly pine, water, live and laurel oak, sweetgum and holly. The understory is mostly waxmyrtle, low paspalum, pineland threeawn, longleaf uniola, hairy panicum, fringeleaf paspalum, huckleberry and some bluestems.

#### Lochloosa Soil (2-5% slope)

This gently sloping, somewhat poorly drained soil is in small and large areas on the rolling uplands. Typically, the surface layer is dark gray fine sand about 7 inches thick. The subsurface layer is yellowish brown loamy sand or sand to a depth of 31 inches. This soil has a water table that is about 30 to 40 inches below the surface for 1 to 4 months during most years. Surface runoff is slow. The available water capacity is low to medium in the sandy surface and subsurface layers and medium in the subsoil. The natural vegetation of this soil is chiefly slash and loblolly pines, oak, dogwood, hickory, magnolia and sweetgum. The understory consists chiefly of waxmyrtle, wildgrape, dwarf huckleberry, toothachegrass, and several varieties of bluestems, low panicums and creeping beggarweed.

#### Millhopper Sand (0-5% slope)

This nearly level to gently sloping, moderately well drained soil is in small and large irregularly shaped areas on uplands and slightly rolling knolls in the broad flatwoods. Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is sand or fine sand about 49 inches thick. This Millhopper sand has a water table that is at a depth of 40 to 60 inches for 1 to 4 months and at a depth of 60 to 72 inches for 2 to 4 months during most years. Natural vegetation of this soil consists of live laurel, post, water oaks, sweet gum, cherry laurel, hickory, slash and longleaf pines. The understory is chiefly lopsided indiagrass, hairy panicum, low panicum, green brier, hawthorn, persimmon, fringeleaf paspalum, hoary tickclover, dwarf huckleberry, chalky and creeping bluestems and pineland threeawn.

#### Mulat (0-2 % slope)

The Mulat series consist of nearly level, poorly drained soils that formed in thick of beds of loamy marine sediments. The water table is a depth of 10 to 30 feet

#### Myakka

The Myakka series consist of nearly level, poorly drained soils that formed in thick beds of sandymarine deposits. These soils are broad in areas of flatwoods. Slopes range from 0 to 2 percent. The water table

#### Pelham (0-2%)

The Pelham series consists of nearly level, poorly drained soils that formed in thick beds of loamymarine sediment. These soils are in broad areas of flatwoods

#### Placid

The Placid series consist of nearly level, poorly drained soils that formed in thick beds of loamymarine sediment. These soils are in broad areas of flatwoods

#### Plummer (0-2% slope)

The plummer series consist of nearly level, poorly drained soils that formed in thick beds of sandy and loamy marine sediment. These soils are nearly level and are in broad areas of the flatwoods and along the fringe between the flatwoods and gently rolling uplands.

#### Pomona Sand (0-2% slope)

This nearly level, poorly drained soil is in small and large areas in the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent. Typically, the surface layer is very dark gray sand about 5 inches thick. The subsurface layer is sand to a depth of 16 inches. In this Pomona soil, the water table is within 10 inches of the surface for 1 to 3 months during most years. The available water capacity is low to medium in the surface and subsurface layers and it ranges from low to high in the subsoil. Permeability is rapid to very rapid in the surface and subsurface layers. Natural vegetation of this soil is a forest of longleaf and slash pine. The understory is sawpalmetto, waxmyrtle, gallberry, bracken fern, pineland threeawn, blueberry, huckleberry, bluestem and running oak. Most areas are still in natural vegetation.

#### Pompano

This nearly level, poorly drained soil is on poorly defined flats in the broad flatwoods and in shallow depressions in the sandy rolling uplands. Slopes are nearly smooth on the broad flats and are slightly concave in the shallow depressions. They range from 0 to 2 percent slope. The shape of the area is variable. They are usually relatively small in size and range from about 10 to 45 acres. Typically, the surface layer is very dark gray sand about 5 inches thick. The underlying layers are sand to a depth of 82 inches or more. Natural vegetation of this soil is a forest of slash pine. The understory is sawpalmetto, waxmyrtle, gallberry, bracken fern, pineland threeawn, blueberry, huckleberry, bluestem and running oak. Most areas are still in natural vegetation.

#### Samsula Muck (0-1% slope)

This nearly level, very poorly drained organic soil is in large and small swamps, marshes and ponded areas in the broad flatwoods. Slopes are usually slightly concave and range from 0 to 1 percent. Areas are either circular, irregular in shape, or elongated. Typically, the surface layer is muck about 35 inches thick. The upper 8 inches is very dark brown and the lower 27 inches is very dark gray. The Samsula soil has water at or on the surface for more than 6 months during most years. The water table is within 10 inches of the surface for most of the remainder of the year, except during long extended dry periods. The available water capacity is very high in the organic layer. The natural vegetation of the soil is chiefly cypress, Bay, black gum and swamp maple are in some areas. Water-tolerant grasses are in few areas. Most areas of this soil are still in natural vegetation.

#### Sparr

The Sparr series are nearly level to gently sloping, somewhat poorly drained soils that formed in thick beds of sandy and loamy marine sediment. These soils are in broad areas of the gently rolling uplands and on slightly convex areas of the flatwoods. Slopes range from 0 to 5 percent. The water table is at a depth of 20 to 40 inches for 1 to 4 months during most years. Natural vegetation of this soil is a forest of longleaf and slash pine. The understory is saw palmetto, waxmyrtle, gallberry, bracken fern, pineland threeawn, blueberry, huckleberry, bluestem and running oak. Most areas are still in natural vegetation.



Dr. Mark Clark explains the hydrogeology of the DRU wetland to the working group.

### Cultural and Passive Recreational Resources

The Dairy Research Unit is located in a relatively remote location and is generally closed to the public. However, the unit is a popular bird watching spot used by the local Alachua County Audubon Society.

According to the local Audubon chapter, the Dairy Research Unit can be an excellent place to find blackbirds, sparrows, Eastern Bluebirds, Eastern Meadowlarks, and several raptors. Fall and winter are usually the best seasons to explore this area. Beginning in August and continuing through the winter, blackbirds congregate around the big tin-roofed cattle pens by the thousands – mostly Brown-headed Cowbirds and European Starlings, but one or two Yellow-headed Blackbirds usually check in during October or November. Cooper’s and Sharp-shinned Hawks, and the occasional Merlin, make a pass through the flocks from time to time. Some of the less common species that have been observed on the dairy property are Greater White-fronted Goose, Snow Goose, Eurasian Wigeon, Upland Sandpiper, White-rumped Sandpiper, White-winged Dove, Western Kingbird, Nashville Warbler, LeConte’s Sparrow, Lincoln’s Sparrow, Painted Bunting, Dickcissel, Yellow-headed Blackbird (annual), and Brewer’s Blackbird.

Finally, no cultural resources have been identified with this site. Therefore, no recreational opportunities are offered or planned.



## **Future Improvements**

This Conservation Area fits into the Nature/Research Preserve category (ies), due to the presence of wetlands, a relatively undisturbed upland forest and the probability of important nesting habitat. The only management issue identified by the working group was the need for closer inspection of the forest to survey for invasive exotic plants and for a treatment strategy if any are found.

Maps on the following pages:

1. Aerial Photo
2. Water Resources
3. Natural Communities
4. Soils