15. Eastern Hillside Seepage Bog

Rarity Rank: S2/G2
Synonyms: Pitcher Plant Bog, Herbaceous Bog, Bog, Hillside Seep, Hillside Bog
Ecological Systems: CES203.078 Southern Coastal Plain Herbaceous Seepage Bog

General Description:

Hillside seepage bogs are open, mostly treeless, herb-dominated natural wetlands of hilly, sandy uplands historically dominated by longleaf pine of the East and West Gulf Coastal Plains in Louisiana. In the East Gulf Coastal Plain, these bogs occur on the Pleistocene high terraces in Washington and St. Tammany Parishes, arising commonly on mid- to low slopes, on saturated, strongly acidic (pH ca. 4.5 - 5.5) and nutrient-poor substrates of fine sandy loams or loamy fine sands with relatively high organic matter content (Smith 1996, Plummer 1963). Soil series names have generally not been assigned to bogs due to the naturally very limited acreage in the state (Smith 1996).

These bogs are generally persistently wet from seepage, and are variable in size being most often less than 1 acre but rarely exceeding 10 acres. EGCP bogs are underlain by an impervious clay layer that, when conditions are right, causes ground water to constantly seep to the soil surface. The herbaceous groundcover is dense, continuous and floristically rich. It is dominated by sedges, grasses and grass-like plants, and many kinds of unusual forbs, including pitcher-plants (*Sarracenia* spp.) and a variety of orchid species. Patches of shrubs are often present within bogs, and can become more prevelant, possibly degrading the habitat, if fire is excluded from the system. Since hillside bogs are embedded in what are now or historically were longleaf pine forests, they are fire-driven systems. They evolved with frequent growing-season fire events. Among other things, frequent fire deters invasion by shrubs and trees and stimulates growth, flowering and seed production by indigenous bog herbs (Barker 1980).

The degree to which a bog remains wet throughout the year depends on the size of the watershed, the soil infiltration rate upslope, the rate of saturated flow in the soil, the topographic position of the bog, the bog's water storage capacity, and the rate of water leaving the bog from evapo-transpiration and through surface and sub-surface flow. In general, the greater the infiltration rate of the watershed soils and the water holding

capacity of bog soils, the smaller recharge area needed to maintain seepage throughout dry periods of the year. Therefore, bogs are extremely sensitive to surrounding land management activities, and are easily degraded or destroyed by activities that alter natural hydrologic regimes.

Hillside seepage bogs are rich in herbaceous plant species, primarily grasses and grass-like plants (graminoids), although a large variety of forbs are present. There appears to be a distinct relationship between the number of species present and bog size (MacRoberts and MacRoberts 1992, 1993); more than 100 plant species may be found in a relatively large bog (MacRoberts and MacRoberts 1988). Many species are restricted to this habitat and closely allied longleaf pine flatwood savannahs.

Vegetation dominants include: *Andropogon* spp. (bluestems), *Aristida* spp. (threeawn grasses), *Panicum* spp. (panic grasses), *Ctenium aromaticum* (tooth-ache grass), *Muhlenbergia capillaris* (hairawn muhly), *Rhynchospora* spp. (beak-rushes), *Rhynchospora stenophylla* (narrow-leaved beakrush, S1G4), *Xyris* spp. (yellow-eyed grasses), *Eriocaulon* spp. (pipeworts), *Lachnocaulon* spp. (bog buttons), *Dichromena latifolia* (giant white top sedge), *Scleria* spp. (nut-rushes), *Fuirena* spp. (umbrella grasses), and *Fimbristylis* spp. (fimbry-sedge). Primary forbs include *Sarracenia alata* (green pitcher plant), *Rhexia* spp. (meadow beauties), *Polygala* spp. (milkworts), *Liatris* spp. (blazing stars), *Aletris lutea* (colic-root), *Eupatorium* spp. (thorough-worts), *Coreopsis linifolia* (narrow-leaved tickseed), *Drosera* spp. (sundews). Many rare forbs are found in EGCP bogs including *Sarracenia psittacina* (parrot pitcherplant, S3G4), *Pinguicula lutea* (yellow butterwort, S2G4G5), *Lilium catesbaei* (southern red lily, S1G4), *Tofieldia racemosa* (coastal false-asphodel, S2S3G5), *Lophiola aurea* (golden crest, S2S3G4), and *Macranthera flammea* (flame flower, S2G3). Various orchids, especially *Platanthera* spp. (fringed orchids), are often conspicuous members of the flora. Ferns (principally *Osmunda* spp.) and club-mosses (*Lycopodium* spp.) are usually present and sphagnum moss is often abundant (LNHP 1986-2004, MacRoberts and MacRoberts 1988, 1993a, 1993b, 1991).

Current Extent and Status:

Hillside seepage bogs in the EGCP of Louisiana are naturally small in size, and historically were embedded within longleaf pine forests. Presettlement extent of seepage bogs in the EGCP of Louisiana is estimated at less than 2,000 acres, with only 10 to 25% currently remaining in St. Tammany and Washington Parishes (Smith 1993). These present day bogs are most often found surrounded by commercial timberlands, being too wet and other soil conditions unfavorable for commercial tree production, or along powerline and pipeline right-of-ways where management practices such as mowing to keep shrubs and other woody vegetation under control have allowed the bog plants to persist (Sheridan et al.

1997). There is currently only minimal protection for remaining bogs. TNC's Abita Creek Preserve in St. Tammany Parish contains a seepage bog of approximately 8 acres. There is one very small, privately owned bog of less than 1 acre registered with the Louisiana Natural Areas Registry Program, and a 1-acre bog, owned by a commercial timber company, has been given a "special site" designation by that company. No bogs are known from federal or state public lands in the EGCP. A larger, 20-acre bog, containing at least 5 species of state rare and one globally rare plant species, is privately owned and current status of this bog is unknown.

EASTERN HILLSIDE SEEPAGE BOG SPECIES OF CONSERVATION CONCERN (8)			
AMPHIBIANS	**BIRDS**	**BUTTERFLIES**	**MAMMALS**
Gulf Coast Mud Salamander	Sedge Wren	Arogos Skipper	Southeastern Shrew
Southern Red Salamander	Henslow's Sparrow		Long-tailed Weasel
	Le Conte's Sparrow		

Priority Species Research and Survey Needs:

Sedge Wren, Henslow's Sparrow, Le Conte's Sparrow: Continue to inventory and monitor this species and its habitat on public and private lands to fill data gaps in species distribution and abundance for inclusion in the LNHP database and the Audubon nationwide database.

Gulf Coast Mud Salamander, Southern Red Salamander: Gulf Coast Mud Salamander; recently (post 1960s) recorded from only one site in Louisiana. Conduct surveys to determine current distribution and abundance of both species for inclusion in LNHP database.

Arogos Skipper: Conduct surveys to determine its current distribution and abundance for inclusion in the LNHP database.

Southeastern Shrew: Considered imperiled in Louisiana. Together with Arkansas and Missouri, Louisiana represents the western edge of its range. Intensive surveys are needed to update occurrence records and abundance for inclusion in the LNHP database.

Species Conservation Strategies:

1. Henslow's Sparrow: Implement conservation and management recommendations of SWG projects T22 and T32 upon completion.
2. Work with landowners to initiate or continue the implementation of PIF bird conservation plans, conservation plans developed for amphibians and reptiles, and USFWS endangered and threatened species recovery plans over the next 10 years.
3. Document habitat relationships of priority species to determine how dependent they are upon this habitat type, relative to other habitat types.

Threats Affecting Habitat:

The following table illustrates the threats identified for this habitat type and the sources of these threats. This represents all threats and sources of threats identified across all ecoregions of the state where this habitat occurs.

	Threat			
Source of Threat	Altered Composition/ Structure	Habitat Destruction or Conversion	Habitat Disturbance	Modification of Water Levels; Changes in Natural Flow Patterns
Construction of ditches, drainage or diversion systems	XXX		XXX	XXX
Conversion to agriculture or other forest types		XXX		
Development/maintenance of pipelines, roads or utilities			XXX	
Fire suppression	XXX			
Incompatible forestry practices	XXX		XXX	XXX
Invasive/alien species	XXX			
Residential development		XXX	XXX	

Habitat Conservation Strategies:

1. Conduct surveys to determine extent and condition of this habitat type with a focus on identifying the surrounding landscape context (i.e., residential developments, etc.) that might be affected by prescribed burning.
2. Once bogs are identified, conduct landowner surveys to aid in the development of management strategies for these sites.
3. Continue to encourage landowners to implement BMPs and adopt Sustainable Forestry Initiative (SFI) standards in the management of this habitat type.
4. Work with land managers/hunting clubs/extension agents, etc. to discourage the placement of food plots in this habitat type.
5. Promote utilization of federal cost share programs (NRCS) to address invasive species problems.
6. Provide additional cost share funds for landowners to drastically reduce or eliminate costs associated with conducting prescribed burns on their property.
7. Provide education/outreach to promote conservation and preservation of this habitat type.
8. Work with the legislature to provide incentives (tax breaks, etc.) to landowners to retain the natural state of areas where this habitat occurs.
9. Work with appropriate planning commissions to provide LNHP data that illustrates locations of this habitat type.

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