Summary Table: Characteristics of the Ecoregions of Louisiana

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation / Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
34a. Northern Humid Gulf Coastal Prairies	2561	Flat coastal plain with innumerable low circular mounds (pimple mounds) and occasional low coastal ridges and indistinct relict fluvial channels. Low-gradient rivers and streams, some channelized.	5-50 / 5-25	Quaternary (late Pleistocene) alluvial and deltaic sand, silt, clay, and gravel.	Alfisols (Albaqualfs, Epiaqualfs, Glossaqualfs, Glossudalfs), Mollisols (Argiudolls), Vertisols (Epiaquerts)	Crowley, Kaplan, Judice, Midland, Morey, Mowata, Vidrine; on floodplains Basile and Brule.	Thermic / Aquic, Udic	57-61	275-280	40/61; 73/91	Prairie grassland with little bluestem, big bluestem, Indiangrass, brownseed paspalum, switchgrass, and other herbaceous species. Riparian forests or gallery forests of bottomland hardwoods.	Cropland with mostly rice, soybeans, and hay; some crawfis aquaculture, pasture, and urban. Oil and gas production.
34c. Floodplains and Low Terraces	150	Larger river floodplains and associated low terraces; low-gradient streams with sandy and silty substrates.	2-40 / 2-25	Quaternary (Holocene) alluvial sand, silt, clay, and gravel.	Alfisols (Glossaqualfs, Albaqualfs, Epiaqualfs), Entisols (Udifluvents, Hydraquents)	Guyton, Basile, Iuka, Mowata, Arat, Barbary	Thermic / Aquic, Udic	59-61	275-280	40/61; 73/94	In wettest areas, cypress-gum swamps (bald cypress, water tupelo); on less flooded zones, pecan, water oak, live oak, and elm.	Mixed and deciduous forest, forested wetlands.
34g. Texas-Louisiana Coastal Marshes	2094	Flat plains with most of area covered by standing water; tidal marshes with bayous, lakes, canals, and cheniers.	0-10 / 0-5	Quaternary (Holocene) clay and silt of moderate to high organic content (including peat deposits in places), sand, and shell fragments on cheniers or beach ridges.	Entisols (Hydraquents), Alfisols	Allemands, Kenner, Creole, Clovelly, Gentilly, Lafitte, Larose, Bancker, Scatlake, Ged	Hyperthermic / Aquic	56-60	310-345	43/62; 74/90	Salt marsh with smooth cordgrass, wiregrass; intertidal salt and mud flats; fresh marsh of maidencane, sawgrass; cheniers with live oak and hackberry.	Marshland, wildlife and waterfowl habitat, oil and gas production.
34j. Lafayette Loess Plains	1104	Flat coastal plain with occasional indistinct relict fluvial channels and, along its eastern edge, meander-belt topography.	5-70 / 5-25	Quaternary loess overlying late Pleistocene alluvial and deltaic sand, silt, clay, and gravel.	Alfisols (Epiaqualfs, Hapludalfs, Glossaqualfs), Mollisols (Argiaquolls)	Patoutville, Coteau, Memphis, Jeanerette, Frost	Hyperthermic, Thermic / Udic, Aquic	61-64	275-290	41/62; 72/92	Prairie grassland with big and little bluestem, Indiangrass, switchgrass, and other herbaceous species. Riparian forests or gallery forests of bottomland hardwoods.	Cropland with rice, soybeans, pasture, sugarcane, corn, wheat, some cotton in the north, locally some sweet potatoes; crawfish aquaculture; some forestland.

Level IV Ecoregio	ns	Physiography		Geology		Soils			Climate		Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation / Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
35a. Tertiary Uplands	5499	Hilly uplands formed by extensive dissection of bedrock strata.	65-535 / 50-300	Tertiary (Paleocene–Eocene) alluvial, deltaic, interdeltaic coastal, and shallow marine deposits of sand, silt, and clay.	Ultisols (Hapludults, Paleudults), Alfisols (Paleudalfs, Glossaqualfs), Inceptisols (Dystrudepts), Entisols (Udifluvents)	Sacul, Mahan, Darley, Bowie, Keithville, Kirvin, Wolfpen; on floodplains Guyton, Ochlockonee, Ouachita, Iuka, Dela.	Thermic / Udic, Aquic	51-58	230-250	33/58; 70/94	Shortleaf pine, loblolly pine, oaks (southern red, white, post, blackjack, black), hickory (mockernut, black, bitternut), and sweetgum; drier sites with deep sands have bluejack, sand post, and upland laurel oaks.	Forestland, pine plantations, forested wetlands, and pasture and hayland; oil and gas production.
35b. Floodplains and Low Terraces	669	Nearly level floodplains and associated low terraces; low-gradient streams with silty and sandy substrates.	2-195 / 10-40	Quaternary (Holocene and late Pleistocene) alluvial sand, silt, clay, and gravel.	Alfisols (Glossaqualfs), Entisols (Udifluvents, Hydraquents), Inceptisols (Dystrudepts, Epiaquepts, Haplaquepts), Vertisols (Dystraquerts)	Guyton, Iuka, Ouachita, Ochlockonee, Una, Urbo, Litro, Basile, Arat, Barbary	Thermic / Aquic, some Udic	57-67	255-275	37/61; 71/93	Bottomland hardwoods including elms, oaks (water, willow, swamp chestnut), sweetgum, blackgum, and red maple. Wetter areas contain bald cypress and water tupelo.	Forested wetlands and deciduous forest, with small areas of pasturand hayland.
35c. Pleistocene Fluvial Terraces	2396	Relatively flat to undulating terraces with increasing dissection and relief with age. Younger terraces commonly exhibit relict fluvial channels and ridges. Low-gradient rivers and streams, some of which are channelized.	50-265 / 50-150	In eastern part, Quaternary loess overlying fluvial terrace deposits of unconsolidated gravels, sands, silts, and clays. In the western part, Quaternary (Pleistocene) fluvial terrace deposits of unconsolidated sands, silts, clays, and gravels.	Ultisols (Paleudults), Alfisols (Paleudalfs, Hapludalfs, Glossaqualfs, Fraglossudalfs, Fragiudalfs)	In western part, Ruston, Malbis, Boykin, Kolin, Gore, Wrightsville; in eastern part, Calhoun, Grenada, Gilbert, Frizzell, Bussy.	Thermic / Udic, some Aquic	53-58	230-260	31/57; 70/94	High diversity of natural communities including oak-hickory forests; shortleaf pine-oak-hickory forests; hardwood flatwoods and calcareous forests and prairies with many rare plant species; bald cypress, water tupelo in wetter sites.	Forestland, pine plantations, pasture and hayland, and some urban concentrations.
35e. Southern Tertiary Uplands	5898	Hilly uplands formed by extensive dissection of bedrock strata.	50-460 / 60-300	Tertiary (Eocene–Pliocene) alluvial, deltaic, interdeltaic coastal, and shallow marine deposits of sand, silt, clay, and gravel.	Ultisols (Hapludults, Paleudults, Fragiudults), Alfisols (Paleudalfs, Glossaqualfs, Hapludalfs), Entisols (Udifluvents)	Sacul, Beauregard, Malbis, Glenmora, Caddo, Kisatchie, Blevins, Savannah, Ruston, Smithdale; on floodplains Guyton and Iuka.	Thermic / Udic, some Aquic	54-62	230-265	34/59; 70/94	High diversity of natural communities including upland longleaf pine woodlands (historically dominant), longleaf pine savannas, hardwood slope forests with beech and magnolia; calcareous forests and prairies, bogs with pitcher plants and orchids, and sandstone glades with pines and drought tolerant oaks.	Forestland, pine plantations, forested wetlands, some pasture and hayland.
35f. Flatwoods	2116	Moderately undulating and dissected coastal plain with innumerable low circular mounds (pimple mounds). Relict Pleistocene landforms, e.g., beach ridge complex and fluvial channels, are found only along southern edge.	12-215 / 10-100	Quaternary (Pleistocene) fluvial terrace deposits of unconsolidated sands, silts, clays, and gravels.	Ultisols (Paleudults, Glossudults), Alfisols (Glossudalfs, Glossaqualfs, Paleudalfs), Entisols (Udifluvents)	Beauregard, Caddo, Messer, Glenmora, Kinder, Guyton, Blevins; on floodplains Guyton and Iuka.	Thermic / Udic, some Aquic	57-64	255-280	37/61; 71/93	Primarily longleaf pine savannas with bluestem grasses and other herbaceous species in understory and occasional flatwood ponds with three-awn grass, spikerushes, and beakrushes. Some mixed pine-hardwood forests. Acidic drainages with sweetbay magnolia, blackgum, and laurel oak.	Forestland, pine plantations, forested wetlands, some pasture and hayland.
35g. Red River Bottomlands	1897	Broad, level to nearly level floodplains and low terraces, with oxbow lakes, meander scars, backswamps, natural and artificial levees, and drainage ditches.	50-195 / 5-20	Quaternary (Holocene) alluvial clay, silt, and sand.	Vertisols (Hapluderts), Entisols (Udifluvents), Mollisols (Argiudolls), Alfisols (Hapludalfs)	Moreland, Latanier, Roxana, Caspiana, Severn, Gallion	Thermic / Udic	51-63	230-275	31/61; 72/93	Bottomland hardwoods including oaks (willow, overcup, water, cherrybark, Nuttall, swamp chestnut), sweetgum, blackgum, American elm, red maple, green ash, honey locust, water locust, bald cypress, and water tupelo.	Cropland with cotton, corn, soybeans, rice, pasture, and hayland; forestland and forested wetlands.

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation / Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
65f. Southern Pine Plains and Hills		Coastal plains moderately to deeply dissected by streams into low rolling hills and broad gently sloping ridges. Low- to moderate-gradient streams with sand to clay bottoms.	100-250	Quaternary alluvial pebble gravel and sand; Tertiary (Pliocene) gravel, sand, and clay.	Ultisols (Paleudults, Hapludults, Fragiudults), Alfisols (Glossaqualfs), Entisols (Udifluvents), Inceptisols (Dystrudepts)	Savannah, Ruston, Smithdale, Tangi, Toula, Prentiss, Latonia, Bassfield, Cahaba; on floodplains Guyton, Ouachita, Ochlockonee.	Thermic / Udic, some Aquic	62-66	250-260	37/61; 71/92	Pine and pine-oak forest. Mostly longleaf pine, some slash pine in wet areas, southern red oak, post oak, mockernut hickory, flowering dogwood, and loblolly pine; some southern floodplain forest with cypress-gum swamp and bottomland hardwoods.	Forestland, pine plantations, pasture and hayland, cattle and dairy production, some minor cropland.
65p. Southeastern Floodplains and Low Terraces	95	Major river floodplains and associated low terraces; low-gradient streams with sandy and silty substrates, oxbow lakes, ponds, and swamps.	40-200 / 5-35	Quaternary (Holocene) alluvial gravelly sand, silts, and clays.	Entisols (Udifluvents, Fluvaquents), Inceptisols (Dystrudepts)	Bibb, Ouachita, Jena	Thermic / Udic, some Aquic	62-66	250-260	37/61; 71/92	Southern floodplain forest. Includes cypress-gum swamp (bald cypress, pond cypress, water tupelo, swamp tupelo) and bottomland hardwood forest (bottomland oaks, sweetgum, American elm, red maple, green ash, water hickory) with spruce pine.	· ·

Level IV Ecoregie	ons	Physiography		Geology		Soils			Climate		Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation / Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
73a. Northern Holocene Meander Belts	1330	Flat plains and river meander belt with levees, point bars, oxbows, and abandoned channels. Large rivers and some smaller low-gradient streams, channelized in many places.	50-115 / 5-30	Quaternary (Holocene) alluvial sand, silt, clay, and gravel.	Vertisols (Epiaquerts), Inceptisols (Endoaquepts), Entisols (Udipsamments), Alfisols (Epiaqualfs)	Sharkey, Commerce, Crevasse, Convent, Tensas	Thermic / Udic, Aquic	56-59	245-255	35/56; 72/93	In wettest areas, cypress-gum swamps (bald cypress, water tupelo); on less flooded zones, overcup oak, Nuttall oak, willow oak, water hickory, elm, green ash, sweetgum; on point bars and natural levees, sweetgum, ash, cottonwood. Some forested canebrakes with open, mixed deciduous trees and giant cane.	Cropland with mostly cotton, soybeans, and corn; aquaculture; some deciduous forest and forested wetlands.
73d. Northern Backswamps	632	Flat plains with floodplain depressions containing ponded wetlands, swamps and lakes. Some low-gradient streams with silty substrates.	45-100 / 5-25	Quaternary (Holocene) alluvial clay and silty clay, some layers of peat and sand.	Vertisols (Epiaquerts), Inceptisols (Endoaquepts, Epiaquepts)	Sharkey, Tensas, Dowling	Thermic / Aquic	56-59	245-255	35/56; 72/93	In wettest areas, cypress-gum swamps (bald cypress, water tupelo); on less flooded zones, overcup oak, Nuttall oak, willow oak, water hickory, elm, green ash, swamp privet, planertree, and sweetgum.	Deciduous forest, forested wetlands; cropland with mostly cotton, soybeans, corn, and minor areas of wheat and rice.
73h. Arkansas/ Ouachita River Holocene Meander Belts	484	Flat plains and river meander belt with levees, point bars, oxbows, and abandoned channels. Large rivers and some smaller low-gradient streams, channelized in many places.	35-100 / 5-20	Quaternary (Holocene) alluvial sand, silt, clay, and gravel.	Alfisols (Epiaqualfs, Hapludalfs). Vertisols (Epiaquerts), Inceptisols (Endoaquepts)	Hebert, Perry, Portland, Rilla, Rosebloom, Sterlington, Forestdale	Thermic / Aquic, some Udic	57-59	245-260	34/56; 72/94	In wettest areas, cypress-gum swamps (bald cypress, water tupelo); on less flooded zones, overcup oak, Nuttall oak, willow oak, water hickory, elm, green ash, sweetgum; on point bars and natural levees, sweetgum, ash, and cottonwood.	Deciduous forest, forested wetlands; cropland with corn, cotton, and soybeans.

SOURCES

Allan, P.F., 1950, Ecological bases for land use planning in Gulf Coast marshlands: Journal of Soil and Water Conservation, v. 5, p. 57-62, 85.

Anderson, J.R., 1970, Major land uses, *in* The national atlas of the United States of America: Washington, D.C., U.S. Geological Survey, p. 158-159, scale 1:7,500,000.

Bailey, R.G., 1995, Description of the ecoregions of the United States (2d ed.): Miscellaneous Publication No.

1391, U.S. Department of Agriculture - Forest Service, 108 p. + map.

Bailey, R.G., Avers, P.E., King, T., and McNab, W.H., eds., 1994, Ecoregions and subregions of the United States (map) (supplementary table of map unit descriptions compiled and edited by McNab, W.H., and Bailey, R.G.): Washington, D.C., U.S. Department of Agriculture - Forest Service, scale 1:7,500,000.

Barnes, C.P., and Marschner, F.J., 1933, Natural land-use areas of the United States: U.S. Department of Agriculture, scale 1:4,000,000.

Bayer, K.C., 1983, Generalized structural lithologic and physiographic provinces in the fold and thrust belts of the

United States: U.S. Geological Survey, scale 1:2,500,000.

Braun, E.L., 1950, Deciduous forests of eastern North America: New York, Hafner Publishing Company, 596 p.

Bridges, E.L., and Orzell, S.L., 1989, Longleaf pine communities of the West Gulf Coastal Plain: Natural Areas Journal, v. 9, p. 246-253.

Brown, C.A., 1941, Historical commentary on the distribution of vegetation in Louisiana and some recent observations: Proceedings of the Louisiana Academy of Science, v. 8, p. 35-47.

Brown, C.A., 1945, Louisiana trees and shrubs: Baton Rouge, Louisiana, Louisiana Forestry Commission, Bulletin No. 1, 262 p.

Brown, K.M., and Banks, P.D., 2001, The conservation of *Unionid* mussels in Louisiana rivers - diversity, assemblage composition and substrate use: Aquatic Conservation, v. 11, p. 189-198.

Chabreck, R.H., 1972, Vegetation, water and soil characteristics of the Louisiana coastal region: Baton Rouge, Louisiana, Louisiana State University, Louisiana Agricultural Experiment Station, Bulletin 664, 72 p.

Chapman, S.S., Griffith, G.E., Omernik, J.M., Comstock, J.A., Beiser, M.C., and Johnson, D., 2004, Ecoregions of Mississippi (2 sided color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey, scale 1:1,000,000.

Chapman, S.S., Kleiss, B.A., Omernik, J.M., Foti, T.L., and Murray, E.O., 2004, Ecoregions of the Mississippi Alluvial Plain (2 sided color poster with map, descriptive text, summary tables, and photographs): Reston,

Virginia, U.S. Geological Survey, scale 1:1,150,000.

Christensen, N.L., 1988, Vegetation of the southeastern Coastal Plain, *in* Barbour, M.G., and Billings, W.D., eds., North American terrestrial vegetation: Cambridge, U.K., Cambridge University Press, p. 317-363.

Colten, C.E., ed., 2001, Transforming New Orleans and its environs - centuries of change: Pittsburgh, Pennsylvania, University of Pittsburgh Press, 272 p.

Cowdrey, A.E., 1996, This land, this South: an environmental history: Lexington, Kentucky, University Press of Kentucky, 240 p.

Delcourt, H.R., and Delcourt, P.A., 1975, The blufflands-Pleistocene pathway into the Tunica Hills: American Midland Naturalist, v. 94, no. 2, p. 385-400.

Douglas, N.H., 1973, Freshwater fishes of Louisiana: Baton Rouge, Claitor's Publishing, 443 p.

Dundee, H.A., and Rossman, D.A., 1989, The amphibians and reptiles of Louisiana: Baton Rouge, Louisiana, Louisiana State University Press, 300 p.

Evans, D.L., Burns, P.Y., Linnartz, N.E., and Robinson, C.J., 1983, Forest habitat regions of Louisiana: Baton Rouge, Louisiana, Louisiana Agricultural Experiment Station, Research Report No.1., 23 p., map supplement, scale 1:1,000,000.

Fenneman, N.M., 1938, Physiography of eastern United States: New York, McGraw-Hill, 714 p.

Frost, C.C., 1993, Four centuries of changing landscape patterns in the longleaf pine ecosystem, *in* Hermann, S.H., ed., 18th Tall Timbers Fire Ecology Conference, the longleaf pine ecosystem: ecology, restoration and management, Tallahassee, Florida, 1991, Proceedings, Tall Timbers Research Station, p. 17-43.

Frost, C.C., 1995, Presettlement fire regimes in southeastern marshes, peatlands, and swamps, *in* Cerulean, S.I., and Engstrom, R.T., eds., 19th Tall Timbers Fire Ecology Conference, fire in wetlands: a management perspective, Tallahassee, Florida, 1995, Proceedings, Tall Timbers Research Station, p. 39-60.

Goins, C.R., and Caldwell, J.M., 1995, Historical atlas of Louisiana: Norman, Oklahoma, University of Oklahoma Press, 45 p.

Gosselink, J.G., Coleman, J.M., and Stewart, R.E., Jr., 1998, Coastal Louisiana, *in* Mac, M.J., Opler, P.A., Puckett

Griffith, G.E., Bryce, S.A., Omernik, J.M., Comstock, J.A., Rogers, A.C., Harrison, B., Greenwade, J., Casby-Horton, S., Hatch, S.L., and Bezanson, D., 2004, Ecoregions of Texas (2 sided color poster with map, descriptive text, and photographs): Reston, Virginia, U.S. Geological Survey, scale 1:2,500,000.

Hackney, C.T., Adams, S.M., and Martin, W.H., eds., 1992, Biodiversity of the southeastern United States - aquatic communities: New York, John Wiley and Sons, 779 p.

Haecker, C.E., and Doran, P.D., Status and trends of the nation's biological resources: Reston, Virginia, U.S.

Hamel, P.B., and Foti, T.L., eds., 2001, Bottomland hardwoods of the Mississippi Alluvial Valley - characteristics and management of natural function, structure, and composition: Asheville, North Carolina, U.S. Department of Agriculture - Forest Service, Southern Research Station, General Technical Report SRS-042, 111 p.

Hammond, E.H., 1970, Classes of land-surface form, *in* The national atlas of the United States of America: Washington, D.C., U.S. Geological Survey, p. 62-63, scale 1:7,500,000.

Heggem, D.T., Neale, A.C., Edmonds, C.M., Bice, L.A., Van Remortel, R.D., and Jones, K.B., 1999, An ecological assessment of the Louisiana Tensas River basin: Washington, D.C., U.S. Environmental Protection Agency, Office of Research and Development, EPA/600/R-99/016, 123 p.

Holbrook, D.F. Gilliland, W.A., Luza, K.V., Pope, D.F., Wermund, E.G., Miller, R.A., Bush, W.V., Jensen, K.N.,

Holbrook, D.F., Gilliland, W.A., Luza, K.V., Pope, D.E., Wermund, E.G., Miller, R.A., Bush, W.V., Jensen, K.N., and Fishman, W.D., state compilers, 1990, Quaternary geologic map of the Vicksburg 4° x 6° quadrangle, United States: U.S. Geological Survey, Map I-1420 (NI-15), scale 1:1,000,000. Hunt, C.B., 1974, Natural regions of the United States and Canada: San Francisco, California, W.H. Freeman, Kesel, R.H., 1989, The role of the Mississippi River in wetland loss in southeastern Louisiana, U.S.A.: Environmental Geology and Water Sciences, v. 13, p. 183-193. Keys, J., Jr., Carpenter, C., Hooks, S., Koenig, F., McNab, W.H., Russell, W.E., Smith, M.L., 1995, Ecological units of the eastern United States - first approximation: Atlanta, Georgia, U.S. Department of Agriculture - Forest Service, Technical Publication R8-TP 21, scale 1:3,500,000. King, P.B., and Beikman, H.M., 1974, Geologic map of the United States: U.S. Geological Survey, scale Küchler, A.W., 1964, Potential natural vegetation of the conterminous United States: New York, American Geographical Society, Special Publication no. 36, 116 p., scale 1:3,168,000. Louisiana Natural Heritage Program, 2004, Natural communities of Louisiana: Baton Rouge, Louisiana, Louisiana Department of Wildlife and Fisheries, 46 p. Loveland, T.R., Merchant, J.W., Brown, J.F., Ohlen, D.O., Reed, B.C., Olsen, P., and Hutchinson, J., 1995, Seasonal land-cover regions of the United States: Annals of the Association of American Geographers, v. 85, Lowery, G.H., Jr., 1974, Louisiana birds: Baton Rouge, Louisiana, Louisiana Wildlife and Fisheries Commission and Louisiana State University Press, 651 p. Lowery, G.H., Jr., 1974, The mammals of Louisiana and its adjacent waters: Baton Rouge, Louisiana, Louisiana State University Press, 565 p.

Lytle, S.A., and Sturgis, M.B., 1962, General soil areas and associated soil series groups of Louisiana: Baton Rouge, Louisiana, Louisiana State University and Agricultural and Mechanical College, Agricultural Experiment Station, scale 1:750,000. MacRoberts, B.R., and MacRoberts, M.H., 1991, Floristics of three bogs in western Louisiana: Phytologia, MacRoberts, B.R., and MacRoberts, M.H., 1993, Floristics of two Louisiana sandstone glades: Phytologia, v. 74, p. 431-437. MacRoberts, B.R., and MacRoberts, M.H., 1993, Vascular flora of sandstone outcrop communities in western Louisiana, with notes on rare and noteworthy plants: Phytologia, v. 75, p. 463-480. MacRoberts, B.R., and MacRoberts, M.H., 1993, Why don't west Louisiana bogs and glades grow up into forests?: MacRoberts, D.T., 1984, The vascular plants of Louisiana: The Bulletin of the Museum of Life Sciences, No. 6, 165 p. MacRoberts, M.H., and MacRoberts, B.R., 1992, Floristics of a sandstone glade in western Louisiana: Phytologia, v. 72, p. 130-138. MacRoberts, M.H., and MacRoberts, B.R., 1997, Historical notes on Louisiana prairies - changes in prairie flora in half a century: Phytologia, v. 82, p. 65-72. Martin, W.H., Boyce, S.G., and Echternacht, A.C., eds., 1993, Biodiversity of the southeastern United States lowland terrestrial communities: New York, John Wiley and Sons, 502 p. McNab, W.H., and Avers, P.E., compilers, 1994, Ecological subregions of the United States - section descriptions: Washington, D.C., U.S. Department of Agriculture - Forest Service, Administrative Publication WO-WSA-5, National Research Council, Committee on the Restoration and Protection of Coastal Louisiana, 2006, Drawing Louisiana's new map - addressing land loss in coastal Louisiana: Washington, D.C., The National Academies Press, 204 p. Newton, M.B., Jr., 1972, Atlas of Louisiana: Baton Rouge, Louisiana, Louisiana State University Press, School of Geoscience, Miscellaneous Publication 72-1, 188 p.

Newton, M.B., Jr., 1987, Louisiana - a geographical portrait: Baton Rouge, Louisiana, Geoforensics, 325 p.

Louisiana: Sida, v. 19, p. 361-386.

Neyland, R., Hoffman, B., Mayfield, M., and Urbatsch, L., 2000, Vascular flora survey of Calcasieu Parish,

regions - a preliminary classification, *in* Herman, S.M., ed., 18th Tall Timbers Fire Ecology Conference, the longleaf pine ecosystem: ecology, restoration and management, Tallahassee, Florida, 1991, Proceedings, Tall Timbers Research Station, p. 45-81.

Platt, S.G., and Brantley, C.G., 1997, Canebrakes - an ecological and historical perspective: Castanea, v. 62, p. 8-21.

Platt, W.J., 1999, Southeastern pine savannas, *in* Anderson, R.C., Fralish, J.S., and Basking, J.M., eds., Savannas, barrens and rock outcrop communities of North America: Cambridge, U.K., Cambridge University Press, p. 23-51.

Pope, D.E., Gilliland, W.A., and Wermund, E.G., state compilers, 1990, Quaternary geologic map of the White Lake 4° x 6° quadrangle, United States: U.S. Geological Survey, Map I-1420 (NH-15), scale 1:1,000,000.

Saucier, R., 1994, Geomorphology and quaternary geologic history of the Lower Mississippi Valley, volume 1

(report), volume 2 (map folio): Vicksburg, Mississippi, U.S. Army Corps of Engineers, Waterways Experiment

Peet, R.K., and Allard, D.J., 1993, Longleaf pine vegetation of the Southern Atlantic and Eastern Gulf Coast

Schumacher, B.A., Day, W.J., Amacher, M.C., and Miller, B.J., 1988, Soils of the Mississippi River alluvial plain in Louisiana: Baton Rouge, Louisiana, Louisiana State University, Louisiana Agricultural Experiment Station, Bulletin 796, 275 p.

Sharitz, R.R., and Mitsch, W.J., 1993, Southern floodplain forests, *in* Martin, W.H., Boyce, S.G., and Echternacht, A.C., eds., Biodiversity of the southeastern United States - lowland terrestrial communities: New York, John Wiley and Sons, p. 311-372.

Smith, L.M., 1988, The natural communities of Louisiana: Baton Rouge, Louisiana, Louisiana Natural Heritage Program, Louisiana Department of Wildlife and Fisheries, 35 p.

Snead, J.I., and McCulloh, R.P., compilers, 1984, Geologic map of Louisiana: Baton Rouge, Louisiana, Louisiana Geological Survey, scale 1:500,000.

Stanturf, J.A., Gardiner, E.S., Hamel, P.B., Devall, M.S., Leininger, T.D., and Warren, M.E., 2000, Restoring bottomland hardwood ecosystems in the lower Mississippi alluvial valley: Journal of Forestry, v. 98, no. 8, p. 10-16.

Twedt, D.J., and Loesch, C.R., 1999, Forest area and distribution in the Mississippi alluvial valley - implications for breeding bird conservation: Journal of Biogeography, v. 26, p. 1215-1224.

U.S. Department of Agriculture - Forest Service, 1969, A forest atlas of the South: New Orleans, Southern Forest

Experiment Station, and Asheville, North Carolina, Southeastern Forest Experiment Station, 27 p.

U.S. Department of Agriculture - Forest Service, 1997, Forest type groups of the United States, scale 1:7,500,000, *in* Powell, D.S., Faulkner, J.L., Darr, D.R., Zhu, Z., and MacCleery, D.W., Forest resources of the United States: Fort Collins, Colorado, U.S. Department of Agriculture - Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-234, 132 p.

U.S. Department of Agriculture - National Agricultural Statistics Service, 1999, Census of agriculture, 1997, v. 2, subject series, part 1, agricultural atlas of the United States: Washington, D.C., U.S. Government Printing Office, 163 p.

U.S. Department of Agriculture - Natural Resources Conservation Service, 1998, Louisiana general soil map: Baton Rouge, Louisiana, produced as a cooperative effort between NRCS Soil Survey staff, Louisiana Department of Agriculture and Forestry, Louisiana State University and Agricultural and Mechanical College, Louisiana Agricultural Experiment Station, scale 1:500,000.
U.S. Department of Agriculture - Natural Resources Conservation Service (formerly Soil Conservation Service), various county soil surveys of Louisiana.

various county soil surveys of Louisiana.

U.S. Department of Agriculture, Soil Conservation Service, 1981, Land resource regions and major land resource areas of the United States: Washington, D.C., U.S. Government Printing Office, Agriculture Handbook 296, 156 p. + map.

U.S. Geological Survey, 1986, Land use and land cover data from 1:250,000- and 1:100,000-scale maps: Reston, Virginia, U.S. Geological Survey Data Users Guide no. 4.
U.S. Geological Survey, 1999, GAP land use / land cover for Louisiana: Lafayette, Louisiana, U.S. Geological Survey, National Wetlands Research Center.

Van Kley, J.E., 1999, The vegetation of the high terrace rolling uplands, Louisiana: Castanea, v. 64, no. 4, p. 318-336.

Van Kley, J.E., 1999, The vegetation of the Kisatchie sandstone hills, Louisiana: Castanea, v. 64, no. 1, p. 64-80.

Waggoner, G.S., 1975, Southeastern evergreen and oak-pine region; inventory of natural areas and sites recommended as potential natural landmarks: Washington, D.C., U.S. National Park Service, 206 p.

Ware, S., Frost, C., and Doerr, P.D., 1993, Southern mixed hardwood forest: the former longleaf pine forest, *in* Martin, W.H., Boyce, S.G., and Echternacht, A.C., eds., Biodiversity of the southeastern United States - lowland terrestrial communities: New York, John Wiley and Sons, p. 447-493.

Woods, A.J., Foti, T.L., Chapman, S.S., Omernik, J.M., Wise, J., Murray, E.O., Prior, W.L., Pagan, J., Comstock,

J.A., and Radford, M., 2004, Ecoregions of Arkansas (2 sided color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey, scale 1:1,000,000.

	Level IV Ecoregion	18	Physiography		Geology		Soils			Climate		Natural Vegetation	Land Cover and Land Use
		Area (square miles)		Elevation / Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
73i.	Arkansas/ Ouachita River Backswamps	533	Flat plains with floodplain depressions containing ponded wetlands, swamps, and lakes. Some low-gradient streams with silty substrates.	35-100 / 5-15	Quaternary (Holocene) alluvial clay and silty clay, some layers of peat and sand.	Alfisols (Epiaqualfs, Endoaqualfs, Hapludalfs), Vertisols (Epiaquerts), Inceptisols (Epiaquepts), Mollisols (Argiudolls)	Hebert, Perry, Portland, Rilla, Mer Rouge, Gallion, Sterlington, Forestdale	Thermic / Aquic, some Udic	57-59	245-260	34/56; 72/94	In wettest areas, cypress-gum swamps (bald cypress, water tupelo); on less flooded zones, overcup oak, Nuttall oak, willow oak, water oak, water hickory, elm, green ash, swamp privet, planertree, and sweetgum.	Deciduous forest, forested wetlands, cropland with soybeans, corn, cotton, and rice, some pasture and urban.
73j.	Macon Ridge	1499	Wide, flat to irregular alluvial terrace with relict patterns of branching channels, irregular braided bars, and interfluves. Low-gradient, channelized streams and canals with silty substrates.	50-120 / 5-30	Quaternary windblown silt (loess) veneers Pleistocene terrace deposits of alluvial sand, silt, and clay, and Pleistocene glacial outwash deposits.	Alfisols (Glossaqualfs, Fraglossudalfs, Hapludalfs, Fragudalfs)	Calhoun, Calloway, Dexter, Egypt, Gigger, Gilbert, Grenada, Loring, Necessity, Liddieville	Thermic / Udic, Aquic	56-59	245-265	34/56; 72/94	Bottomland hardwoods and hardwood flatwoods of willow oak, water oak, Nuttall oak, swamp chestnut oak, sweetgum and hickory; some upland hardwood forests of white oak, southern red oak, and on drier sites some post oak. In wettest areas, cypress-gum swamps (bald cypress, water tupelo). Small areas of tallgrass prairie or loblolly pine may have occurred.	Cropland and pasture with crop of cotton, corn, soybeans, and some wheat; some deciduous forest and forested wetlands.
73k.	Southern Holocene Meander Belts	3160	Flat plains and river meander belts with levees, point bars, oxbows, and abandoned channels. Large rivers and some smaller low-gradient streams, channelized in many places.	5-100 / 5-30	Quaternary (Holocene) alluvial sand, silt, clay, and gravel.	Inceptisols (Endoaquepts, Epiaquepts), Entisols (Udifluvents, Udipsamments), Alfisols (Epiaqualfs, Endoaqualfs), Vertisols (Epiaquerts)	Commerce, Convent, Crevasse, Robinsonville, Dundee, Sharkey, Tunica, Newellton, Schriever, Gramercy, Baldwin, Thibaut, Cancienne, Galvez	Thermic, Hyperthermic/ Aquic	58-65	265-345	37/63; 73/92	In wettest areas, cypress-gum swamps (bald cypress, water tupelo); on less flooded zones, overcup oak, Nuttall oak, willow oak, water hickory, elm, green ash, sweetgum; on point bars and natural levees, sweetgum, ash, cottonwood, some areas of live oak. Some forested canebrakes with open, mixed deciduous trees and giant cane.	Forested wetlands, deciduous forest, cropland with sugarcane, cotton, soybeans, and corn; pasture; crawfish aquaculture; some urban and industrial.
731.	Southern Pleistocene Valley Trains	195	Flat to irregular alluvial plain with relict patterns of branching channels, terraces, irregular braid bars, and interfluve areas. Low-gradient streams with silty substrates, channelized in many places.	50-60 / 0-10	Quaternary (Pleistocene) unconsolidated silty alluvium and alluvial sand, generally 5 to 15 feet in depth. Older alluvial deposits greater than 100 feet deep. Alluvium covers Pleistocene sand and gravel, glacial outwash (early to late Wisconsin deposits).	Alfisols (Glossaqualfs, Natraqualfs, Fraglossudalfs, Endoaqualfs, Natraqualfs), Inceptisols (Endoaquepts), Vertisols (Epiaquerts)	Bursley, Forestdale, Foley, Calhoun, Necessity, Deerford, Dowling, Sharkey	Thermic / Aquic	58-62	265-275	36/60; 72/92	Bottomland forest with overcup oak, Nuttall oak, honey locust, elm, water oak, sweetgum, blackgum, hickory, and Spanish moss.	Deciduous forest, forested wetlands, cropland with cotton, soybeans, and corn.
73m.	Southern Backswamps	1631	Flat plains with depressions containing ponded wetlands, swamps, and lakes; some low-gradient streams with silty substrates.	20-60 / 5-20	Quaternary (Holocene) alluvial clay and silty clay, some layers of peat and sand.	Vertisols (Epiaquerts), Inceptisols (Endoaquepts, Epiaquepts), Alfisols (Epiaqualfs)	Commerce, Tensas, Sharkey, Dowling, Convent	Thermic / Aquic	58-64	265-270	36/60; 72/92	In wettest areas, cypress-gum swamps (bald cypress, water tupelo); on less flooded zones, overcup oak, Nuttall oak, willow oak, water hickory, elm, green ash, swamp privet, planertree, sweetgum; on point bars and natural levees, sweetgum, ash, cottonwood. Some forested canebrakes with open, mixed deciduous trees and giant cane.	Forested wetlands, deciduous forest, cropland with soybeans, rice, corn, and sugarcane; aquaculture; minor areas in peca orchards, hayland and pasture.
73n.	Inland Swamps	3051	Flat alluvial plain with a transition to a deltaic plain. Backswamps, bayous, distributary ridges, and natural levees. Wetlands, low-gradient streams and channelized streams.	5-35 / 0-10	Quaternary (Holocene) alluvial deposits. Lacustrine deposits, alluvium with organic deposits.	Vertisols (Epiaquerts), Entisols (Hydraquents), Inceptisols (Endoaquepts), Alfisols (Endoaqualfs)	Schriever, Barbary, Fausse, Cancienne, Grammercy, Galvez, Thibaut	Hyperthermic / Aquic	62-70	275-295	41/63; 72/92	Tupelo-cypress swamp forest with sedges, grasses, and rushes in frequently flooded areas. Overcup oak-water hickory forest and oak-sweetgum forest in areas flooded less frequently. Live oak and Spanish moss are also common. Other wetland vegetation includes water hyacinths, water lily, cattails, and duckweed.	Forested wetlands, wildlife habitat, recreation, aquaculture, fishing and hunting; oil and gas production.
730.	Deltaic Coastal Marshes and Barrier Islands	4738	Flat deltaic and coastal plain with fresh-water and saline marshes. Rivers, lakes, bayous, tidal channels, canals, and barrier islands.	0-15 / 0-10	Quaternary (Holocene) alluvial, deltaic, interdeltaic coastal, and shallow marine sediments of sand, silt, and clay of comparatively high organic content, including peat deposits in places.	Histosols (Haplosaprists), Entisols (Hydraquents)	Scatlake, Timbalier, Bellpass, Clovelly, Lafitte, Bancker, Allemands, Kenner, Larose	Hyperthermic / Aquic	54-62	335-355	43/63; 73/91	Freshwater to saltwater marsh vegetation of grasses, sedges, and rushes. Few to no trees. Alligator weed, spike rush, maidencane, cutgrass, and bulltongue in freshwater marshes. Marshhay cordgrass, Olney bulrush, and saltgrass in brackish areas, with smooth cordgrass and black needlerush in saline marshes. Barrier island species follow elevation gradients and exposure to saltwater spray or tidal overwash. Succulent species and vines on beach fronts, marshhay cordgrass on highest dunes, and black mangrove and smooth cordgrass on sheltered bayside areas.	Marshland, wildlife habitat, oil and gas production; hunting, trapping, and fishing. Levees of the Mississippi River support citrus orchards and pasture.

Level IV Ecoregions		Physiography		Geology		Soils			Climate		Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation / Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)	è	
74a. Bluff Hills	50	Dissected hills and ridges and irregular plains; steeper hillsides and narrow valleys to the west, smoother terrain to the east. Moderate- to low-gradient silt and sand bottomed streams, some with occasional gravel.	50-350 / 100-300	Quaternary loess, in many places greater than 30 to 50 feet thick, overlying Tertiary (Pliocene) and Quaternary (late Pleistocene) gravel, sand, silt, and clay; sparse exposures of Miocene clay, sandy clay, sand, and siltstone occur in near-vertical stream cutbanks.	Alfisols (Hapludalfs, Fragiudalfs, Fraglossudalfs), Entisols (Udifluvents, Quartzipsamments), Inceptisols (Eutrudepts)	Feliciana, Natchez, Loring, Memphis, Olivier, Weyanoke; on floodplains Morganfield, Bigbee.	Thermic / Udic	62-64	250-260	37/59; 71/91	Oak-hickory forests with some areas richer in mesophytes (mostly water oak, cherrybark oak, white oak, sweetgum, basswood, tulip poplar, beech, white ash, maples, and hophornbeam). Beech-magnolia-holly forest predominant on narrow ridges and steep ravines in Tunica Hills. Some loblolly pine and spruce pine.	Mostly deciduous forest and mixed forest.
74c. Southern Rolling Plains	691	Gently rolling coastal plains moderately dissected by low-gradient streams with silt and sand bottoms.	50-330 / 100-200	Quaternary loess and loessial alluvium and colluvium, some alluvial gravel and sand, and sandy clay decomposition residuum derived from Quaternary and Tertiary strata, overlying Tertiary (Pliocene) and Quaternary (late Pleistocene) gravel, sand, silt, and clay; sparse exposures of Miocene clay, sandy clay, sand, and siltstone occur in near-vertical stream cutbanks.	Alfisols (Hapludalfs, Glossaqualfs, Fragiudalfs, Fraglossudalfs), Ultisols (Fragiudults, Hapludults), Inceptisols (Dystrudepts, Eutrochrepts), Entisols (Udifluvents, Quartzipsamments)	Tangi, Lytle, Smithdale, Toula, Bude, Loring, Feliciana, Olivier, Natchez, Fluker, Calhoun, Weyanoke; on floodplains Ouachita, Ocholockonee, Guyton, Cascilla, Morganfield, Bigbee.	Thermic / Udic, some Aquic	62-64	250-260	37/59; 71/91	Pine-oak-hickory forest of shortleaf pine and some loblolly pine with white oak, post oak, southern red oak, blackjack oak, mockernut and pignut hickory.	Pine plantations, mixed forest; some pasture, hayland, and cropland of mostly soybeans and grains; some oil and gas production.
74d. Baton Rouge Terrace	1049	Flat coastal plain deeply dissected along its eastern and southern margins by partially filled valleys. These valleys contain wetlands and low-gradient streams with silt and sand bottoms.	10-140 / 10-30	Quaternary loess (in western part) overlying alluvial and deltaic sand, silt, clay, and gravel.	Alfisols (Natraqualfs, Glossaqualfs, Hapludalfs, Fragiudalfs, Epiaqualfs, Fraglossudalfs, Albaqualfs), Ultisols (Fragiudults), Entisols (Udifluvents), Inceptisols (Dystrudepts), Mollisols (Argiaquolls)	Calhoun, Toula, Tangi, Satsuma, Scotlandville, Oprairie, Bude, Colyell, Springfield, Encrow, Deerford, Verdun, Gilbert, Dexter, Frost, Jeanerette; on floodplains Guyton, Ochlockonee, Ouachita, Natalbany.	Thermic / Aquic, some Udic	63-65	255-260	41/61; 73/91	Hardwood forests of cherrybark, swamp chestnut and water oaks, sweetgum, sycamore, southern magnolia, beech and elm. Also once extensive spruce pine – hardwood flatwoods with some loblolly pine. Areas of high sodium soils once supported saline prairies with salt-tolerant forbs and grasses.	Pine plantations, mixed forest, some pasture and hayland, urban and industrial, oil and gas production.

Level IV Ecoregion		s	Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
		Area (square miles)		Elevation / Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
75a. Gulf Coa Flatwoo	1		Flat to gently undulating coastal plain commonly exhibiting relict Pleistocene fluvial channels and coastal ridges. Low-gradient streams with sandy and silty bottoms and deposits.	5-110 / 5-30	peat, and some Pleistocene gravel.	Hapludults), Alfisols (Paleudalfs, Hapludalfs, Natraqualfs, Glossaqualfs), Entisols	Myatt, Stough, Abita, Prentiss, Satsuma, Brimstone, Latonia, Cahaba; on floodplains Guyton, Ouachita, Ochlockonee, Bibb, Arat.	Thermic / Aquic, Udic	62-65	245-270	38/62; 71/92	Historically, longleaf pine-dominated flatwoods and more open savannas. Slash pine often mixed with pond cypress in lower flats. Bayhead swamps with sweetbay, swamp blackgum, and laurel oak. Savannas had grasses of Gulf Coast muhly and slender bluestem. Bog plants included sedges, rushes, pitcher plants, and orchids.	Pine plantations, mixed forest, forested wetlands, some pasture and hayland on better drained areas, urban.
75i. Floodpla Low Ter	l l		Major river floodplains and associated low terraces; low-gradient streams with sandy and silty substrates, oxbow lakes, ponds, swamps.	1-50 / 5-25	1 ~	Inceptisols (Endoaquepts), Alfisols (Glossaqualfs), Entisols (Hydraquents, Fluvaquents), Ultisols (Hapludults, Ochraquults)	Rosebloom, Arkabutla, Guyton, Ouachita, Cahaba, Bibb, Myatt, Arat, Barbary	Thermic / Aquic, some Udic	62-64	260-270	38/61; 72/92	Southern floodplain forest. Includes cypress-gum swamp (bald cypress, pond cypress, water tupelo, swamp tupelo) and bottomland hardwood forest (bottomland oaks, sweetgum, American elm, red maple, green ash, water hickory).	
75k. Gulf Bar Islands a Coastal	I		Tidal marshes, bays, river deltas, lagoons, barrier islands, dunes, beaches.	0-25 / 5-15	Quaternary (Holocene) deltaic and interdeltaic coastal sediments comprising quartz sand, shell fragments, silt, clay, muck, and peat.	Entisols (Hydraquents), Histosols (Haplosaprists)	Larose, Allemands, Kenner	Hyperthermic / Aquic	61-63	270-335	41/63; 73/91	In Louisiana, the westernmost extent of Ecoregion 75k, mostly tidal freshwater marsh occurs with arrowhead, spikerush, and bulrush as dominants. Some areas of smooth cordgrass, seaside goldenrod.	Marsh, forested wetlands, wildlife habitat, recreation, fish and shellfish production.