

EDWARDS PLATEAU LIMESTONE SAVANNA AND WOODLAND

Nature Serve ID: CES303.660

Geology: Primarily found on Cretaceous limestones of the Edwards Plateau and Limestone (also referred to as Lampasas) Cutplain, but also associated with Pennsylvanian limestones of the Palo Pinto Formation and Winchell, Ranger, Home Creek Limestone in the vicinity of Palo Pinto County, as well as on Cretaceous chalk formations in the Northern Blackland Prairie and Cretaceous limestones of the Western Crosstimbers and Rolling Plains.

Landform: Rolling to level topography, often on plateau tops, but also on gentle slopes.

Soils: Generally loams, clay loams, or clays, often with limestone parent material apparent. Low Stony Hill, Adobe, Clay Loam, and Shallow Ecological Sites are commonly associated with this system.

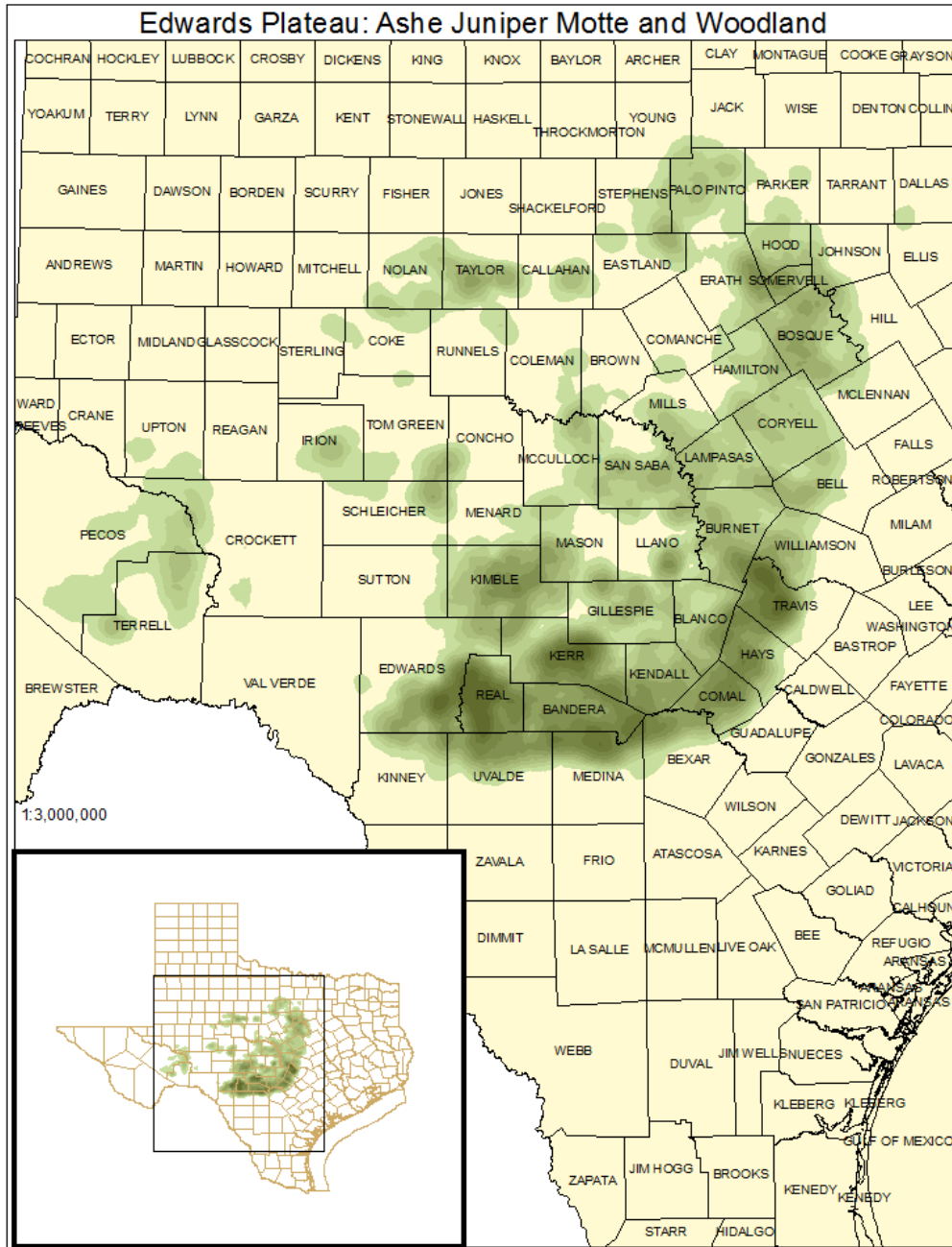
Parent Description: This upland system forms the matrix vegetation type of the Edwards Plateau. It is typified by a mosaic of evergreen oak and juniper forests, woodlands and savannas over shallow soils of rolling uplands and adjacent upper slopes within the Edwards Plateau and some adjacent ecoregions where limestone is present. Significant open areas dominated by grasses may resemble prairies, and such open occurrences may grade into prairie types to the west (shortgrass prairie), northwest (Central mixedgrass), north (Southeastern Great Plains tallgrass), and east (Blackland). Species such as *Quercus fusiformis* (plateau live oak) or *Juniperus ashei* (Ashe juniper) often dominate the canopy of this system. Other canopy species may include *Quercus buckleyi* (Texas oak), *Quercus laceyi* (Lacey oak, in the southwestern part of the Edwards Plateau), *Ulmus crassifolia* (cedar elm), *Fraxinus texensis* (Texas ash), *Quercus sinuata* var. *breviloba* (white shin oak), and *Quercus vaseyana* (Vasey shin oak) (especially in the western part of the region). *Pinus remota* (paper-shell pinyon) and *Juniperus pinchotii* (redberry juniper) may dominate or be a component of the canopy to the southwest and west of the region. The shrub layer may be fairly well-developed, containing overstory species, as well as species such as *Diospyros texana* (Texas persimmon), *Mahonia trifoliolata* (agarito), *Sophora secundiflora* (Texas mountain-laurel), *Prosopis glandulosa* (honey mesquite), *Opuntia engelmannii* var. *lindheimeri* (Lindheimer pricklypear), and *Cylindropuntia leptocaulis* (tasajillo). Many uplands have mottes of *Quercus fusiformis* (plateau live oak) punctuating a generally grass dominated landscape, forming what has been referred to as a motte-savanna. The understory can contain various graminoid species, including *Schizachyrium scoparium* (little bluestem), *Bouteloua curtipendula* (sideoats grama), *Bothriochloa barbinodis* (cane bluestem), *Bothriochloa laguroides* ssp. *torreyana* (silver bluestem), *Nassella leucotricha* (Texas wintergrass), *Sorghastrum nutans* (Indiangrass), *Hilaria belangeri* (curlmesquite), *Bouteloua dactyloides* (buffalograss), *Andropogon gerardii* (big bluestem), *Bouteloua hirsuta* (hairy grama), *Bouteloua rigidiseta* (Texas grama), *Muhlenbergia reverchonii* (seep muhly), *Muhlenbergia lindheimeri* (Lindheimer muhly), *Aristida purpurea* (purple threeawn), and/or *Carex planostachys* (cedar sedge). The composition of the grassland component is driven by grazing, fire, and climate. Shortgrass species such as *Bouteloua dactyloides* (buffalograss) and *Hilaria belangeri* (curlmesquite) are favored under heavy continuous grazing and/or dry climate (to the west), while mid- and tallgrasses are favored under more mesic conditions, more well-developed soils, and well-managed grazing. The herbaceous stratum is often dominated by non-native grass species, especially *Bothriochloa ischaemum* var. *songarica* (King Ranch bluestem). Some disturbed areas on hard-bedded limestone of the western plateau

are now dominated by mesquite woodland. Natural mesquite woodlands are believed to have occurred on the deeper soils of adjacent riparian systems.

ECOLOGICAL MAPPING SYSTEMS:**EDWARDS PLATEAU: ASHE JUNIPER MOTTE AND WOODLAND****Mapping System ID: 1101**

EMS Description: These relatively closed woodlands are very common on uplands on limestone in the Edwards Plateau and adjacent ecoregions. *Juniperus ashei* (Ashe juniper) is the clear dominant in the canopy and a conspicuous component of the shrub layer as well. *Juniperus virginiana* (eastern redcedar) may be present in the canopy to the northeast, while *Juniperus pinchotii* (redberry juniper) may be present to the west. Occurrences containing thick stands of juniper are sometimes referred to as “cedar breaks.” Some sites mapped as this type may actually be dominated by *Pinus remota* (paper-shell pinyon), though *Juniperus ashei* (Ashe juniper) or *Juniperus pinchotii* (redberry juniper) are often present in the canopy as well. Pinyon woodlands tend to occur on relatively xeric sites and have a sparse herbaceous layer with species such as *Bouteloua curtipendula* (sideoats grama), *Hilaria belangeri* (curlymesquite), *Erioneuron pilosum* (hairy tridens), and others. *Quercus fusiformis* (plateau live oak) is often a significant component in the canopy, and other species such as *Quercus buckleyi* (Texas oak), *Quercus sinuata* var. *breviloba* (white shin oak), *Quercus vaseyana* (Vasey shin oak), *Quercus laceyi* (Lacey oak), *Ulmus crassifolia* (cedar elm), and *Celtis* spp. (hackberry) may also be common. The shrub layer may be dense and dominated by *Juniperus ashei* (Ashe juniper), but *Mahonia trifoliolata* (agarito), *Diospyros texana* (Texas persimmon), *Prosopis glandulosa* (honey mesquite), and other species may be present. Dense canopy cover often leads to a sparse to nearly absent herbaceous layer, sometimes with only *Carex planostachys* (cedar sedge) present.

Distribution Map:



Example:



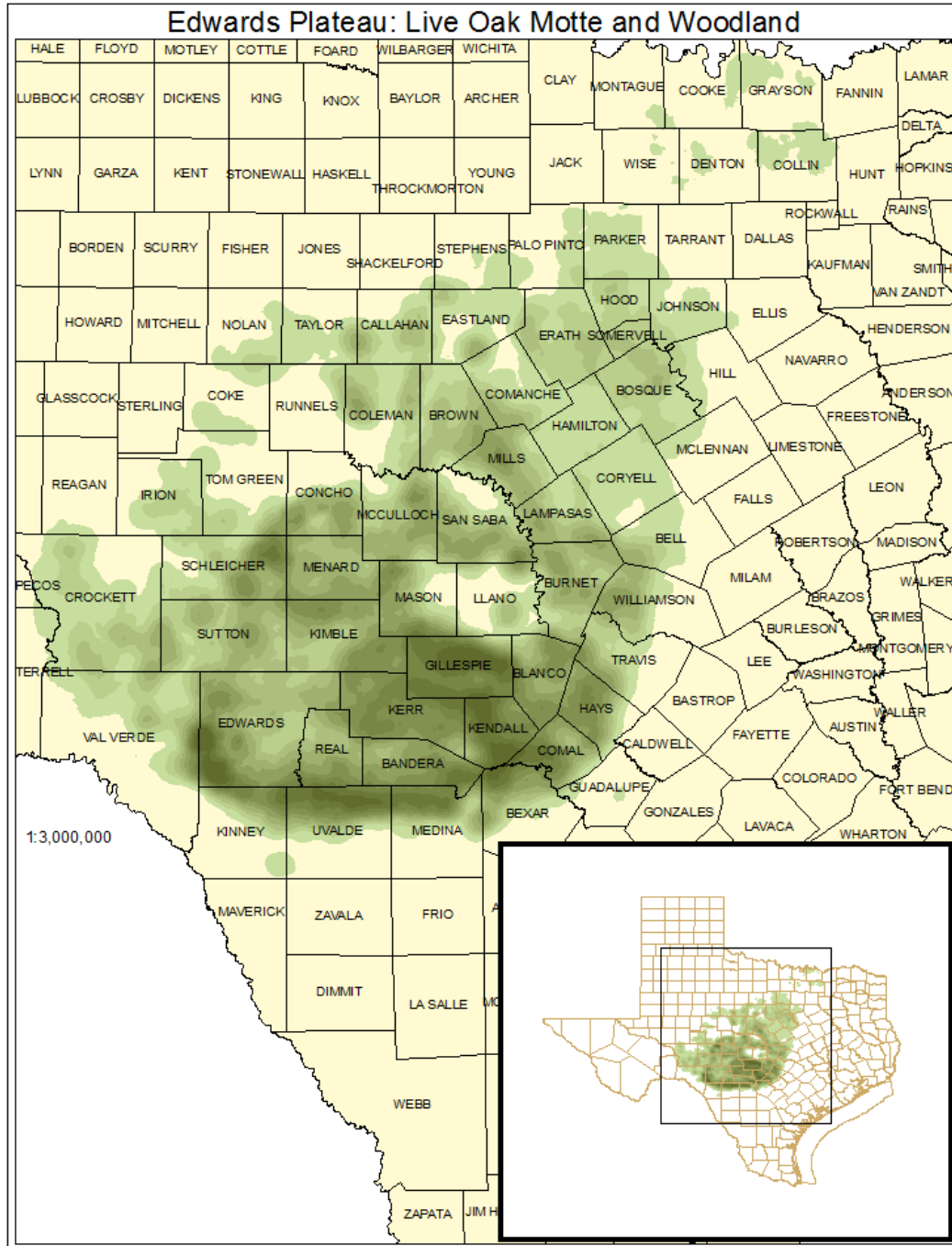
Public Land Occurrence:

- Abilene State Park: Texas Parks & Wildlife Department
- Amistad National Recreation Area: US National Park Service
- Balcones Canyonlands National Wildlife Refuge: U. S. Fish and Wildlife Service
- Barton Creek Habitat Preserve: The Nature Conservancy
- Colorado Bend State Park: Texas Parks & Wildlife Department
- Devil's River State Natural Area: Texas Parks & Wildlife Department
- Friedrich Wilderness Park: City of San Antonio
- Garner State Park: Texas Parks & Wildlife Department
- Government Canyon State Natural Area: Texas Parks & Wildlife Department
- Hill Country State Natural Area: Texas Parks & Wildlife Department
- Kerr Wildlife Management Area: Texas Parks & Wildlife Department Kickapoo
- Cavern State Park: Texas Parks & Wildlife Department
- Pedernales Falls State Park: Texas Parks & Wildlife Department
- Possum Kingdom State Park: Texas Parks & Wildlife Department
- Schnabel Park: City of San Antonio

EDWARDS PLATEAU: LIVE OAK MOTTE AND WOODLAND**Mapping System ID: 1102**

EMS Description: These relatively closed woodlands are common throughout the Edwards Plateau and adjacent ecoregions on limestone. *Quercus fusiformis* (plateau live oak) dominates the overstory, however other species such as *Quercus sinuata* var. *breviloba* (white shin oak), *Ulmus crassifolia* (cedar elm), *Quercus buckleyi* (Texas oak), *Celtis* spp. (hackberry), *Quercus laceyi* (Lacey oak), *Quercus stellata* (post oak), and *Quercus vaseyana* (Vasey shin oak) may also be present to common. *Juniperus ashei* (Ashe juniper) and/or *Juniperus pinchotii* (redberry juniper) may be present in the canopy and shrub layer, but are not typically dominant. The shrub layer is generally patchy and may include species such as *Diospyros texana* (Texas persimmon), *Prosopis glandulosa* (honey mesquite), *Mahonia trifoliolata* (agarito), *Opuntia engelmannii* (prickly pear), and *Opuntia leptocaulis* (tasajillo), as well as small individuals of the overstory species. Cover of the herbaceous layer may be high, but sparse if woody cover is high, with species including *Schizachyrium scoparium* (little bluestem), *Bouteloua* spp. (grama), *Nassella leucotricha* (Texas wintergrass), *Aristida* spp. (threeawn), and *Carex planostachys* (cedar sedge). Fires in this system tend to remove shrub species (especially *Juniperus ashei* (Ashe juniper)), but the overstory typically remains intact. Openings between mottes are typically grass dominated with the same species that occur as understory components in the woodlands.

Distribution Map:



Example:



Public Land Occurrence:

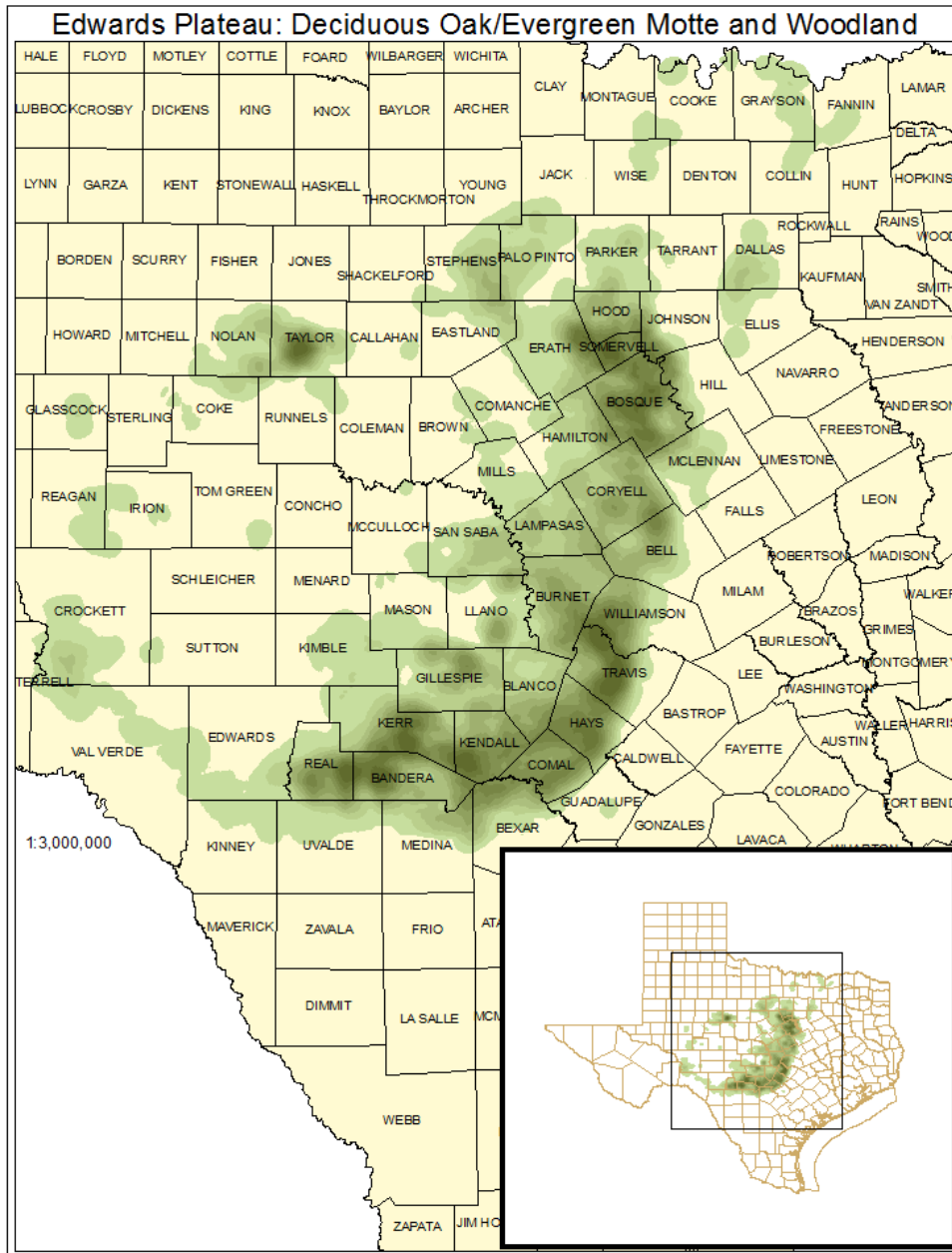
- Amistad National Recreation Area: US National Park Service
- Colorado Bend State Park: Texas Parks & Wildlife Department
- Devil's River State Natural Area: Texas Parks & Wildlife Department
- Devil's Sinkhole State Natural Area: Texas Parks & Wildlife Department
- Garner State Park: Texas Parks & Wildlife Department
- Government Canyon State Natural Area: Texas Parks & Wildlife Department
- Guadalupe River State Park: Texas Parks & Wildlife Department
- Hill Country State Natural Area: Texas Parks & Wildlife Department
- Honey Creek State Natural Area: Texas Parks & Wildlife Department
- Kerr Wildlife Management Area: Texas Parks & Wildlife Department
- Kickapoo Cavern State Park: Texas Parks & Wildlife Department
- Mason Mountain Wildlife Management Area: Texas Parks & Wildlife Department
- Pedernales Falls State Park: Texas Parks & Wildlife Department

EDWARDS PLATEAU: DECIDUOUS OAK / EVERGREEN MOTTE AND WOODLAND

Mapping System ID: 1103

EMS Description: These woodlands are intermediate between those strongly dominated by the evergreen components *Juniperus ashei* (Ashe juniper) and *Quercus fusiformis* (plateau live oak) and those dominated by deciduous components, particularly oaks such as *Quercus buckleyi* (Texas Oak), *Quercus sinuata* var. *breviloba* (white shin oak), and *Quercus laceyi* (Lacey oak). Other deciduous overstory species that may be present include *Ulmus crassifolia* (cedar elm) and *Celtis* sp. (hackberry). The understory of these sites is similar to that of the related woodlands with shrub species such as *Diospyros texana* (Texas persimmon), *Mahonia trifoliolata* (agarito), *Sophora secundiflora* (Texas mountain-laurel), *Prosopis glandulosa* (honey mesquite), and *Opuntia engelmannii* (prickly pear), and relatively sparse herbaceous layer typically dominated by graminoid species common to the surrounding upland sites such as *Bothriochloa ischaemum* var. *songarica* (King Ranch bluestem), *Schizachyrium scoparium* (little bluestem), *Bothriochloa laguroides* ssp. *torreyana* (silver bluestem), *Dichanthelium* sp. (rosette grass), *Bouteloua* sp. (grama), *Nassella leucotricha* (Texas wintergrass) and others.

Distribution Map:



Example:



Public Land Occurrence:

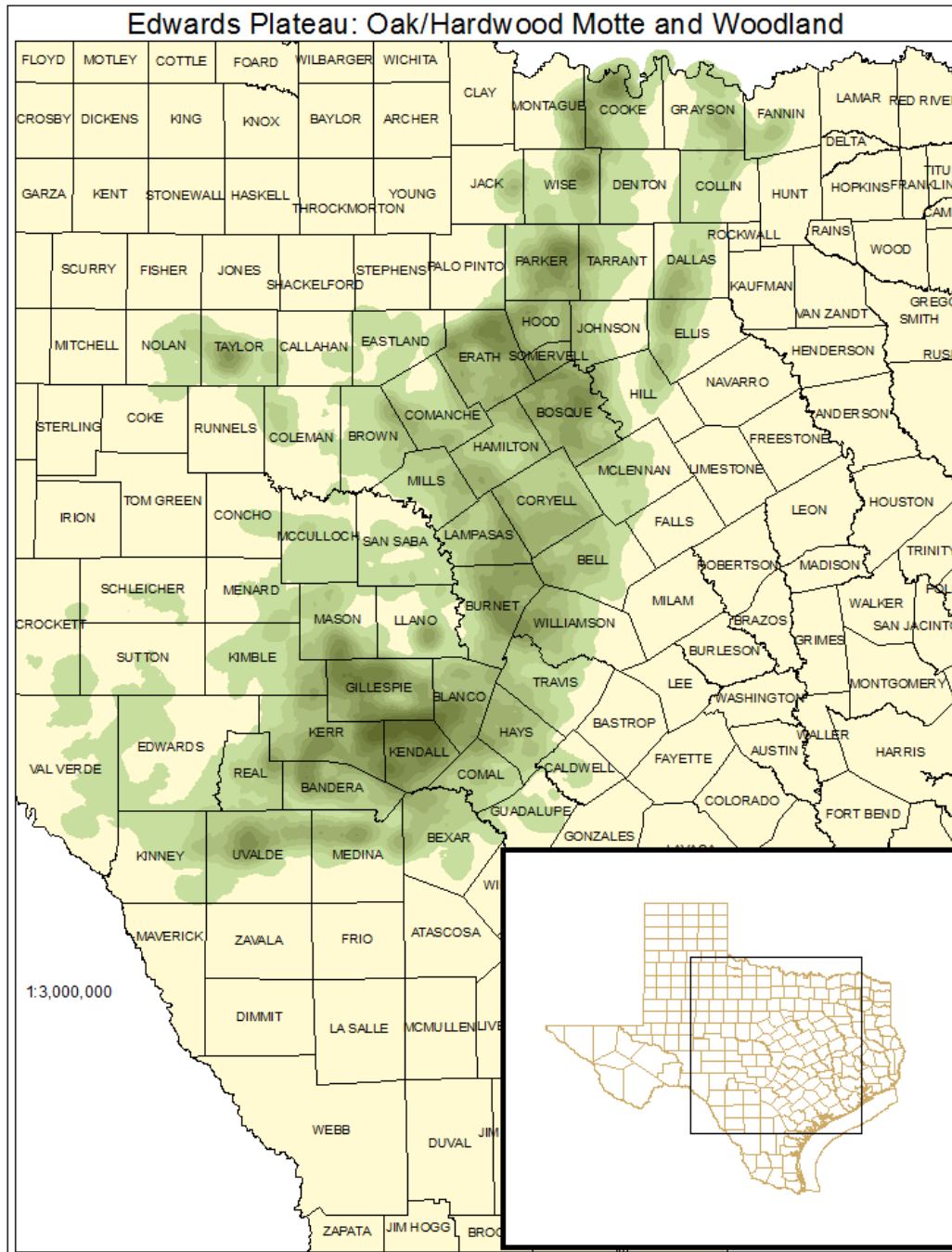
- Abilene State Park: Texas Parks & Wildlife Department
- Amistad National Recreation Area: US National Park Service
- Balcones Canyonland National Wildlife Refuge: U. S. Fish and Wildlife Service
- Barton Creek Greenbelt: City of Austin
- Barton Creek Habitat Preserve: The Nature Conservancy
- Devil's River State Natural Area: Texas Parks & Wildlife Department
- Dinosaur Valley State Park: Texas Parks & Wildlife Department
- Friedrich Wilderness Park: City of San Antonio
- Government Canyon State Natural Area: Texas Parks & Wildlife Department
- Guadalupe River State Park: Texas Parks & Wildlife Department
- Honey Creek State Natural Area: Texas Parks & Wildlife Department
- Kickapoo Cavern State Park: Texas Parks & Wildlife Department
- McAllister Park: City of San Antonio
- Meridian State Park: Texas Parks & Wildlife Department
- Olmos Basin Park: City of San Antonio
- Pedernales Falls State Park: Texas Parks & Wildlife Department

EDWARDS PLATEAU: OAK / HARDWOOD MOTTE AND WOODLAND

Mapping System ID: 1104

EMS Description: While *Quercus buckleyi* (Texas oak), *Celtis* spp. (hackberries), and *Ulmus crassifolia* (cedar elm) are significant elements of the canopy of nearby slope forests and woodlands, they may also dominate upland sites. Other deciduous species, such as *Quercus sinuata* var. *breviloba* (white shin oak), *Celtis laevigata* (sugar hackberry), *Prosopis glandulosa* (mesquite), and *Quercus stellata* (post oak), may also occupy the canopy, with lesser amounts of evergreen components, such as *Quercus fusiformis* (live oak) and *Juniperus ashei* (Ashe juniper), present. These sites with dominant deciduous canopies on upland Ecological Sites (such as Low Stony Hill, Shallow, and Adobe) are less commonly encountered than woodlands dominated by some mix of an evergreen canopy.

Distribution Map:



Example:



Public Land Occurrence:

Abilene State Park: Texas Parks & Wildlife Department

Amistad National Recreation Area: US National Park Service

Balcones Canyonlands National Wildlife Refuge: U. S. Fish and Wildlife Service Belton Lake Recreation Area: US Army Corps of Engineers

Devil's River State Natural Area: Texas Parks & Wildlife Department Friedrich Wilderness Park: City of San Antonio

Garner State Park: Texas Parks & Wildlife Department

Government Canyon State Natural Area

Kerr Wildlife Management Area: Texas Parks & Wildlife Department Kickapoo Cavern State Park: Texas Parks & Wildlife Department

Mason Mountain Wildlife Management Area: Texas Parks & Wildlife Department

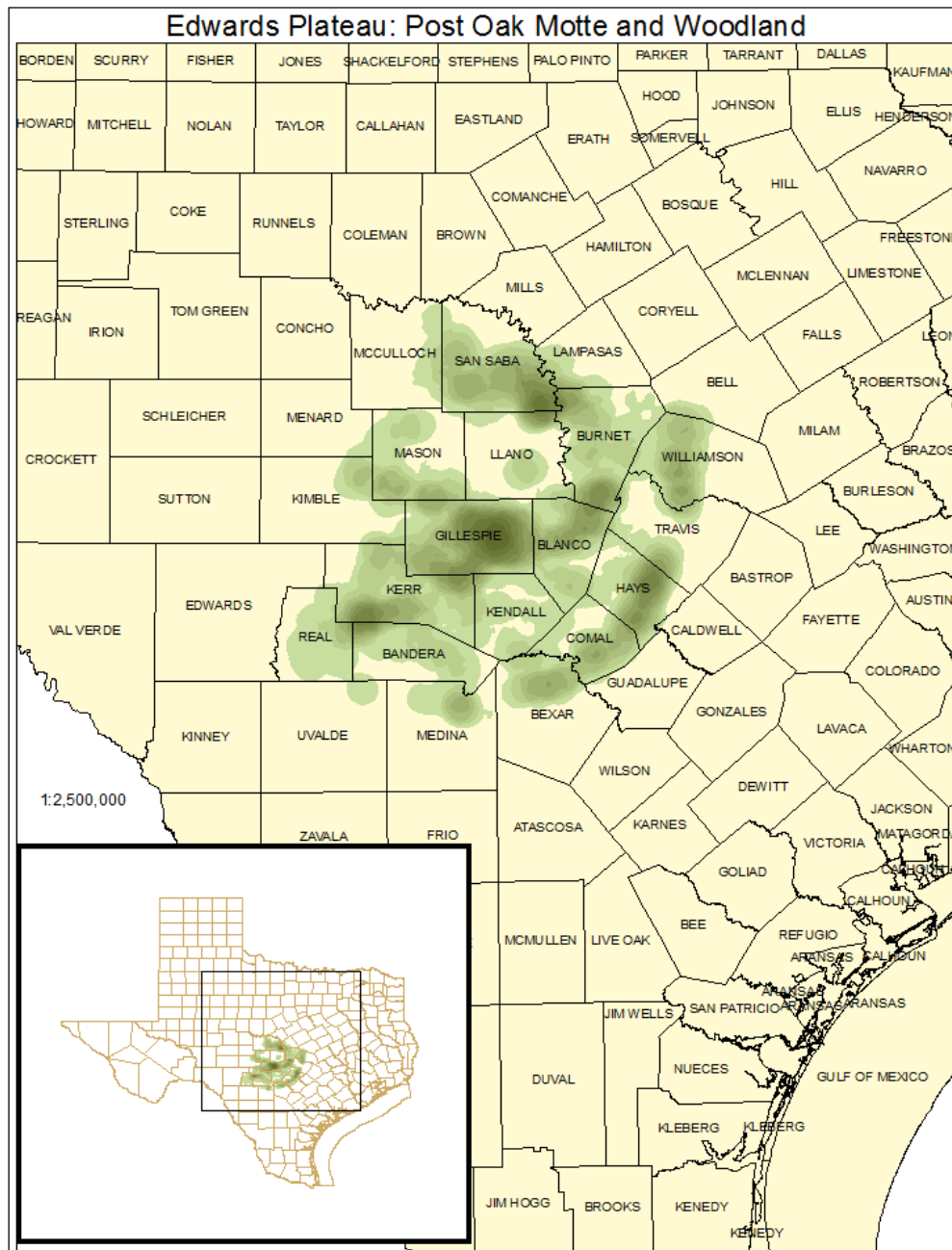
McAllister Park: City of San Antonio

Stillhouse Hollow Lake Recreation Area: US Army Corps of Engineers

EDWARDS PLATEAU: POST OAK MOTTE AND WOODLAND**Mapping System ID:** 1114

EMS Description: These woodlands and mottes tend to occur on Redland Ecological Sites, but may also be found on sandy benches. On the Edwards Plateau, Redland sites are often associated with cherty or siliceous members of limestone formations such as Edwards Limestone, Tanyard, Gorman, and Honeycut Formations. Sandy Cretaceous formations (such as Hensell Sand) may also harbor this vegetation type. These situations provide slightly more acidic conditions relative to the surrounding landscape. The overstory tends to be open and dominated by *Quercus stellata* (post oak), though *Quercus marilandica* (blackjack oak), *Quercus fusiformis* (plateau live oak), *Ulmus crassifolia* (cedar elm), *Juniperus ashei* (Ashe juniper), and *Quercus buckleyi* (Texas oak) may also be present. The shrub layer is patchy and may contain small individuals of the canopy species as well as other species. The herbaceous layer is often dominated by *Schizachyrium scoparium* (little bluestem), *Nassella leucotricha* (Texas wintergrass), *Bouteloua curtipendula* (sideoats grama), and other species, but may be dominated by the non-native *Bothriochloa ischaemum* var. *songarica* (King Ranch bluestem). In areas of transition to the Crosstimbers (such as in the Limestone Cut Plain and Carbonate Cross Timbers), it may be difficult to distinguish this system from Crosstimbers Oak Forest and Woodland.

Distribution Map:



Example:



Public Land Occurrence:

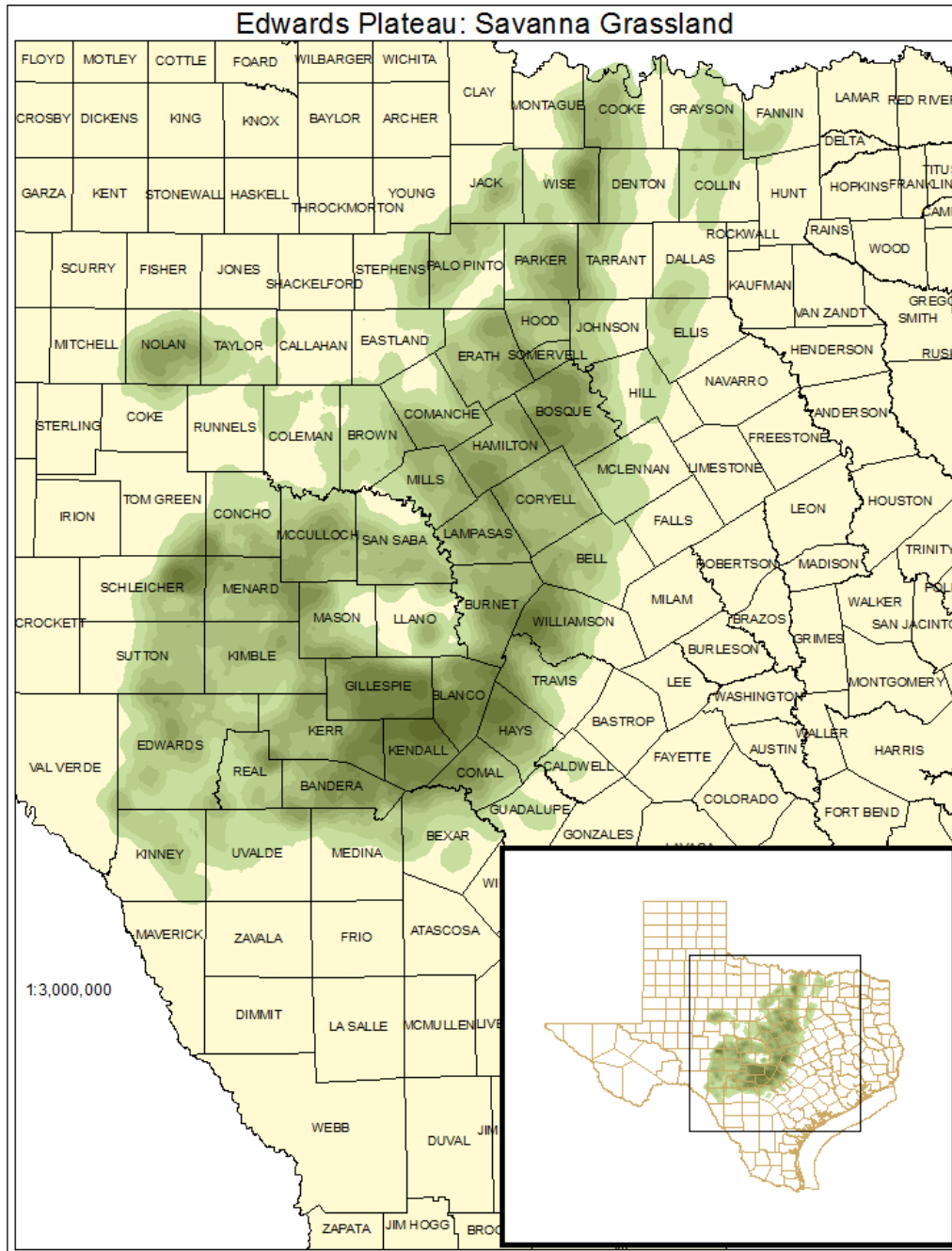
- Balcones Canyonlands National Wildlife Refuge: U. S. Fish and Wildlife Service
- Colorado Bend State Park: Texas Parks & Wildlife Department
- Honey Creek State Natural Area: Texas Parks & Wildlife Department
- Kerr Wildlife Management Area: Texas Parks & Wildlife Department
- Mason Mountain Wildlife Management Area: Texas Parks & Wildlife Department
- Pedernales Falls State Park: Texas Parks & Wildlife Department

EDWARDS PLATEAU: SAVANNA GRASSLAND

Mapping System ID: 1107

EMS Description: Uplands of the Edwards Plateau are frequently described as a mosaic of woodlands, shrublands, and grasslands. Areas with reduced woody cover may occupy sites of considerable size, depending on the land use history, management, and fire history. While these sites have sometimes been referred to as prairies, they are more appropriately considered a part of the savanna mosaic. Grasslands in areas transitioning to regions with a prairie matrix (such as the northwestern transitions to shortgrass prairie, northern transitions to mixedgrass prairie, and northeastern and eastern transitions to tallgrass prairie), may closely resemble and be difficult to distinguish from these prairie types. *Schizachyrium scoparium* (little bluestem), *Aristida purpurea* (purple threeawn), *Nassella leucotricha* (Texas wintergrass), and *Bouteloua curtipendula* (sideoats grama) are common dominants on these sites, but *Bothriochloa ischaemum* var. *songarica* (King Ranch bluestem) and/or *Cynodon dactylon* (bermudagrass) frequently dominate or are significant components. Numerous other grass species, including *Aristida* sp. (threeawn), *Bothriochloa barbinodis* (cane bluestem), *Bothriochloa laguroides* ssp. *torreyana* (silver bluestem), *Sorghastrum nutans* (Indiangrass), *Bouteloua hirsuta* var. *pectinata* (tall grama), *Bouteloua trifida* (red grama), *Bouteloua rigidiseta* (Texas grama), *Bouteloua hirsuta* (hairy grama), *Erioneuron pilosum* (fluffgrass), *Hilaria belangeri* (curly mesquite), and many others may be present or dominate these sites. Open, gentle slopes underlain by Glen Rose Limestone often maintain grasslands that are often dominated by *Bouteloua pectinata* (tall grama) and *Muhlenbergia reverchonii* (seep muhly). Sites under heavy, continuous grazing, or sites with thin or xeric soils tend to be dominated by shortgrass species such as *Bouteloua dactyloides* (buffalograss), *Hilaria belangeri* (curly mesquite), or *Erioneuron pilosum* (fluffgrass). Numerous forb species are also present in the herbaceous layer. Woody cover constitutes less than 25% of the canopy and is made up of various species including, but not limited to, *Prosopis glandulosa* (mesquite), *Juniperus ashei* (Ashe juniper), *Mahonia trifoliolata* (agarito), *Quercus sinuata* var. *breviloba* (white shin oak), *Quercus fusiformis* (plateau live oak), *Diospyros texana* (Texas persimmon), *Ziziphus obtusifolia* (lotebush), and/or *Sophora secundiflora* (Texas mountain-laurel).

Distribution Map:



Example:



Public Land Occurrence:

Abilene State Park: Texas Parks & Wildlife Department
Balcones Canyonlands National Wildlife Refuge: U. S. Fish and Wildlife Service
Fort Richardson State Park and Historical Site: Texas Parks & Wildlife Department
Garner State Park: Texas Parks & Wildlife Department
Government Canyon State Natural Area: Texas Parks & Wildlife Department
Guadalupe River State Park: Texas Parks & Wildlife Department
Hill Country State Natural Area: Texas Parks & Wildlife Department
Honey Creek State Natural Area: Texas Parks & Wildlife Department
Kerr Wildlife Management Area: Texas Parks & Wildlife Department
Kickapoo Cavern State Park: Texas Parks & Wildlife Department
Mason Mountain Wildlife Management Area: Texas Parks & Wildlife Department
Possum Kingdom State Park: Texas Parks & Wildlife Department