

Chapter 1 : Tropical Rainforest Plants List, Information, Pictures & Facts

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Central Texas section is central Texas. It extends northward from the Mexican boundary far into Canada. The semi-arid climate excludes tree growth and opens far-reaching views. They are of diverse structure and of various stages of erosional development. They are occasionally interrupted by buttes and escarpments. They are frequently broken by valleys. Yet on the whole, a broadly extended surface of moderate relief so often prevails that the name, Great Plains, for the region as a whole is well-deserved. The eastern boundary of the plains is more climatic than topographic. The line of 20 in. If a boundary must be drawn where nature presents only a gradual transition, this rainfall line may be taken to divide the drier plains from the moister prairies. The plains may be described in northern, intermediate, central and southern sections, in relation to certain peculiar features. The strata here are Cretaceous or early Tertiary, lying nearly horizontal. The surface is shown to be a plain of degradation by a gradual ascent here and there to the crest of a ragged escarpment, the escarpment-remnant of a resistant stratum. All these reliefs are more plentiful towards the mountains in central Montana. The peneplain is no longer in the cycle of erosion that witnessed its production. It appears to have suffered a regional uplift or increase in elevation, for the upper Missouri River and its branches no longer flow on the surface of the plain, but in well graded, maturely opened valleys, several hundred feet below the general level. This peculiar feature is explained as the result of displacement of the river from a better graded preglacial valley by the Pleistocene ice sheet. Here, the ice sheet overspread the plains from the moderately elevated Canadian highlands far on the north-east, instead of from the much higher mountains near by on the west. The Black Hills, chiefly in western South Dakota, are the largest group. The weaker uppermost strata have been eroded down to the level of the plains where their upturned edges are evenly truncated. The next following harder strata have been sufficiently eroded to disclose the core of underlying igneous and metamorphic crystalline rocks in about half of the domed area. Known as the Badlands, it is a minutely dissected form with a relief of a few hundred feet. This is due to several causes: That is, this section was once smoothly covered with a gently sloping plain of gravel and sand that had been spread far forward on a broad denuded area as a piedmont deposit by the rivers which issued from the mountains. Since then, it has been more or less dissected by the erosion of valleys. The central section of the plains thus presents a marked contrast to the northern section. While the northern section owes its smoothness to the removal of local gravels and sands from a formerly uneven surface by the action of degrading rivers and their inflowing tributaries, the southern section owes its smoothness to the deposition of imported gravels and sands upon a previously uneven surface by the action of aggrading rivers and their outgoing distributaries. The two sections are also alike in that residual eminences still here and there surmount the peneplain of the northern section, while the fluvial plain of the central section completely buried the pre-existent relief. Exception to this statement must be made in the southwest, close to the mountains in southern Colorado, where some lava-capped mesas Mesa de Maya, Raton Mesa stand several thousand feet above the general plain level, and thus testify to the widespread erosion of this region before it was aggraded. Like the central section, it is for the most part a dissected fluvial plain. However, the lower lands which surround it on all sides place it in so strong relief that it stands up as a table-land, known from the time of Mexican occupation as the Llano Estacado. It is of very irregular outline, narrowing to the south. Like the High Plains farther north, it is extraordinarily smooth. The Llano is separated from the plains on the north by the mature consequent valley of the Canadian River, and from the mountains on the west by the broad and probably mature valley of the Pecos River. There, between the Brazos and Colorado rivers, occurs a series of isolated outliers capped by a limestone which underlies both the Llano Uplift on the west and the Grand Prairies escarpment on the east. The southern and narrow part of the table-land, called the Edwards Plateau, is more dissected than the rest, and falls off to the south in a frayed-out fault scarp. This scarp overlooks the coastal plain of the Rio Grande embayment. The central denuded area, east of the Llano, resembles the east-central section of the plains in exposing older rocks. Between these two similar areas, in the space limited by the Canadian and Red Rivers, rise the subdued

forms of the Wichita Mountains in Oklahoma , the westernmost member of the Ouachita system. However, during the Late Cretaceous to the Paleocene 65â€”55 million years ago , the seaway had begun to recede, leaving behind thick marine deposits and a relatively flat terrain which the seaway had once occupied. During the Cenozoic era, specifically about 25 million years ago during the Miocene and Pliocene epochs, the continental climate became favorable to the evolution of grasslands. Existing forest biomes declined and grasslands became much more widespread. The grasslands provided a new niche for mammals, including many ungulates and glires , that switched from browsing diets to grazing diets. Traditionally, the spread of grasslands and the development of grazers have been strongly linked. However, an examination of mammalian teeth suggests that it is the open, gritty habitat and not the grass itself which is linked to diet changes in mammals, giving rise to the "grit, not grass" hypothesis. The vast majority of these animals became extinct in North America at the end of the Pleistocene around 13, years ago. Wind speeds are often very high, especially in winter. Grasslands are among the least protected biomes. The Great Plains have dust storms mostly every year or so. In this context, the High Plains, as well as Southern Alberta , south-western Saskatchewan and Eastern Montana are mainly semi arid steppe land and are generally characterised by rangeland or marginal farmland. The region especially the High Plains is periodically subjected to extended periods of drought ; high winds in the region may then generate devastating dust storms. The eastern Great Plains near the eastern boundary falls in the humid subtropical climate zone in the southern areas, and the northern and central areas fall in the humid continental climate. Many thunderstorms occur in the plains in the spring through summer. The southeastern portion of the Great Plains is the most tornado active area in the world and is sometimes referred to as Tornado Alley.

Chapter 2 : Frontier Planes, Fleet and Seat Maps

*A Tropical Plains Frontier: The Llanos of Colombia, [Jane M Rausch] on calendrierdelascience.com *FREE* shipping on qualifying offers.*

It is a deep-rooted summergrowing perennial with drought resistance and tolerance to heavy grazing. Buffel responds quickly to rainfall and prefers higher fertility scrub soils however will grow on a range of soil types. Generally not tolerant to waterlogging or flooding conditions, Buffel grass is high in oxalate. It establishes readily in heavy soil types and is preferred in heavy-suckering country. It is adapted to a wide range of soil types and has good stock acceptance. It is suitable for lighter textured, well-drained soils. Suited to a range of soil types, Bisset is finer in the stem, later maturing and more stoloniferous than Hatch. Creeping Bluegrass can be slower to establish than other grasses. It forms large tussocks and will compete with weeds like Lippia once established. Floren Bluegrass is highly palatable. It will establish in low fertility soils, and has a vigorous and dense mat forming growth habit that responds well to fertiliser. It withstands heavy grazing with minimum weed invasion, but this density makes it incompatible with twinning-type legumes. Minimum mm rainfall regions. It is tolerant to low pH and high exchangeable aluminium in soils and requires intensive grazing management to maintain feed quality. It will tolerate saline soils, frost, flooding, waterlogging and drought conditions. It has deep fibrous root systems and tolerates heavy black clays and melon hole country. Gatton Panic is very palatable and is regarded as being a more vigorous, drought tolerant, tougher species than Green Panic. Suited to sub-tropical areas with fertile, well-drained soils, it has good shade tolerance. It looks similar to Green Panic except it has broader, greener leaves. It grows in a wide range of soil types, but is best suited to high fertility soils. It responds well to moisture and fertiliser and has good grazing tolerance, with quick return after grazing. It grows well under shady conditions, enabling it to tolerate weedy infestations. Once weeds are controlled, it allows a strong sward of *Wettsteinii* to establish. This tolerance to shade is utilised in both pastures and parklands, where it is often difficult to establish other species of grasses under trees. Well adapted to inland environments with low rainfall and winter frosts, Premier Digit Grass will grow on a wide range of soils from sands, scrub and medium clay, where its open sward makes it easy to co-exist with legumes. Premier has good drought, fire and cold tolerance and its foliage is low in oxalate, making it suitable for horses. It is highly suited to companion legumes such as Siratro, Burgundy Bean and Glycine. Grown extensively in the coastal regions of Queensland and northern New South Wales, Callide responds well to both moisture and fertiliser. It displays greater drought tolerance and the ability to grow on lower fertility soils such as spear grass country. Katambora will cope with a wider variation in soil and moisture conditions than other varieties and will cope with periodic waterlogging, making it a useful variety in heavy Gilgai country where it competes aggressively with weeds. Splenda is very palatable to stock and the stems are readily grazed up to, and after, flowering. After grazing, stem nodes may sprout aerial tillers and these may root and establish if the stems are trampled into the soil. Splenda may be heavily grazed without the risk of plant death. Suited to most soil types, it is relatively frost tolerant and is very tolerant of water-logging. This perennial has an aggressive stoloniferous root system and long trailing stems, which will readily root down at the nodes. It will tolerate a wide range of soil types and is best suited to humid tropical regions with a rainfall above mm. *Urochloa* responds well to rainfall and grows in a range of well-drained soil types. It is highly productive across a range of soil types. It also benefits from a degree of cold tolerance for western regions. Suitable for grazing or hay production, it displays good drought, grazing and cold tolerance. B1 Burgundy establishes easily and also performs very well in combination with selected grasses. Siran and Amiga Siran.

The strength of this monograph is evident in its solid documentation of three hundred years of Spanish and creole settlement in the tropical plains (llanos) frontier of Colombia, which extends east from the Andean cordillera into the greater llanos of Venezuela.

Daniel Boone escorting settlers through the Cumberland Gap In the colonial era, before , the west was of high priority for settlers and politicians. The American frontier began when Jamestown , Virginia was settled by the English in . In the earliest days of European settlement of the Atlantic coast, until about , the frontier was essentially any part of the interior of the continent beyond the fringe of existing settlements along the Atlantic coast. Only a few thousand French migrated to Canada; these habitants settled in villages along the St. Lawrence River , building communities that remained stable for long stretches; they did not simply jump west the way the British did. Although French fur traders ranged widely through the Great Lakes and mid-west region they seldom settled down. French settlement was limited to a few very small villages such as Kaskaskia, Illinois [8] as well as a larger settlement around New Orleans. Likewise, the Dutch set up fur trading posts in the Hudson River valley, followed by large grants of land to rich landowning patroons who brought in tenant farmers who created compact, permanent villages. They created a dense rural settlement in upstate New York, but they did not push westward. These areas remained primarily in subsistence agriculture, and as a result by the s these societies were highly egalitarian, as explained by historian Jackson Turner Main: The typical frontier society therefore was one in which class distinctions were minimized. The wealthy speculator, if one was involved, usually remained at home, so that ordinarily no one of wealth was a resident. The class of landless poor was small. The great majority were landowners, most of whom were also poor because they were starting with little property and had not yet cleared much land nor had they acquired the farm tools and animals which would one day make them prosperous. Few artisans settled on the frontier except for those who practiced a trade to supplement their primary occupation of farming. There might be a storekeeper, a minister, and perhaps a doctor; and there were a number of landless laborers. All the rest were farmers. North Carolina was representative. However frontier areas of that had good river connections were increasingly transformed into plantation agriculture. Rich men came in, bought up the good land, and worked it with slaves. The area was no longer "frontier". It had a stratified society comprising a powerful upper-class white landowning gentry, a small middle-class, a fairly large group of landless or tenant white farmers, and a growing slave population at the bottom of the social pyramid. Unlike the North, where small towns and even cities were common, the South was overwhelmingly rural. Land ownership brought a degree of independence as well as a vote for local and provincial offices. The typical New England settlements were quite compact and small—under a square mile. Conflict with the Native Americans arose out of political issues, namely who would rule. In the peace treaty of , France lost practically everything, as the lands west of the Mississippi river, in addition to Florida and New Orleans, went to Spain. Otherwise lands east of the Mississippi River and what is now Canada went to Britain. Steady migration to frontier lands[edit] Regardless of wars Americans were moving across the Appalachians into western Pennsylvania, what is now West Virginia, and areas of the Ohio Country , Kentucky and Tennessee. West of the mountains, settlements were curtailed briefly by a decree by the Royal Proclamation of . However the Treaty of Fort Stanwix re-opened most of the western lands for frontiersmen to settle. Pioneers housed themselves in a rough lean-to or at most a one-room log cabin. The main food supply at first came from hunting deer, turkeys, and other abundant game. Clad in typical frontier garb, leather breeches, moccasins, fur cap, and hunting shirt, and girded by a belt from which hung a hunting knife and a shot pouch—“all homemade”—the pioneer presented a unique appearance. In a short time he opened in the woods a patch, or clearing, on which he grew corn, wheat, flax, tobacco, and other products, even fruit. Homespun clothing replaced the animal skins. Land policy[edit] The land policy of the new nation was conservative, paying special attention to the needs of the settled East. By the s, however, the West was filling up with squatters who had no legal deed, although they may have paid money to previous settlers. The Jacksonian Democrats favored the squatters by promising rapid access to cheap land. By contrast, Henry Clay

was alarmed at the "lawless rabble" heading West who were undermining the utopian concept of a law-abiding, stable middle-class republican community. Rich southerners, meanwhile, looked for opportunities to buy high-quality land to set up slave plantations. The Free Soil movement of the s called for low-cost land for free white farmers, a position enacted into law by the new Republican Party in , offering free acre 65 ha homesteads to all adults, male and female, black and white, native-born or immigrant. Map of the Wilderness Road by After winning the Revolutionary War , American settlers in large numbers poured into the west. In , American pioneers to the Northwest Territory established Marietta, Ohio as the first permanent American settlement in the Northwest Territory. It was later lengthened to reach the Falls of the Ohio at Louisville. The Wilderness Road was steep and rough, and it could only be traversed on foot or horseback, but it was the best route for thousands of settlers moving into Kentucky. In alone, Indians killed over travelers on the Wilderness Road. No Indians lived permanently in Kentucky [24] but they sent raiding parties to stop the newcomers. Johnson , who later became Vice president The War of marked the final confrontation between major Indian forces trying to stop the advance, with British aid. The British war goal included the creation of an independent Indian state under British auspices in the Midwest. The death in battle of the Indian leader Tecumseh dissolved the coalition of hostile Indian tribes. In general the frontiersmen battled the Indians with little help from the U. Army or the federal government. They rejected the British plan to set up an Indian state in U. They explained the American policy toward acquisition of Indian lands: The United States, while intending never to acquire lands from the Indians otherwise than peaceably, and with their free consent, are fully determined, in that manner, progressively, and in proportion as their growing population may require, to reclaim from the state of nature, and to bring into cultivation every portion of the territory contained within their acknowledged boundaries. In thus providing for the support of millions of civilized beings, they will not violate any dictate of justice or of humanity; for they will not only give to the few thousand savages scattered over that territory an ample equivalent for any right they may surrender, but will always leave them the possession of lands more than they can cultivate, and more than adequate to their subsistence, comfort, and enjoyment, by cultivation. If this be a spirit of aggrandizement, the undersigned are prepared to admit, in that sense, its existence; but they must deny that it affords the slightest proof of an intention not to respect the boundaries between them and European nations, or of a desire to encroach upon the territories of Great Britain. Then when population reached , the territory applied for statehood. Louis, Missouri was the largest town on the frontier, the gateway for travel westward, and a principal trading center for Mississippi River traffic and inland commerce but remained under Spanish control until The Louisiana Purchase of [edit] Thomas Jefferson thought of himself as a man of the frontier and was keenly interested in expanding and exploring the West. Between and the s, the federal government purchased the actual land from the Indian tribes then in possession of it. Additional sums were paid to the Indians living east of the Mississippi for their lands, as well as payments to Indians living in parts of the west outside the Louisiana Purchase. He charged Lewis and Clark to "explore the Missouri River, and such principal stream of it, as, by its course and communication with the waters of the Pacific Ocean; whether the Columbia, Oregon, Colorado or any other river may offer the most direct and practicable communication across the continent for the purposes of commerce". By , Astor had taken over independent traders to create a profitable monopoly; he left the business as a multi-millionaire in

Chapter 4 : Settling the Western Frontier

This includes mountains, plains, and river valleys. The amount of rainfall that each gets as well as the temperatures there are the main differences. There is also a big difference regarding the types of plants and animals that live there.

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streams and rivers and their catchments Likens and Bormann , Hynes , Weins and understanding the influence of land use practices on aquatic ecosystem structure and function often depends on the spatial scale of the analysis. Regional conditions such as geomorphology, soils, topography, and land use land cover change can influence nutrient supply, sediment delivery, hydrology, and channel characteristics. Local riparian conditions such as vegetation cover can exert control over in stream habitat structure and organic matter input Allan et al. Although extensive literature exists linking human land use practices and aquatic ecosystem structure and function in temperate watersheds, studies incorporating both terrestrial and aquatic ecosystems in tropical regions are exceedingly rare Allan et al. Increased awareness of this connectivity has added to the value of a watershed scale perspective for conservation initiatives in Belize Nunny et al. Most of these rivers originate as high gradient, relatively low pH streams within granite and metamorphic rock catchments, traverse PAGE 17 limestone dominated landscapes, build up alluvial plains and wetlands, and ultimately discharge into the inner channel or shelf lagoon that separates the coast from the barrier reef. The Rio Hondo forming the northern border of Belize and New River, originate in karst hills, drain the low relief limestone landscape of northern Belize and discharge into Chetumal Bay, which in turn discharges into the inner channel. The headwaters of the Temash River begin in Guatemala and flow eastward across the southern Toledo district. The Sarstoon River demarcating the southern border of Belize originates in Guatemala, within the mountain range and foothills of the Sierra de Santa Cruz Esselman and Boles , Esselman et al. Many of the freshwater wetlands occur in northern Belize and contain large complexes of lentic still water habitats including swamp forests, herbaceous marshes and open water areas Esselman and Boles Of the many freshwater wetlands in Belize, two have been internationally recognized as RAMSAR sites including Crooked Tree Lagoon and a Sphagnum bog within the boundaries of the Sarstoon Temash National Park. A few karst, sink hole lakes are found in the country, with Five Blues Lake in the Cayo District being the most notable. Although recognized as a significant component of the freshwater resources of Belize, groundwater resources remain almost completely unstudied ERMA Research on freshwater biodiversity and the ecology of aquatic organisms is limited in Belize. Significant works on aquatic macroinvertebrates have been conducted in the Belize River Gonzalez and the Sibun River Boles Both studies provide descriptive information on the community of aquatic macroinvertebrates in PAGE 18 these two watersheds and serve as important reference documents for future monitoring efforts. The ecology and distribution of tropical disease carrying mosquitoes has also received significant research attention. Mosquitoes of the genus Anopheles known malaria vectors were observed to have a strong habitat preference within 1 km of rivers Roberts et al. Freshwater Fishes of the Continental Waters of Belize Greenfield and Thomerson is the definitive work on freshwater fishes, and includes taxonomic keys importance of longitudinal connectivity and geology to native fish fauna has been documented in the Monkey River watershed Esselman et al. Chapter 2 addresses LULCC impacts at the scale of the riparian zone and presents results from a study utilizing a rapid impact PAGE 19 assessment technique to estimate potential stresses on aquatic ecosystems stemming from riparian land uses. Chapter 3 takes a closer look at riparian zone land use and Maya of southern Belize and their utilization of riparian zones for corn cultivation during the dry season. This chapter compares and contrasts traditional slash and burn agriculture with the slash and mulch agriculture that is practiced within riparian zones of the Temash River watershed and also discusses impacts related to an increased use of pesticides within these slash and mulch fields. Chapter 4 examines LULCC at the watershed scale in the Temash and focuses on soil nutrient dynamics across a chronosequence of active and abandoned agricultural fields, pasture, small holder cacao plantations, and mature forest. Chapter 5 examines the spatial and temporal variability of in stream nutrients in four small watersheds within the Temash River watershed. Land use within these catchments is primarily slash and burn and the discussion focuses on the relationship between nutrients, land use practices, and abiotic variables such as soil characteristics and basement geology. PAGE 20 Table 1.1. Principal mechanisms by which land use influences stream ecosystems modified from Allan Environmental Stressor Effects Sedimentation turbidity, scouring, abrasion primary production, depth heterogeneity of stream Nutrient enrichment autotrophic production, favorable conditions for filamentous algae, litter breakdown rates dissolved oxygen; species shift from sensitive to tolerant species Contaminant pollution heavy metals and

toxic organic substances resulting in deformities and mortality growth and reproduction rates and survival among fishes Hydrologic alteration Alters runoff evapotranspiration balance vulnerability to erosion; potential for transport of nutrients, sediments and contaminants Riparian clearing light penetration and water temperature bank stability, litter and woody debris inputs and retention of nutrients and sediments Alters quantity and quality of organic matter Table 1 2. Sixteen major watersheds of Belize, drainage areas and underlying geologies. Riparian forests maintain bank stability and serve as buffers against excess sediment and nutrient transport across the terrestrial aquatic interface. Vegetation in riparian zones regulates in stream temperatures and provides organic matter that is essential for aquatic food webs. Riparian forests also exert control on the hydrologic balance in watersheds by influencing runoff, subsurface water storage, and evapotranspiration. In addition, riparian forests contain biological communities that are adapted to disturbance regimes associated with hydrologic events. They are also key components for maintaining biological connectivity across the landscape. Together with aesthetic and cultural values related to water quality, reduced flood damage, and recreation, riparian forests are important target habitats in a conservation portfolio Naiman and Decamps, Naiman et al. Patterns of land use and land cover change at the catchment scale influence nutrient supply, sediment delivery, hydrology and geomorphic characteristics. Local riparian conditions such as vegetation cover can exert control over in stream habitat structure and organic matter input. In addition to spatial controls on freshwater ecosystems, the legacy of past land uses also influences freshwater ecosystems Allan et al. This paper addresses three primary concerns for the conservation of freshwater resources in the MRW: A clear understanding of the drivers of ecological stress within riparian zones, together with knowledge of where land use change is occurring in the MRW, can enable effective management strategies that address riparian zone and freshwater conservation at the river reach, sub catchment, and catchment scale. The Monkey River watershed consists of three main branches Bladen, Trio and Swasey that join in the coastal plain and enter the Caribbean Sea as a 6th order river. The Monkey River is the fourth largest watershed in Belize km². The headwaters of all three branches drain mountainous, primarily undisturbed tropical broadleaf forest. The middle reaches flow through human dominated landscapes that include commercial banana cultivation, pasture, gravel mining, and subsistence agriculture. Human settlements are also concentrated within these middle reaches Figure 2 1. The lower reaches, below the confluence of the Bladen and Swasey Branches, are largely undeveloped. The MMMC is a landscape scale conservation initiative that connects headwater regions of the Maya Mountains to the coastal waters and coral reefs in the Gulf of Honduras. A Conservation Action Plan was recently developed for the MMMC and freshwater systems were identified as a primary conservation target for the corridor Salas and Meerman Within this conservation target, riparian zone connectivity was identified as a key ecological attribute. In the MMMC, riparian zone connectivity includes longitudinal connectivity the riparian zone and associated flood plain Buck et al. Segments are converted to polygons that include a m buffer around the river channel. These segmented polygons become the basis of analysis for analyzing stresses across the riparian corridor. For ease of communication, categorical break points were established by ranking each stress score and dividing the rankings into quartiles. Human impact maps and ELSI scores for the MRW from and were analyzed to identify river reaches where changes in stress intensity had occurred. All rankings were equal across both study years except with respect to PAGE 27 27 drainage ditches associated with industrial banana plantations within the MRW. These data reveal the direction of land use change a positive value suggests increased impact between and ; a negative value suggests reduced impact between and Observations of sources of stress were summarized for each branch of the MRW to further isolate areas of land use change and the drivers of change within each branch. Results Change in overall distribution of primary stress types within the MRW between a nd was minimal Figure 2 2, Figure 2 3. The dominant stress in the MRW was sedimentation. Sources of stress contributing to flow alteration were minimal. The number of observed sources of stress within the riparian zone of the MRW increased from 13 8 observations in to observations in Figure 2 4. Riparian zones with no buffer or thin buffer PAGE 28 28 watershed. The Trio Branch experienced the most rapid human induced changes. The expansion of cattle within Trio has severely impacted the middle and lower reaches of this tributary Esselman and Buck Cattle contribute to multiple stresses including sedimentation,

nutrient enrichment, and habitat alteration. Many of the new pasture areas along the Trio Branch use barbed wire fences that are stretched across the main channel. During flood events, riparian trees cleared during pasture development create large snags where barbed wire crosses the channel, impeding the natural flow of the river. Esselman and Buck Small scale agricultural activity also impacts the riparian zone of the MRW. Slash and burn agriculture, primarily for corn cultivation, is a common practice in both the Bladen and Swasey Branches and contributes to the loss of riparian buffers. Esselman and Buck Human activities associated with slash and burn e. In stream gravel mining, largely in the Swasey Branch, is expected to change the natural flow regime and alter habitats. In addition, commercial banana farming in the Swasey and Bladen Branches represents a continued stress on riparian zones through reduced buffer width.

Chapter 5 : Tropical Texas Behavioral Health

Balochistan fruit fly (Myiopardalis pardalina Bigot (Diptera: Tephritidae)) is one of the major pests of muskmelon in torrent spate areas of Baluchistan and North Western Frontier Province (N.W.F).

The American Indians Discussion questions: What were the characteristics of the Plains Indians culture? How did the culture of white settlers differ from that of the Plains Indians? Why did settlers continue to push westward? What clues do you find in the lyrics that indicate that this song is about gold mining? What expectations does the singer have about finding gold in California? How does the tune of this song make you feel? What precious minerals drew miners to the west during the s? What are boomtowns and where were they located? Give at least four examples. What problems did prospectors face in underground mines? Why or why not? What strikes you most about this song? What musical phrase is especially memorable? What makes it so memorable: How often does it or a similar phrase occur? Describe the life of a cowboy based on the verses of this song. What instruments did you hear? What emotions does the song express? What did the writer try to convey in this song? How did the transcontinental railroad open up the west for settlers? How did the federal government encourage western settlement? What new technology helped the homesteaders farm the prairie? What do you think the song is about? How does the song illustrate the life of a railroad man? Why was this song easy to parody? Have students break into groups and create a new version and then share with the class. How did the US government encourage the railroad companies to build rails across the country? What two railroad companies built the transcontinental railroad and where did they meet? What were the working conditions of the railroad builders? What role did the railroad serve in settling the west? Why did the railroad also play a role in ending the long cattle drive? Summary The American Indians on the Western Frontier were pushed off their land by the demise of the buffalo, and the arrival of the homesteaders, ranchers, miners, the railroad, and US Army. Boomtowns, cow towns, and railroad stations grew as a great number of people moved west. In , the Census Bureau claimed the United States no longer had a continuous frontier. Settling the Western Frontier Cube Project Follow the directions for completing each side of the cube. Indians use of the Buffalo Illustrate 4 or more uses of the buffalo by the Indians Side 2: Cattle trails Create a map illustrating and labeling the four cattle trails.

Chapter 6 : The Captain - Issue 07 by TheCaptainMag - Issue

Terms "West" and "Frontier" The frontier line was the outer line of European-American settlement. It moved steadily westward from the s to the s (with occasional movements north into Maine and Vermont, south into Florida, and east from California into Nevada).

SAVE Tropical deserts are among the hottest and driest locations on the planet. The deserts of Baja California, such as the Senora, and the interior deserts of Mexico are considered tropical desert climates. Despite the harsh conditions that sometimes result in triple-digit temperatures and some years with only a trace of rainfall or less, there are plants and animals that survive here. These species are specially equipped to handle the environment the tropical desert provides. Coyotes are common desert animals that can adapt to nearly any environment. They survive and flourish in areas as far north as Alaska and as far south as Central America. In fact, coyotes can make it basically anywhere. These animals are wolf-like in appearance, but are somewhat smaller than their canine cousins. They will eat just about anything depending on what is available. They hunt in packs to become more effective and have a strong sense of community or family. Coyotes will find food whether it is big game such as deer, fish in rivers, road kill, insects, snakes or plants. They are true omnivores. This helps them in environments like the tropical deserts of Mexico where food is often scarce.

Kangaroo Rat
The kangaroo rat is a furry and plump little creature with a round body, big eyes and a tail that is generally longer than its body. The overall length of the kangaroo rat is around 9 to 14 inches. The rat gets its name from the way it moves, hopping on its hind legs like a kangaroo. This rodent is among the best-suited animals in the world for surviving in a low-water environment such as the tropical desert. They do not pant or sweat to keep cool like many other animals and they are unique in that they do not necessarily have to drink water to survive. Their bodies are able to convert dry seeds into water internally to keep them hydrated.

Creosote Bush
The deserts of the southwestern United States as well as the tropical deserts of Mexico are dotted with a ragged evergreen bush known as the creosote. The plains and lower slopes of the tropical desert is often the home to most of this shrubbery. Bright yellow flowers top the ends of the long branches of the creosote bush. The leaves are waxy and thick and have adapted to the harsh heat and dry conditions of the tropical desert. They are useful in retaining moisture and fending off heat. In the tropical deserts, this bush is usually less than 4 feet tall, but can grow to 10 feet tall in wetter climates, according to the Desert USA website.

Bur Sage
Triangle-leaf bur sage is a native plant of the Sonoran Desert. It often accompanies creosote growth between 1, and 3, feet above sea level. This small shrub grows to around 18 inches tall and is two feet wide, according to the Blue Planet Biomes website. The hairy leaves of the bur sage are usually around 1 inch long and gray and green in color. Yellow flowers also bloom from the plant. The bur sage is generally one of the first plants to grow in hot, sunny areas where other seeds are unable to survive.

Chapter 7 : Digital History

The plains and lower slopes of the tropical desert is often the home to most of this shrubbery. Bright yellow flowers top the ends of the long branches of the creosote bush. The leaves are waxy and thick and have adapted to the harsh heat and dry conditions of the tropical desert.

Current Caribbean Surface Analysis: Current Gulf of Mexico Surface Analysis: Western Atlantic Wind and Wave Analysis: Current Atlantic Sea State Analysis: Day 3 Forecast Surface Weather Map: Day 4 Forecast Surface Weather Map: Day 5 Forecast Surface Weather Map: Day 6 Forecast Surface Weather Map: Day 7 Forecast Surface Weather Map: Current Atlantic mb Relative Vorticity Analysis: Current Atlantic Wind Shear Analysis: Depressions have a closed circulation. The convection in tropical storms is usually more concentrated near the center with outer rainfall organizing into distinct bands. Hurricanes are further designated by categories on the Saffir-Simpson scale. Hurricanes in categories 3, 4, 5 are known as Major Hurricanes or Intense Hurricanes. The scale provides examples of the type of damages and impacts in the United States associated with winds of the indicated intensity. In general, damages rise by about a factor of four for every category increase. The maximum sustained surface wind speed peak 1-minute wind at 10 m [33 ft] is the determining factor in the scale. The scale does not address the potential for such other hurricane-related impacts, as storm surge, rainfall-induced floods, and tornadoes. These wind-caused impacts are to apply to the worst winds reaching the coast and the damage would be less elsewhere. It should also be noted that the general wind-caused damage descriptions are to some degree dependent upon the local building codes in effect and how well and how long they have been enforced. Hurricane wind damage is also dependent upon such other factors as duration of high winds, change of wind direction, amount of accompanying rainfall, and age of structures. Very dangerous winds will produce some damage. People, livestock, and pets struck by flying or falling debris could be injured or killed. Older mainly pre construction mobile homes could be destroyed, especially if they are not anchored properly as they tend to shift or roll off their foundations. Newer mobile homes that are anchored properly can sustain damage involving the removal of shingle or metal roof coverings, and loss of vinyl siding, as well as damage to carports, sunrooms, or lanais. Some poorly constructed frame homes can experience major damage, involving loss of the roof covering and damage to gable ends as well as the removal of porch coverings and awnings. Unprotected windows may break if struck by flying debris. Masonry chimneys can be toppled. Well-constructed frame homes could have damage to roof shingles, vinyl siding, soffit panels, and gutters. Failure of aluminum, screened-in, swimming pool enclosures can occur. Some apartment building and shopping center roof coverings could be partially removed. Industrial buildings can lose roofing and siding especially from windward corners, rakes, and eaves. Failures to overhead doors and unprotected windows will be common. Windows in high-rise buildings can be broken by flying debris. Falling and broken glass will pose a significant danger even after the storm. There will be occasional damage to commercial signage, fences, and canopies. Large branches of trees will snap and shallow rooted trees can be toppled. Extensive damage to power lines and poles will likely result in power outages that could last a few to several days. Hurricane Dolly is an example of a hurricane that brought Category 1 winds and impacts to South Padre Island, Texas. Extremely dangerous winds will cause extensive damage. There is a substantial risk of injury or death to people, livestock, and pets due to flying and falling debris. Older mainly pre construction mobile homes have a very high chance of being destroyed and the flying debris generated can shred nearby mobile homes. Newer mobile homes can also be destroyed. Poorly constructed frame homes have a high chance of having their roof structures removed especially if they are not anchored properly. Unprotected windows will have a high probability of being broken by flying debris. Well-constructed frame homes could sustain major roof and siding damage. Failure of aluminum, screened-in, swimming pool enclosures will be common. There will be a substantial percentage of roof and siding damage to apartment buildings and industrial buildings. Unreinforced masonry walls can collapse. Commercial signage, fences, and canopies will be damaged and often destroyed. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to

weeks. Potable water could become scarce as filtration systems begin to fail. Hurricane Frances is an example of a hurricane that brought Category 2 winds and impacts to coastal portions of Port St. Lucie, Florida with Category 1 conditions experienced elsewhere in the city. Devastating damage will occur. There is a high risk of injury or death to people, livestock, and pets due to flying and falling debris. Nearly all older pre mobile homes will be destroyed. Most newer mobile homes will sustain severe damage with potential for complete roof failure and wall collapse. Poorly constructed frame homes can be destroyed by the removal of the roof and exterior walls. Unprotected windows will be broken by flying debris. Well-built frame homes can experience major damage involving the removal of roof decking and gable ends. There will be a high percentage of roof covering and siding damage to apartment buildings and industrial buildings. Isolated structural damage to wood or steel framing can occur. Complete failure of older metal buildings is possible, and older unreinforced masonry buildings can collapse. Numerous windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Most commercial signage, fences, and canopies will be destroyed. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to a few weeks after the storm passes. Hurricane Ivan is an example of a hurricane that brought Category 3 winds and impacts to coastal portions of Gulf Shores, Alabama with Category 2 conditions experienced elsewhere in this city. Catastrophic damage will occur. There is a very high risk of injury or death to people, livestock, and pets due to flying and falling debris. A high percentage of newer mobile homes also will be destroyed. Poorly constructed homes can sustain complete collapse of all walls as well as the loss of the roof structure. Extensive damage to roof coverings, windows, and doors will occur. Large amounts of windborne debris will be lofted into the air. Windborne debris damage will break most unprotected windows and penetrate some protected windows. There will be a high percentage of structural damage to the top floors of apartment buildings. Steel frames in older industrial buildings can collapse. There will be a high percentage of collapse to older unreinforced masonry buildings. Most windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Nearly all commercial signage, fences, and canopies will be destroyed. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months. Hurricane Charley is an example of a hurricane that brought Category 4 winds and impacts to coastal portions of Punta Gorda, Florida with Category 3 conditions experienced elsewhere in the city. People, livestock, and pets are at very high risk of injury or death from flying or falling debris, even if indoors in mobile homes or framed homes. Almost complete destruction of all mobile homes will occur, regardless of age or construction. A high percentage of frame homes will be destroyed, with total roof failure and wall collapse. Extensive damage to roof covers, windows, and doors will occur. Windborne debris damage will occur to nearly all unprotected windows and many protected windows. Significant damage to wood roof commercial buildings will occur due to loss of roof sheathing. Complete collapse of many older metal buildings can occur. Most unreinforced masonry walls will fail which can lead to the collapse of the buildings. A high percentage of industrial buildings and low-rise apartment buildings will be destroyed. Nearly all windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Nearly all trees will be snapped or uprooted and power poles downed. Hurricane Andrew is an example of a hurricane that brought Category 5 winds and impacts to coastal portions of Cutler Ridge, Florida with Category 4 conditions experienced elsewhere in south Miami-Dade County.

Chapter 8 : Tropical/Temperate Pasture and forage Guide by redhanded - Issuu

Explain the rapid settlement of the Great Plains due to homesteading. Describe how early settlers survived on the Plains and transformed them into profitable farmland. Describe the role the railroad played in the settlement of the west and the closing of the frontier.

Contact Tropical Rainforest Plants List In the previous article we looked at plants in the tropical rainforest. On this page, we provide a tropical rainforest plants list, with pictures and information on individual plant species. This article is part of our Rainforest Series. You can download rainforest worksheets here: However, there is a lot of competition for sunlight and nutrients. Plants have to adapt to find their place in the ecosystem. Some plants grow faster, some have bigger leaves, and others evolve better defences against predators. Epiphytes are plants that live on other plants. Epiphytes even grow on other epiphytes! The most common epiphytes are bromeliads. Bromeliads are flowering plants whose long leaves are arranged in a rosette. They attach themselves to the host tree by wrapping their roots around its branches. The water is used not only by the plant, but also by many rainforest animals. Birds and mammals drink from the tank. Tadpoles grow there, and insects lay their eggs in the pond. Orchids Many rainforest orchids grow on other plants. Orchids in the rainforest are often epiphytes. Some have specially adapted roots that enable them to capture water and nutrients from the air. Other orchids have roots that spread out over the branch of the host tree, capturing water without needing to bury into the ground. Its fruit is edible. Its fruit are eaten, and its wood used in building. Carnauba wax is used in car polishes, lipstick, soap, and in many other products. It is even rubbed on surfboards to help them slip through the water faster! Rattan Palm Rattan palms are used to make furniture. There are over species of rattan palm. They grow in African, Asian and Australasian rainforests. Rattans are vines; long plants which are unable to support themselves. Instead, they wrap themselves around other trees. Hooked spines on their stems allow them to climb up the other trees towards the sunlight. Rattans are harvested and used in furniture construction. They have stilt roots that project out of the trunk above the ground see our Plants In The Tropical Rainforest article to find out more about stilt roots. Amazon water lily *Victoria amazonica* The leaves of the Amazon Water Lily can grow to over 2 metres in diameter! The Amazon water lily is an aquatic plant that grows in the lakes and rivers of South American rainforests. Its huge leaves can be up to 3 metres 9. There are rows of sharp spines on the undersides of the leaves. These deter rainforest animals such as manatees from eating them. The rubber tree, which was first found in the Amazon Rainforest, is now also grown in tropical areas in Asia and Africa. These vessels are opened and the latex which runs out is collected in buckets. Latex is used to make natural rubber. Natural rubber has many uses, including car tyres, hoses, pulley belts and clothing. There are over 1. Bougainvillea *Bougainvillea* is a rainforest plant. A colourful entry to the tropical rainforest plants list, Bougainvilleas are native to South America. They are grown as ornamental plants in other areas. These thorny plants grow as vines and shrubs. Some species of bamboo can grow 90 cm 3 ft. Indian Timber Bamboo is a particularly useful species of bamboo. As its name suggests, it is used to make furniture. It is also used to make paper and musical instruments. It grows in South Asian rainforests. Vanilla Orchid *Vanilla Orchid*. Many of the tropical rainforest plants in this list are grown commercially. The vanilla orchid was first used as a flavouring by the Aztecs. Vanilla orchids grow like vines, climbing up other trees. Wild vanilla orchids are pollinated by hummingbirds and melipona bees. They grow in Central and South America. The only way out for the bee is through a part of the flower that attaches pollen to its body. The bee makes its escape, and will now pollinate other bucket orchids that it visits. The Bucket Orchid and the Bucket Bee have coevolved, and each is dependent on the other to reproduce. Silky Oak *Grevillea robusta* The silky oak is a large tree that grows in Australian rainforests. It is not closely related to true oak trees. Its timber is resistant to rot, and is used in carpentry and joinery. They are some of the tallest rainforest trees. They can grow over 80 m ft. Tualangs have very smooth bark, making them difficult for animals to climb. Tualang trees have buttress roots, which make them more stable and also spread their roots out over the rainforest floor. Strangler Figs Strangler figs kill the trees that they grow on. Many epiphytes avoid harming the plant on which they grow. Strangler figs begin life in the branches of other trees. As

strangler figs grow, their roots descend to the forest floor. Their stems wrap around the host tree, until they form a lattice. The fig is now able to capture more sunlight and draw up more nutrients than the tree in which it grows. The host tree eventually dies. The strangler fig lattice, which is often formed by more than one fig, is by then strong enough to support its own weight. It remains standing even when the host tree has rotted away. The strangler fig is an extremely important plant in the rainforest ecosystem. The *Rafflesia arnoldii* has the biggest flower in the world. This rare plant grows on vines that cross the forest floor. It is found in the rainforests of Borneo and Sumatra. *Rafflesia arnoldii* flowers can reach 1 m 3 ft. This scent attracts the flies which will pollinate the flower. Pitcher Plants Pitcher plants capture and drown unwary insects. No tropical rainforest plants list would be complete without a carnivorous plant! Pitcher plants have evolved to prey on insects. They grow in areas where the soil is low in nutrients. There are many different types of pitcher plant, but all work in the same way. They lure insects with nectar or tempting scents. Hairs in the sides of the tube prevent the insect from escaping. The insect eventually drowns in a pool of liquid at the bottom of the tube. Can you see why? Heliconias are flowering plants that grown in the tropical rainforests of the Americas. They grow on the forest floor, and their brightly-coloured flowers attract hummingbirds, which pollinate the plant. Heliconias are popular all over the world as ornamental plants. Kapok *Ceiba pentandra* Kapok trees are tall trees with buttress roots. Kapok trees are tall rainforest trees whose highest branches form part of the emergent layer. Kapoks have buttress roots. Kapok trees are found in the tropical rainforests of South America, Asia and Africa. Durio Durians are famous for being foul-smelling, but surprisingly good to eat. Durian trees grow in Southeast Asia.

Chapter 9 : Tropical Storm Ernesto, September 1,

This tropical rainforest plants list includes flowers with special adaptations, trees with unusual root structures, and many plants that are used by man either for food or to make other goods and products.

Event Overview Ernesto was the costliest tropical cyclone of the Atlantic hurricane season. The sixth tropical storm and first hurricane of the season, Ernesto Figure 1 developed from a tropical wave on August 24 in the eastern Caribbean Sea. Ernesto first affected the northern Caribbean, reaching minimal hurricane status near Haiti before weakening and moving across eastern Cuba as a tropical storm. Despite initial predictions for it to track through the eastern Gulf of Mexico as a major hurricane, Ernesto moved across eastern Florida as a weak tropical storm. **Evolution and Impacts** Ernesto was the sixth named storm, and the first hurricane of the Atlantic hurricane season, forming from a vigorous tropical wave that exited the African coast on August 24. After forming, Ernesto briefly attained hurricane status early on August 27 while south of Haiti. However, interaction with the mountainous terrain of Haiti weakened Ernesto to a Tropical Storm with maximum sustained winds of 60 mph. After the weakening, Ernesto never again attained Hurricane strength, remaining a Tropical Storm until it was over Central Florida, when it weakened to a Depression. After landfall, strong Tropical Storm Ernesto moved across the Coastal Plains of eastern North Carolina during the early morning hours of September 1, Wind gusts ranged from 40 to 60 mph, with the highest gusts to near 70 mph along coastal sections of Onslow County. Minor storm surge flooding and beach erosion occurred along the Onslow and Carteret county coastline and on the Neuse River. A 2 to 4 foot surge was reported at New Bern with some street flooding in the downtown area. A 2 to 3 foot surge occurred along coastal sections of Onslow and Carteret counties resulting in minor beach erosion. Areal flood warnings were issued for most of the county warning area as Ernesto moved across the Coastal Plains counties of eastern North Carolina. Duplin County was hardest hit with many primary roads flooded including a 12 mile stretch of Interstate 95. Many streams and roads across the Coastal Plains remained flooded for several days. Evacuations of many homes, and rescues due to high water were required for many locations across the county, especially near Chinquapin. The Northeast Cape Fear River near Chinquapin rose to major flooding levels on the 2nd and remained in major flooding status through the 7th. The river crested at 30 feet. Thirty homes and businesses were damaged, mainly from freshwater flooding, in Onslow County with damages estimated near a half million dollars. Three tornadoes were reported across eastern North Carolina during the evening of August 28. A weak tornado was reported in Carteret County at 8 pm, damaging a roof in Morehead City. Freshwater and river flooding caused most of the damage across eastern North Carolina associated with Ernesto. Crop damage in Jones County was estimated up to 5 million dollars. Minor wind or flooding damages were reported in many other counties in eastern North Carolina.