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A SURVEY OF PUBLIC PLANTINGS IN THE FRONT YARDS OF RESIDENCES IN GALVESTON, TEXAS, U.S.A.

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ABSTRACT.—The cultural plantscapes (planted landscapes) of urbanized Galveston are the result of historical events, plant introductions, and habitat modifications. Since Galveston was chartered in 1837, residents have been continually altering and sculpturing private and public property. This study identifies significant native species and plant introductions which have resulted in tropical and European garden patterns. Several 19th century introduced exotics such as oleanders (*Nerium oleander* L.), palms (*Washingtonia* spp. and *Phoenix* spp.), and Chinese tallow (*Sapium sebriferum* (L.) Roxb.) still are plantings of choice, although plant introductions have continued. Because of human intervention, more colorful cultivated landscapes have replaced native Gulf coastal plant communities reflecting individual, community and institutional preferences. The survey also suggests lifestyle changes among residents have influenced planting designs in residential gardens.

RESUMEN.—Los sembrados tradicionales del Galveston urbano son la consequencia de eventos históricos, de introducciones de plantas, y de modificaciones del medio ambiente. Desde que Galveston se constituyó oficialmente, los residentes han estado alterando y esculpiendo continuamente la propiedad pública y privada. Este estudio identifica importantes introducciones de plantas nativas de Norteamérica y extranjeras, lo que ha resultado en patrones tropicales y Europeos en los jardines. Algunas plantas exóticas introducidas en el siglo XIX como adelfas (*Nerium* sp.), palmas, y arboles de sebo de China (*Sapium sebriferum* (L.) Roxb.) siguen siendo siembras escogidas, aunque las introducciones de plantas han continuado. A causa de la intervención humana, los sembrados pintorescos han reemplazado las comunidades de plantas indíginas de la costa del Golfo, reflejando preferencias individuales, comunales e institucionales. Esta perspectiva también sugiere que cambios en el estilo de vida entre los residentes han influido sobre los designios de sembrados en jardines residenciales.

RESUME.—Les jardins d'agrêment (platnations paysagistes) du perimetre urbanisé de Galveston sont le résultat d'événements historiques, de l'acclimation de plantes nouvelles et de modifications de l'habitat. Depuis que Galveston fut elevée au rang de cité en 1837, ses habitants n'ont cessé de modifier et de remodeler les propriétés privées et la domaine public. La présente étude inventorie les principales especès locales et 'etrangères que ont servi a dessiner des jardins de type tropical et Européen. Quelques plantes exotiques introduites au XVIII ème siècle, telles que la *Nerium*, le palmier, le sapium, sont encore recherchées, bien que l'on continue a' importer de nouvelles espèces. Grâce a l'intervention humaine, des paysages cultivés richement colorés ont remplacé les ensembles végétaux typiques de la côte du Golfe du Mexique: ils reflètent le goût de particuliers, et les choix des communautés et institutions. Le présent inventaire fait allusion anx changements dans les modes de vie qui ont influencé la conception des plantations dans les jardins privés.

INTRODUCTION

The documentation of landscape change and transformation is an exciting area for cultural plant geography research. Schmid (1975:1), in his treatment of the urban vegetation of Chicago, states that city planting preferences in North America have largely been ignored in the literature because of the cross discipline approach that is necessary to address these problems. Schmid (1975:218) goes on to suggest planting preferences are used by residents to accentuate built structures and produce planted landscape themes. Hugill (1986:423) adds that these designed themes develop from the frequency and intensity of social contact between newly settled areas and established cultures. Thus, cultural plantscapes (planted landscapes) can be seen as a separate but important aspect of the total landscape. These plant associations have economic functions as well as express conscious garden designs of citizens (Jellicoe and Jellicoe 1987:7).

In *The Landscape of Man* (1987) the Jellicoes suggest the most complete expression of cultural preferences for plants and built structures is contained within the cultural landscape. Indeed, since earliest explorers and traders began moving plants, resources, and ideas about the earth, the selection process for cultural favorites has continued as a dynamic process resulting in landscape transformation. Crosby's (1986) discourse on the impact of European expansion on world cultures supports this assertion. Although landscape tastes in North America have been strongly influenced by European contact, over the centuries an American landscape tradition has emerged (Czeslochowski 1982; Leighton 1986:162).

Public plantings, those situated where people can readily observe them, represent an individual's effort to fit into the local cultural community (Schmid 1975:219). And yet, the individual's garden, the private planting space, may remain aloof from cultural pressures simply because it represents a personal, not collective expression of design preference (Jellicoe 1987:7).

The purpose of this study is to investigate changing planting preferences in front yards of Galveston residences in areas of the city that developed at different times. A further object is to determine the affect of location (habitat zone) on plantings in Galveston front yards.

Galveston Island has long been an important contact point for diverse cultural traditions. Since the 1830s immigrants, visitors and artisans have frequently passed through the port; during the late 1890s Galveston was recognized as one of the most prosperous coastal cities in the New World (Dexter 1900; Marinbach 1983). This flow continues today. Most people continued onward to settle inland or return to their homes, but many have taken up residence, endured and enriched the cultural diversity of this barrier island. Along with these people have come gardening traditions and plants.

HISTORICAL BACKGROUND

Physical environment.—Galveston is a low-lying subtropical barrier island located near the upper Texas Gulf Coast (Fig. 1). It is composed of water deposited sands overlying coastal sedimentary rocks. The island extends some 50 km (32 miles)

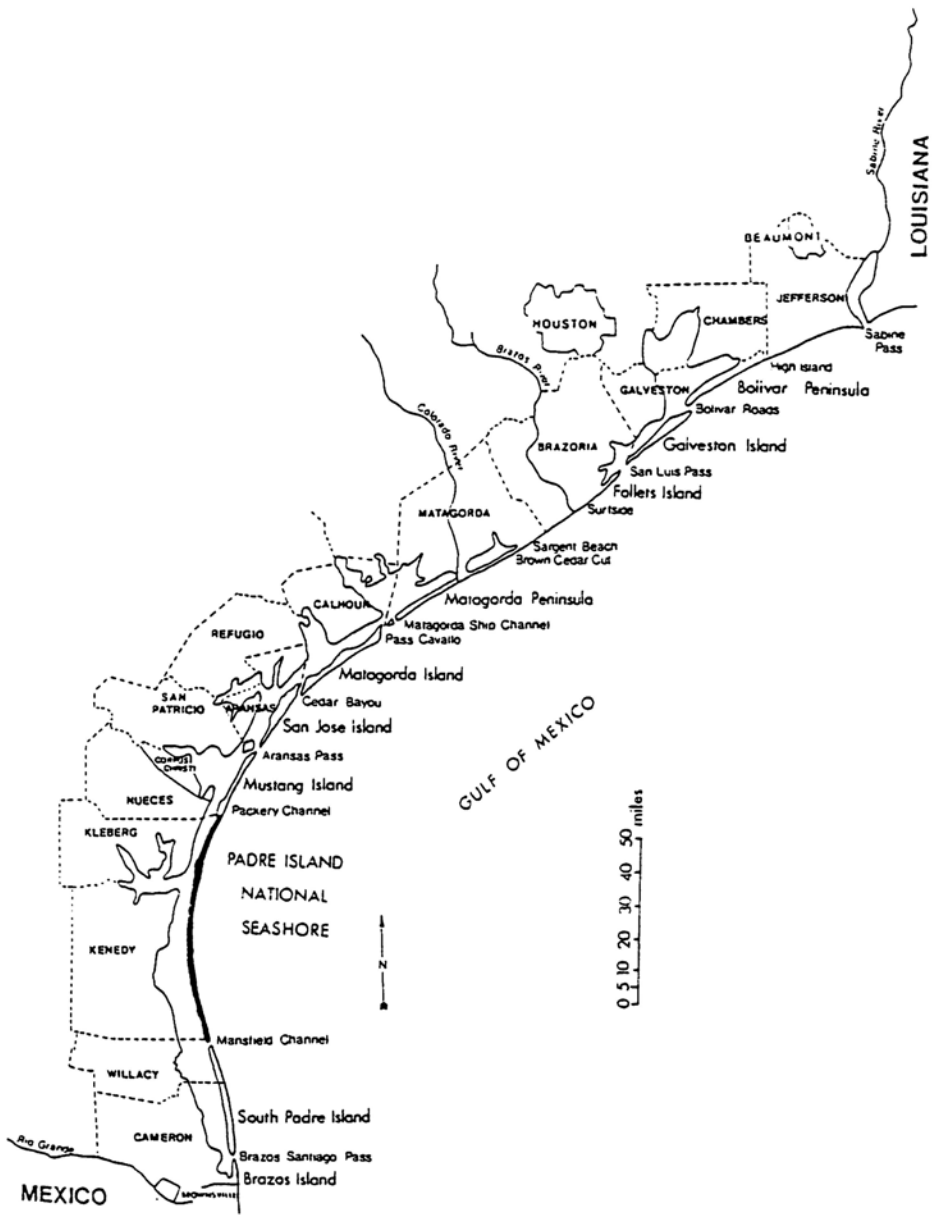

FIG. 1.—Texas Gulf Coast (From: Morton, R. *et al.*, 1983).

in length with the width varying from .8 km to more than 3 km (.5 to 2 miles). Galveston Island is a dynamic physical environment; wave action and storm surges regularly and significantly change its configuration (Davis 1981:2).

The island is geographically exposed to many environmental extremes. Summers are long and hot, many of which are accompanied by prolonged dry

spells. Additionally, continental cold air masses, fondly referred to as "northers" by residents, occasionally descend upon the island reducing temperatures well below freezing (Bomar 1983:74). Historical records indicate infrequent 19th century cold spells were intense enough to freeze over Galveston Bay (Carson 1952). Snow accumulations have been recorded (*Galveston Daily News* 1886). Salt-laden sea breezes regularly add to the physical stresses plants must endure to survive. In addition, tree trimming to protect power lines appears to weaken some woody plants.

Natural vegetation.—In near shore or low inundated areas native salt marsh communities are dominated by *Spartina patens* (Ait.) Muhl. and *Distichlis spicata* (L.) Greene. Coastal prairie associations including *Andropogon gerardi* Vitm., *Muhlenbergia capillaris* (Lam.) Trin. and *Uniola paniculata* L. occupied higher beach ridges (Correll and Johnston 1979:3). Scattered shrubs, particularly *Prosopis glandulosa torreyana* (L. Benson) M.C. Johnst., the mesquite, provided the principal woody component. Trees were rare. Early 19th century historians and travellers to the island reported only one small motte of *Quercus virginiana* Mill. (live oak) located mid-island in an area now referred to as Lafitte's Grove (Mueller 1935:41; Hayes 1879:242). It has been estimated that Galveston Island's native plant communities included about 100 species. Although the area covered by these communities has decreased, there have been no reports of any species having been completely eliminated from the island (Steenberghen 1988:51).

Cultural component.—The island's resource base attracted early Amerindian groups. In particular, the Karankawa Indians seasonally exploited the island for tubers, berries and animals, but made few permanent alterations to the vegetation because of the harsh environment and mosquito population (Gatschet 1891:11; Bandlier 1964:68).

Early settlement and population growth.—In the early 1800s, privateer Jean Lafitte made Galveston his home base, erecting structures on the east end of the island. His cohorts practiced gardening in between forays in the Gulf of Mexico (Baker 1935:357). It was not until 1837 that permanent settlement was established on the island. In that year the Texas Legislature charted a tract of land to Col. Michael Menard as a site for the city. The city was platted on the east end near deep water anchorage and the mouth of Galveston Bay (Nesbitt 1976:79; Sandusky Map 1845 Rosenberg Library: Galveston Texas History Center [RL,GTHC]).

Population growth was sporadic in the early years but by 1843 nearly 600 homes had been built (McComb 1986:68). Population increases continued into the 20th century with several major fluctuations resulting from natural calamities such as yellow fever and hurricanes (Nesbitt 1985:53). Today Galveston's ethnic population is more diverse than in the early decades of growth in the 19th century. In 1985 the population was estimatd at 63,000; composed of approximately 70% white with 17% black and 12% hispanic (U.S. Department of the Navy 1986:2-99).

Early horticultural landscapes.—Galveston residents have persistently expanded planted landscapes since initial settlement. Residents have altered sizeable

portions of the original vegetation by enriching planted areas with imported topsoil and diversifying the flora by introducing exotics from Mediterranean and tropical regions.

By the end of the 19th century Galveston had grown to be one of the richest cities in the United States and was a garden spot along the Texas Gulf Coast. Stately homes lined the streets adorned with palms, oleanders and oaks. These plantings gave a tropical look to the landscape *(Galveston Daily News* 1907).

Sources of plants.—Earliest plant introductions to Galveston included shade trees *Sapium sebiferum* (L.) Roxb., flowering shrubs, most notably *Nerium oleander* L. and tropical trees including *Phoenix* spp., *Washingtonia* spp. and *Musa* sp. (Mueller 1935:43; Fornell 1961:96). Flower and vegetable seeds were obtained from a variety of sources, such as New England Shaker communities, retail catalogs from the south of France, and from eastern U.S. seed suppliers *(The Civilian and Galveston Gazette* 1842; Samuel May Williams Papers 23-0867 RL,GTHC). The vast majority of introduced plant materials arrived on sailing vessels calling upon the most important port along the Texas Gulf Coast. Plants were viewed as a "filler" item by barque captains. They were more concerned about the lumber and food staples cargos which commanded high prices in Galveston *(Flakes Bulletin* 1868). Later, nurseries developed on the mainland nearby as people settled the hinterlands of Galveston.

Galveston's rapid climb to prosperity was brought to an abrupt halt by the 1900 hurricane (Weems 1957:114). In the period of a few hours all of the built and planted landscapes were laid to waste. Following one of the worst catastrophes in United States history, the island level was raised behind a concrete barrier constructed to prevent any such future devastation (Davis 1981). Although the majority of the fill was dredged and pumped from surrounding waters, substantial topsoil was brought from the mainland (McComb 1986:142).

The planted landscape of urbanized Galveston had to be totally replanted, with the exception of Borden's oak, which was the only culitivated plant known to survive the storm's devastation. Residents rallied through civic organizations, such as the Women's Health Protection Association (WHPA), to return urbanized Galveston to its pre-storm beauty. Initially, the WHPA focused their tireless efforts on storm victims. After helping many citizens recover from storm related injuries and calamities, the women turned their attention to the scarred island itself. The WHPA provided free plantings to Galveston residents, especially oleanders, to help return the planted landscape of Galveston to its pre-storm floral diversity (Kenamore 1987). Community and individual efforts to further enhance the beauty of the island continue today.

METHODS

The study area sampled for this survey included the original platted city (Sandusky Map 1945). It is essentially a grid pattern. Generally, city development has progressed east to west, with housing development replacing dairy and gardening landscapes surrounding the previous city "edge." Occasional outliers such as the exclusive 1930s Cedar Lawn subdivision were exceptions.

Within this pattern of development, sampling sectors were established (Fig. 2). The east end (Sector 1) was the earliest to develop. This area includes the now designated East End and Silk Stocking Historical districts. West of 25th Street, which bounded the early business district, is the middle sector (Sector 2). Most houses date from the 1930s to 1960s in this sector, with major exceptions being the Samuel May Williams (1839) and Michael Menard (1838) homes. The west end sector (Sector 3) represents more recent developments, most houses dating from the 1950s to 1970s.

Sampling Procedures.—Two streets randomly selected extending from the bay to the gulf side of the island were surveyed for woody plants within each sector. In addition, three streets were surveyed along avenues from 6th Street to 57th Street. In all, the front yard woody plantings of 1,088 residences were recorded From the population examined a random subset of 270 yards was selected; thirty (30) sampling sites from each of the nine (9) street transects. A total of 97 woody species representing 45 families were observed in the survey. Species are listed in Appendix A.

For the purposes of this survey, front yards were defined as the side of a residence facing the street or avenue. The boundary of the front yard contained the area from fence lines or a plane extending from the street side of the house to the street. Individual woody plant species were recorded from this area for

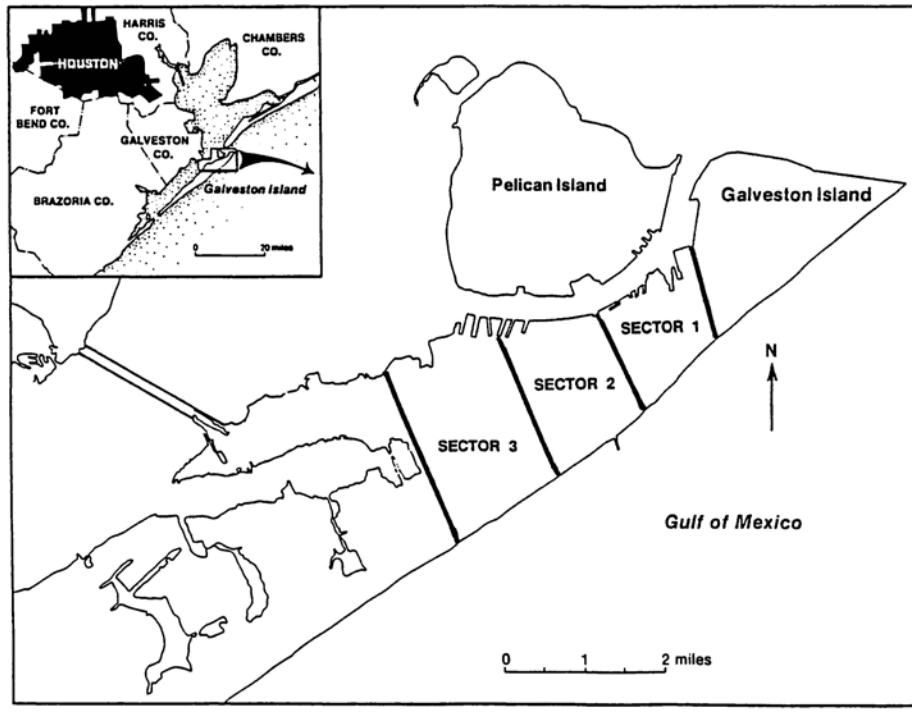

FIG. 2.—City sectors based on time of development.

each house sampled. Hedges were recorded as a single planting but were given a frequency value of ten. A hedge was defined as a continuous planting of a single species extending more than six feet. Means and standard deviations were calculated from the data for each sector to establish planting patterns in different areas of urbanized Galveston. This made possible the separation of different planting preferences. Differences in means between areas were interpreted as illustrating changing patterns and preferences in residential plantings.

RESULTS AND DISCUSSION

The west end sector had the highest total plantings per yard. Plantings were nearly balanced between trees and shrubs. Hedges were frequently found in yards. Hedges were recorded as a single planting. Thus, the weighted shrub plantings total exceeds the total planting number. The east end sector had the highest number of trees per yard. Hedges were occasionally recorded in this sector. The middle sector had the fewest average plantings per yard (Fig. 3).

Next, the most common shrubs were compared. *Nerium oleander* L., *Lingustrum quihoui* Carriere, and *Ilex vomitoria* Ait. (a native) were known from the 19th century as favored plantings. *Pittosporum tobira* (Thunb.) Ait. is a more recent introduction (Fig. 4). *Ligustrum* is hardy and most commonly used as a hedge plant. *Pittosporum* is an accent plant in yards and performs well as single plants or hedges. *Ilex vomitoria,* more common in the 19th century as a hedge, has recently been hybridized to become a more decorative single-bush planting.

Oleanders have been a perennial favorite of Galveston residents. Galveston is often referred to as the oleander city (Pleasants 1966:1). Oleander shows a frequency increase in newer areas, often because gardeners prefer its long lasting blossoms and hardy nature. While oleanders are quite visible in the east end, the greater plant diversity in the older section reduces oleander's rank. The

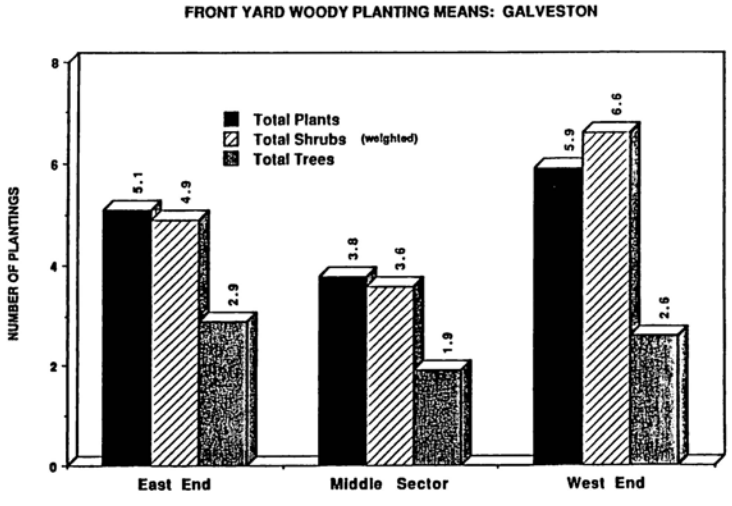

FIG. 3.—Front City sectors based on time of development. Front yard woody planting means: Galveston.

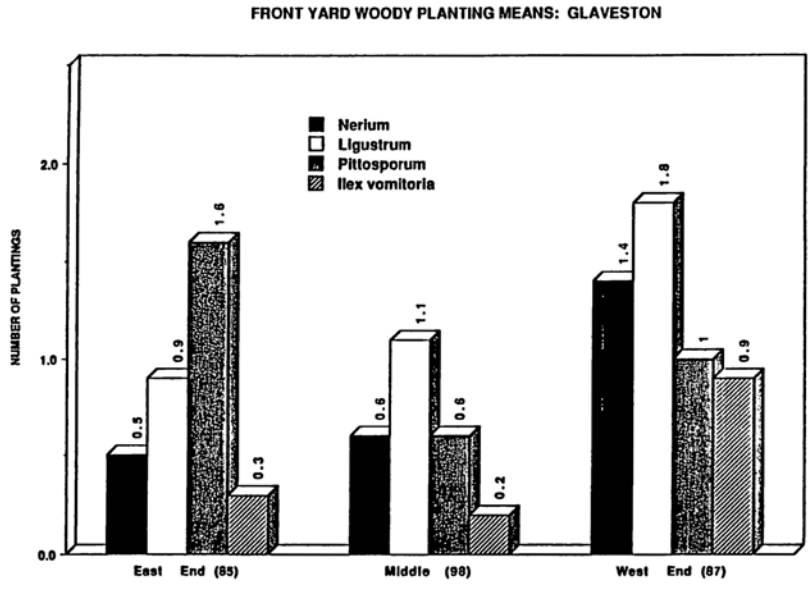

FIG. 4.—City sectors based on time of development. Front yard shrub planting means: Galveston.

oleander has been the plant most manipulated by residents. The oleander was introduced to the island in 1841 by Joseph Osterman (National Oleander Society brochure). By the early 1920s some 65 horticultural variants or cultivars were believed to have flourished on the island. Presently over 40 named cultivars are known, among which several are rare or endangered (Head pers. comm. 1987). Almost all of these are indigenous Galveston cultivars.

When comparing the most common trees, *Quercus* sp. has become less common, being replaced by *Sapium* sp. and *Fraxinus* sp. (Fig. 5). Preferences have shifted from slower growing oaks to faster growing softer wood trees. *Washingtonia* and *Phoenix* palms have remained favorite plantings because of the preference for a tropical plantscape theme.

As suggested earlier, the physical environment influences plant growth. In an attempt to better understand its effect on plantings, habitat zones were established in the originally sampled sectors based on exposure to the Gulf of Mexico (Fig. 6.). Results from this comparison are shown in Fig. 7. In general means for total plantings, shrubs and trees corresponded with sector means. But there are notable deviations. In particular, Sector 3 abuts the warehouse and railroad yard in a lower socio-economic neighborhood (McComb 1986:153). In addition, saline bay waters inundated this area during hurricane Carla in 1961, reducing the soil texture and fertility, thereby affecting plant growth.

Furthermore, the low value for trees in Sector 5 is related to increased exposure. There is less structural protection in this sector than the more established Sector 2 and the more affluent Sector 8.

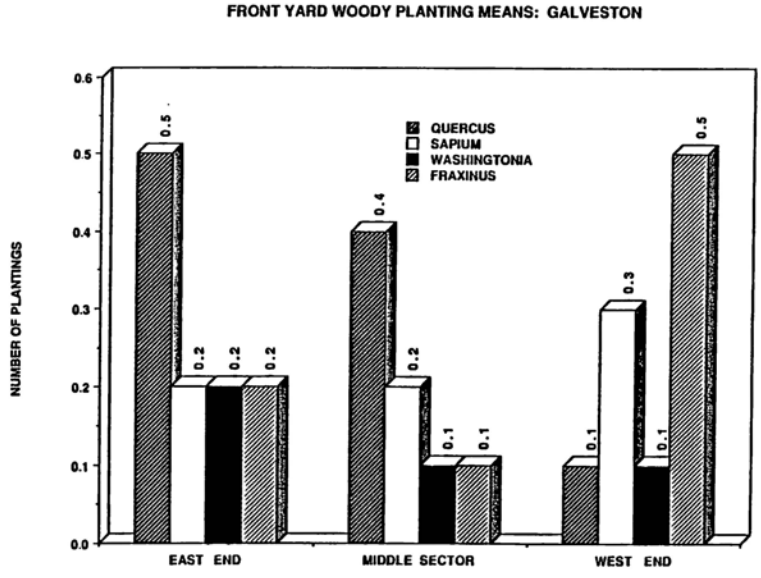

FIG. 5.—City sectors based on time of development. Front yard tree planting means: Galveston.

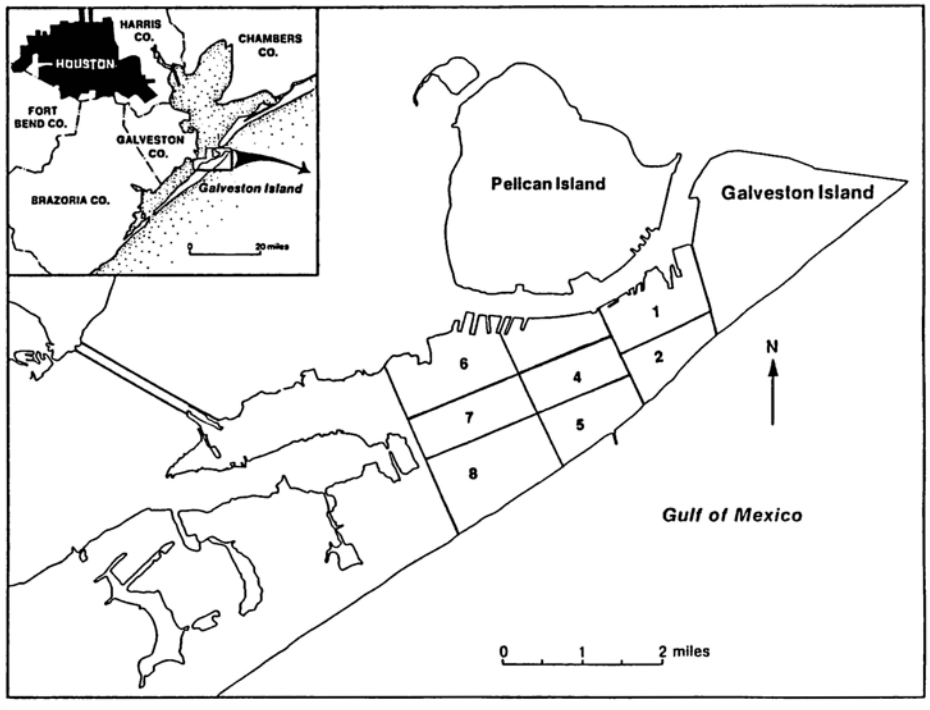

FIG. 6.—Habitat zones based on exposure to Gulf of Mexico.

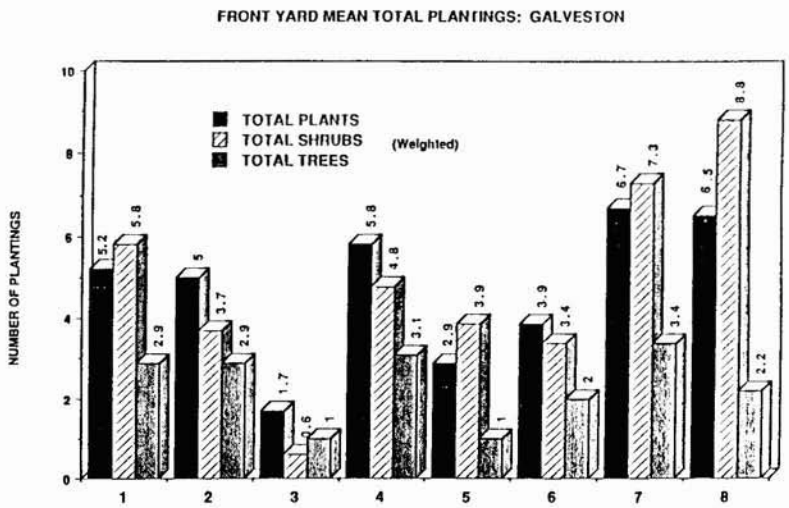

FIG. 7.—Habitat zones based on exposure to Gulf of Mexico. Front yard mean total plantings: Galveston.

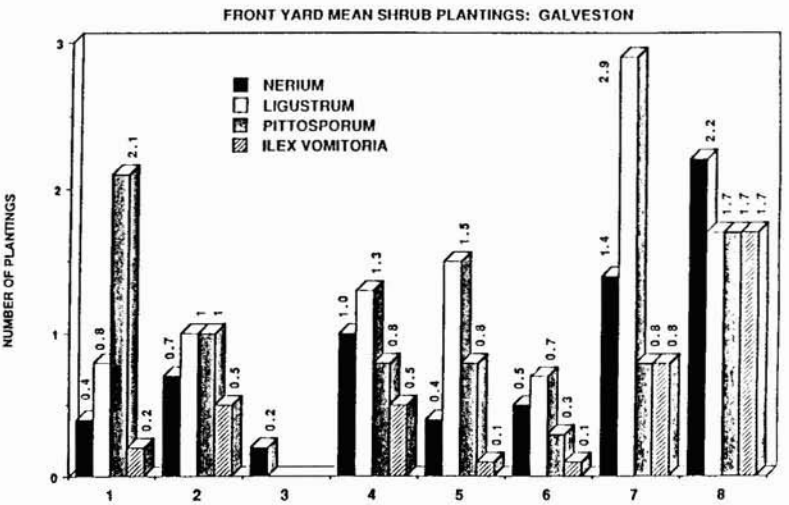

FIG. 8.—Habitat zones based on exposure to Gulf of Mexico. Front yard mean shrub plantings: Galveston.

Comparisons of the most common shrubs and trees supported earlier reports (Fig. 8). The survival of oleander in Sector 3 indicates that it is more hardy than other plants that have been tried there. Although a more recent introduction, the frequency of *Pittosporum* indicates residents especially appreciate the shrub as part of their gardens. In particular, the variegated *Pittosporum* adds variety to yards not readily found in the more established *Ligustrum* plantings.

Fig. 9 indicates changes in planting preference by island residents, from oaks to tallow and ash (almost exclusively *Fraxinus velutina glabra* Rehd.). However,

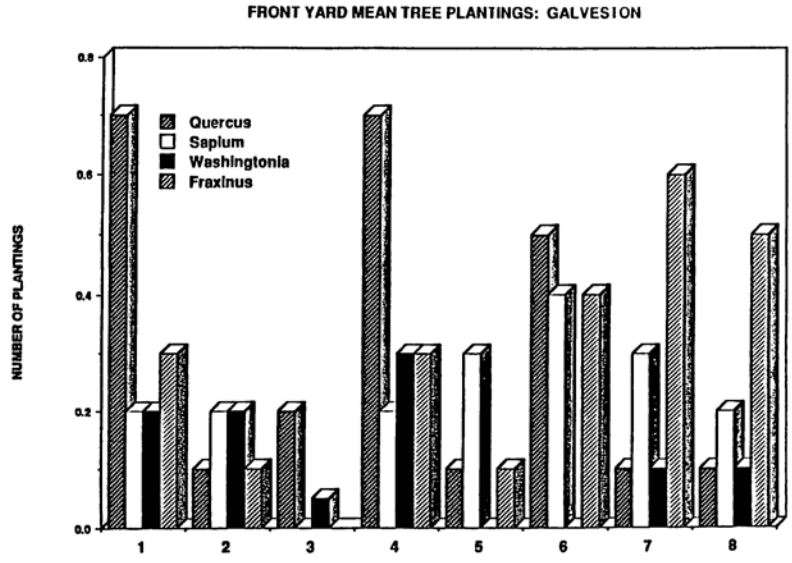

FIG. 9.—Habitat zones based on exposure to Gulf of Mexico. Front yard mean tree plantings: Galveston.

soft wood trees have proved vulnerable to storm damage. Residents who do not prefer oaks also avoid hardy, native trees such as the southern Magnolia *(Magnolia grandifolia)* because the debris from these trees is considered messy. Seasonal litter requires added maintenance and occasionally causes mechanical problems for lawn mowers. Interviews with Galveston residents brought out that yards requiring fewer hours of maintenance fit better into schedules where both adults are working.

CONCLUSION

Galveston residents have been altering plantscapes since the 1830s. Pre-1900 residental patterns were destroyed by the 1900 storm. But preferences for early woody species introductions are found in front yards today. Planting patterns found in neighborhoods represent themes of tropical and European tastes. Public plantings represent a blend of these components. Galveston island continues to be altered by residents and by civic institutions. Down island developments reflect little of the urbanized patterns. Analysis of the new horticultural style emerging in residential planting preferences will be useful in understanding the continuing process of urban planted landscape evolution.

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APPENDIX A

AGAVACEAE
Yucca carnerosana (Trel.) McKelv.
Yucca spp. L.

ANACARDIACEAE
Mangifera indica L.
Rhus glabra L.

APOCYNACEAE
Carissa grandifolia (E.H. Mey) A. DC.
Nerium Oleander L.

AQUIFOLIACEAE
Ilex cornuta Lundl. & Paxt.
Ilex decidua Walt.
Ilex vomitoria Ait.

ASTERACEAE
Iva frutescens L.

BERBERIDACEAE
Nandina domestica Thunb.

BIGNONIACEAE
Campsis radicans (L.) Seem. ex Bur.
Catalpa bignoniodes Walt.

BUXACEAE
Buxus microphylla Siebold & Zucc.
Buxus sempervirens L.

CAPRIFOLACEAE
Abelia Graniflora 'Edward Groucher' (Andre) Rehd.
Lonicera japonica Thunb.
Sambucus canadensis L.

CELASTRACEAE
Euonymus japonica Thunb.
Euonymus japonica 'aureomarginata' Thunb.
Euonymus japonica 'dwarf' Thunb.

CONVOLVULACEAE
Ipomoea alba L.

CUPRESSACEAE
Juniperus communis L.
Juniperus spp. L.
Thuja sp. L.

CYCADACEAE
Cycas circinalis L.

Appendix A (continued)

ELAEGNACEAE
Elaegnus angustifolia L.

ERICACEAE
Rhododendron sp. L.

EUPHORBIACEAE
Sapium sebiferum (L.) Roxb.

FABACEAE
Mimosa bracaatinga Hoehne.
Wisteria floribunda (Willd.) DC.
Wisteria sinensis (Sims) Sweet

FAGACEAE
Quercus nigra L.
Quercus virginiana Mill.
Quercus spp. L.

HAMAMELIDACEAE
Liquidambar styraciflua L.

JUGLANDACEAE
Carya illinoinensis (Wang.) K. Koch.

LABIATAE
Salvia leucophylla Greene.

LAURACEAE
Cinnamomum camphora (L.) J. Presl.
Persea americana Mill.

LYTHRACEAE
Lagerstroemia indica L.

MAGNOLIACEAE
Magnolia grandiflora L.

MALVACEAE
Hibiscus rosa-sinensis L.
Hibiscus syriacus L.

MELIACEAE
Melia azedarach L.

MORACEAE
Ficus carica L.
Ficus elastica Roxb. ex Hornem.
Morus alba 'striblingii' L.
Morus nigra L.

Appendix A (continued)

MUSACEAE
Musa acuminata Colla

MYTACEAE
Callistemon citrinus R. Br.
Psidium guajava L.

OLEACEAE
Forsythia suspensa (Thunb.) Vahl
Fraxinus arizonica Torr.
Jasminum humile L.
Ligustrum quihoui Carriere
Oleo europaea L.

ONAGRACEAE
Fuschia magllanica Lam.

PALMAE
Phoenix canariensis Hort. ex Chabaud.
Phoenix dactylifera L.
Phoenix reclinata Jacq.
Sabal mexicana Mart.
Sabal texana (Cook) Becc.
Washington filifera (L. Linden) H. Wendl.
Washington robusta H. Wendl.

PLANTANACEAE
Plantanus occidentalis L.

PINACEAE
Pinus taeda L.

PITTOSPORACEAE
Pittosporum tobira (Thunb.) Ait.
Pittosporum tobira 'variegated' (Thunb.) Ait.
Pittosporum tobira 'dwarf' (Thunb.) Ait.

PODOCARPACEAE
Podocarpus macrophyllus (Thunb.) D. Don

POLYGONACEAE
Antignon leptopus Hokk & Arn.

ROSACEAE
Malus pumila Mill.
Photinia fraseri 'Red Robin' Dress.
Prunus americana Marsh.
Prunus laurocerasus L.
Prunus persica (L.) Batsch.
Prunus serotina J.F. Ehrh.

Appendix A (continued)

Pyracantha coccinea M.J. Roem.
Raphiolepis indica (L.) Lindl.
Rubus trivialis Michx.

RUTACEAE
Citrus limonia 'Meyer' Osbeck
Citrus sinesis (L.) Osbeck.
Zanthoxylum americanum L.

SALICACEAE
Populus sargentiii Dode.
Salix nigra L.

SOLANACEAE
Brunfelsia australis Benth.

THEACEAE
Camellia japonica L.

ULMACEAE
Celtis laevigata Willd.
Ulmus parvifolia Jacq.
Ulmus rubra Muhleng.
Ulmus sp. Mirb.

VERBENACEAE
Callicarpa americana L.
Lantana montevidensis (K. Spreng.) Briqu.
Vitex trifolia L.

VITACEAE
Vitis labrusa L.