12. Patterns and impacts of coastal recreation along the Gulf coast of Mexico

Introduction

Much of Mexico’s shoreline has been transformed into a recreational cultural landscape. Segments of the Pacific coast and (more recently) the Caribbean coast have undergone such extensive cultural and physical modification by tourism that a recent regional study of Mexico broke them out as a separate ‘nation’ of ‘Club Mex’ (Casagrande, 1987). Included in Club Mex are the Pacific enclaves of Mazatlán, Puerto Vallarta, Manzanillo, Ixtapa, Acapulco, and Puerto Escondido and the Caribbean enclave of Cancún/Cozumel. Coastal tourism accounts for approximately 45% of total tourism in Mexico, which translates to about $700 million in (1983) revenues (Merino, 1987), and the Club Mex enclaves are the primary destinations of most tourists, both international and national. Recognizing the touristic value of its shores, Mexico devoted 93 percent of its (1982) investment in tourism – $370 million – to coastal infrastructural development. Major resort complexes were developed in the 1970s by the Mexican government at Ixtapa-Zihuatanejo on the Pacific coast (Reynoso y Valle and de Regt, 1979) and at Cancún on the Caribbean coast (Collins, 1979).

Conspicuously absent from any discussions of international coastal tourism in Mexico is the Gulf Coast, apparently because of less-than-suitable physical conditions. When the Mexican government decided (in the late 1960s) to develop the infrastructure for an Atlantic resort to counterbalance the numerous Pacific resorts, its computer selected the Cancún site in Quintana Roo (Dunphy, 1972). The beaches along the Gulf of Mexico coast were considered to be ‘physically unsuitable for major tourism development’ because of a combination of climatic, water quality, and beach quality factors (Collins, 1979). Climatically, negative aspects for tourism include the two dozen or so annual winter cold fronts (nortes) which penetrate to the southern Gulf (and thus made winter tourism opportunities unreliable, especially in comparison to Acapulco and Cancún) and the humid, rainy, and overcast summers (especially in the states of Veracruz, Tabasco, and Campeche). Hurricanes which enter the Gulf tend to track either westward or refract to the north and thus pose only a threat mostly to the sparsely developed Tamaulipas coast. Water quality along the Gulf is lower than the Pacific and Caribbean coasts because of high sediment inflow (especially along the southern and western rim of the Gulf), high nearshore turbidity because of a virtual absence of protective offshore reefs, and localized pollution (especially near Veracruz and Tampico) which tends to attract sharks. Beach quality is also somewhat inferior because of a high amount of fine sediments along the Veracruz coast and a high shell content along the north Yucatán coast.

Recreational development along Mexico’s Gulf Coast

In spite of the perceived adverse physical conditions, domestic demand for beach recreation opportunities has nonetheless transformed many segments of the Gulf Coast into distinctively recreational seaside landscapes. A tradition of beach recreation in Mexico is documented at least to the 1780s, when wealthy Spanish ranchers of the lower Rio Grande Valley migrated to Matamoros beaches in the hot summers (WPA, 1940), but it did not become popularized until the present century (Passariello, 1983). Significant coastal recreational development did not take place until the provision of beach access, mostly in the form of highways built during the 1930s and 1940s. As access was facilitated and seaside recreation became more popular among the Mexican middle classes, coastal development became closely correlated to the recreational hinterlands, or market areas, of the various suitable reaches of shoreline (Meyer-Arendt, 1987b). The simplest form of beach resort may cater only to a nearby population center, while shorelines highly physically attractive in terms of water clarity, beach sands, and prevailing climate may attract recreationists and tourists from a hierarchy of stacked (or nested) local, regional, national, and international hinterlands. Although Mexico’s high-amenity Pacific and Caribbean beaches attract beach lovers from the entire spectrum of recreational hinterlands, recreational development along the physically less attractive Gulf Coast beaches has been primarily a result of domestic tourism, at levels ranging from local to regional to national (Meyer-Arendt, 1987c).

Based on field surveys conducted in 1985, a total of 67 recreationally utilized sites along the Gulf Coast (between the Rio Grande and Cabo Catoche) are identified (Figure 1). These sites can be classified either as ‘beach resorts’ with available accommodations or as ‘recreational beaches’ in which at least minimal services existed. The resort category can be subdivided on the basis of size and quality of lodging facilities, and 15 sites (22% of the total) can be classed as major resorts (at least one hotel with over 25 rooms) while 21 sites (31%) are considered minor resorts (with available accommodations). Recreational beaches (31, or 46% of total) include settlements or beaches utilized by recreationists in which at least minimal services (e.g. soft drinks) are available. The distribution of the sites is characterized by three major clusters, largely a function of relative proximity to the urban areas which constitute their recreational hinterlands. Almost half of all sites (46%) are contained within two clusters in the state of Veracruz, and recreationists are drawn both from the city of Veracruz and from Mexico City. A third major resort cluster along the Gulf Coast (containing 25% of the total sites) is in Yucatán, proximate to Mérida. Smaller, less well defined clusters are associated with less populous or more distant local hinterlands such as Villahermosa, Tabasco. Even South Padre Island, Texas draws about 3% of its visitors from Mexico, mainly from a Monterrey hinterland (Myers and Hodges, 1983).

Although the hinterland concept best explains the general distribution of the coastal sites, the specific site location is in large part a function of the local physical environment. A sand beach is the prime recreational attraction at each of the sites, although structural development may take place on a nearby rocky headland or across a lagoon from the beach (as is the case with 10% of the sites).
Figure 1. Beach resorts and recreational beaches along the Gulf Coast of Mexico (Meyer-Arendt 1987a) (from field surveys by author).
Isolated pocket beaches comprise a small clustering of sites along the Tuxtla Mountains coast near Playa Escondida. River mouth locations comprise a third (22%) of all sites, and wide beaches (often widened artificially because of sand-trapping jetties) are generally found at these sites. Barred freshwater river mouth lagoons (la barra) are especially popular for bathing by families, and 14 (21%) of all sites fell into this category. In the absence of freshwater inflow (such as in drier northern Mexico and along the carbonate Yucatán peninsula), however, swimming in brackish or saline lagoons is not as popular. Non-sandy shorelines are also generally avoided by recreationists, unless perhaps a scenic view is provided. This pattern is aptly demonstrated by the minimum of coastal development along the scrubby volcanic coast of north of Chachalacas, Veracruz and along the seagrass debris shoreline near Dzilam de Bravo, Yucatán.

Because of a combination of factors including locations of the population centers that comprised the recreational hinterlands, distance and accessibility to the coast, and local physical attributes, recreational development along Mexico’s Gulf Coast is concentrated in the states of Veracruz and Yucatán.

Coastal recreation in Veracruz

On a national scale, the first major development of Mexico’s coastline is traced to the post-Revolution boom years of the 1920s. Automobiles and buses were becoming more common, especially among the upper and upper middle classes of Mexico City. As a result of the increased popularity of seaside recreation, in 1927 the old wagon road from Mexico City to Acapulco was graded into a highway, thus stimulating the first touristic boom at that sleepy Pacific colonial port (Cerruti, 1964). As the 400-km trip required about 24 hours of travel, however, entrepreneurs (with the proper political connections) shifted their attentions to the Gulf of Mexico. Two main areas within the state of Veracruz were soon earmarked for recreational development: the environs of the city of Veracruz and a coastal stretch extending from Tecomula to Casitas.

The port of Veracruz had been the Atlantic gateway to Mexico since Cortez landed there in 1519, and in 1872 Mexico’s first railway linked the port with Mexico City (West and Augelli, 1976). Its steamy malarial setting prevented the city from being any more than an entrepôt (Arreola, 1980) until the popularization of sea-bathing in the 1920s. Traditionally, the Veracruz elite seasonally fled to the cool ‘hill stations’ of the Sierra Madre for their recreation. Following the 1927 boom in Acapulco, the first major resort hotel along the Gulf Coast – the Hotel Mocambo – was built a few miles south of town at what has become the recreation center of Mocambo Beach (Figure 2). Veracruz proper is flanked by two beach strips: 1) a North Beach (near the port facility as well as the shark-infested point of sewage discharge into the Gulf), and 2) a hotel-lined South Beach. The direction of urban growth is toward the south, and the shorefront between South Beach and Mocambo Beach is rapidly filling in with modern hotels, condominiums, and exclusive subdivisions. The rivermouth town of Boca del Río, south of Mocambo, is presently undergoing conversion from a fishing village into a fashionable upper
middle class seaside resort, and several condominiums have been constructed. The working classes of Veracruz tend to frequent the beaches of Chachalacas, a popular rivermouth resort 16 km north of the city, which is also presently witnessing much hotel and restaurant construction.

Extensive shoreline modification has taken place in the Veracruz area, yet little of it can be directly attributed to coastal recreation. Offshore natural reefs dampen the effects of incoming wave energy and shoreline erosion has been minimal in most of the region. Shoreline modification began as a result of harbor improve-
Figure 3. The Tecolutla-Nautla coastal strip.

Figure 4. Landuse changes at Tecolutla, 1951-1985.
ments in the late 1800s, when the first breakwaters and groins were built (Gutiérrez-Estrada et al., 1988). As the city gradually expanded southward from its walled core, low areas near the shoreline became filled and ‘reclaimed’, and a low seawall extends for several km. Along one short erosional stretch south of Mocambo Beach, a groin field was constructed to protect the coastal highway. The construction of rivermouth jetties at Boca del Río (for navigation purposes) has resulted in updrift beach widening and provision of an attractive recreational resource, which may partly explain the recent recreational development boom at that location.

The second cluster of coastal development in Veracruz occurs along the coastal strip between Nautla and Tecolutla, approximately 200 km north of the city of Veracruz (Figure 3). In this region, the recreational hinterland is primarily Mexico City slightly less than 400 km away, and recreational development followed the provision of highway linkages in the early 1940s (Ramirez, 1981). Tecolutla, a small fishing port at the mouth of the Río Tecolutla, soon became recreationally discovered. Promoted as the closest beach to Mexico City in terms of time and distance, Tecolutla was envisioned by speculators as an ‘Acapulco East’ and three large hotels were built. But significant demand for Gulf Coast resorts never developed, and following improvement of the Acapulco highway in 1955, most new coastal development in Mexico became concentrated along the Pacific coast.

Tecolutla grew slowly between the 1940s and the 1970s. Highway relocation in 1970 left the town isolated from through traffic formerly dependent upon the ferry across the Río Tecolutla. Nonetheless, by the latter 1970s, seasonal recreational demand led to renewed vigor in the resort. The three original hotels, still the major ones, are now filling to capacity during peak periods (notably Holy Week and Christmas), and the construction of new (but modest) lodging facilities has been stimulated. Summer homes, too, are being built in increasing numbers along the beachfront, and a formerly distant beach subdivision (fraccionamiento) has now fused with the main settlement (Figure 4). Most new construction in the area is not in the old resort of Tecolutla proper, but further south along the coast between El Palmar and Casitas, where several medium high-rise resort hotels have been built in recent years (see Figure 3).

The small resorts of Tecolutla and Casitas are situated at rivermouths and thus benefit from high fluvial sedimentation and beach accretion (Self, 1977). The mouth of the Río Tecolutla was jetted in the late 1960s to minimize maintenance dredging for navigational purposes, and the jetties have accelerated the accretion of the updrift beaches. As at Boca del Río south of Veracruz, the widening beaches have enhanced the recreational appeal of Tecolutla. Erosion is a greater problem with distance from rivermouths and some of the newer recreational developments such as Playa Paraiso and Playa Oriente are beginning to be threatened by shoreline retreat. So far, no erosion control structures have been built, however.

Coastal recreation on Yucatán’s north shore

Recreational usage of Yucatán beaches dates to the establishment of Progreso as
Yucatán’s port and its subsequent rail linkage with Mérida in 1881 (Figure 5) (Meyer-Arendt, 1987a). Although the prime function of the railroad was to facilitate the export of sisal (henequén), passenger service was provided to transport 19th century Meridanos to the Progreso beaches. The wealthier families began to build summer residences (casas veraniegas), and by 1907, Progreso boasted of three hotels and a large beachfront recreational complex (Frias and Frías, 1984). By 1928, the automobile age had arrived in Yucatán, and the Mérida-Progreso highway was paved. Increasing numbers of summer homes were built along Progreso’s storefront, behind the promenade (malecón) and along the beach toward the east. Although the only paved road during the 1930s and 1940s was the Mérida-Progreso highway, graded roads extended toward Chicxulub Puerto and Chelém and sand roads ran onward to Dzilam de Bravo and Chuburná Puerto. Roadbeds were built across the coastal lagoon at various locations to provide better port access to inland settlements. This facilitation of access, coupled with growing usage of motorized vehicles, expanded the potential for coastal recreation.

The pattern of recreation use was still primarily one of day use in 1945, although the trend of vacation home ownership was beginning to expand beyond Progreso, initially to Chicxulub (Martínez, 1945). As early as 1948, Progreso and Chicxulub were being welded together by a ribbon of beachfront housing (Figure 6). To the east, summer homes were colonizing the coconut plantations (coals) and barren beach ridges. If Progreso is seen as the core area of beach recreation, this zone represents a recreational ‘frontier’ marked by summer homes built in advance of the provision of basic services. Smaller settlements along the north Yucatán coast such as Telchac Puerto, San Cristanto, and Chabihau also became recreational nodes.
Figure 6. Land use changes at greater Progreso, 1948–1978 (Meyer-Arendt 1987a).
from which summer home development spread laterally. Mérida provided the majority of recreationists to this coast, although distal beaches such as Telchac Puerto also drew from secondary urban centers such as Motul and Temax (see Figure 5).

Because of availability of utilities and easy access from Mérida, the Progreso vicinity remained most popular for summer home construction. After Progreso’s beachfront filled in with summer homes during the 1950s, Chicxulub became the primary locus of recreational growth. A secondary direction of expansion during the 1950s was westward toward Chelem (Figure 7), which, like Telchac Puerto became a recreational node from which summer home construction spread both to the east and west. Chuburná Puerto presently marks the western limit of the 20-km long contiguous north coast recreational landscape. Toward the east, the shoreline is still relatively pristine, although the ‘recreational frontiers’ continue to shift eastward from Chicxulub Puerto and outward from the smaller nodal settlements. Within the next several decades, the entire coast from Chuburná Puerto to Dzilam de Bravo will undoubtedly witness extensive beachfront urbanization.

The sandy barrier coastline of northern Yucatán has historically been characterized by slight shoreline erosion, both as a result of normal wave action and also by human interference with the prevailing east-to-west longshore sediment drift. The Progreso waterfront, for example, has historically experienced much local erosion as a result of port construction, and a rare hurricane in 1947 destroyed many beachfront structures. The first human responses to erosion, however, were efforts to improve the beaches for recreationists. In 1964, several rock-and-timber groins (espolones or escolleras), designed by government engineers, were installed fronting the Progreso malecón. In the short term, the espolones proved to be relatively successful in offsetting a trend of beach erosion.

Armoring of the recreational shorefront increased after the construction of the safe harbor (puerto de abrigo) at Yucalpetén in 1968 (see Figure 6). Although the storm-protected safe harbor provided a suitable base for the Progreso fishing fleet,
Figure 8. A theoretical model of resort evolution (loosely based upon a model by Butler 1980).

a naval base, and a growing seafood processing industry, the dredging of a channel through the barrier island led to accelerated shoreline erosion downdrift of the jettied entrance. In response to the high rates of erosion (the 1978 map indicates retreat of over 30 m in a 10-year period immediately west of the jetties), widespread unauthorized espolón construction began (see Figure 7). Beachfront lot owners built espolones — eventually extending westward to beyon Chelem — without obtaining either advice on engineering or the legally required construction permits. Approximately 75% of the vacation home properties west of the Yucalpetén jetties presently encroach to within the 25-meter wide federal beach easement as a result of beach erosion, and many seasonal landowners perceive groins as a means of saving their property. As groin construction led to increased downdrift erosion, more groins were built in response, and between 1968 and 1985 the leading edge of espolón construction continued to migrate westward. During a 1984 aerial survey, 178 espolones were noted along the 8.8 km stretch from Yucalpetén to Chuburná Puerto, an average of one every 50 m. Groin density is highest between the jetties and Chelem. As a consequence of this shoreline modification, the attractiveness (and widths) of the beaches diminished. In the early 1980s, officials from Chuburná Puerto formally complained that espolones had increased shoreline erosion within their jurisdiction, and by April 1985 the ban on unauthorized groin construction became actively enforced. Several groins have been removed from the Chuburná ejido beachfront since 1985.
In recent studies of recreational development patterns along the Gulf Coast of both the United States and Mexico (Meyer-Arendt, 1987b; Meyer-Arendt, 1988), temporal (theoretical), spatial (morphological), and environmental models of resort development were proposed. Theoretically, resort evolution progresses along a classic S-curve model (Figure 8), in which the x-axis represents time and the y-axis measures development levels either by numbers of tourists or numbers of housing units. Progression of resort development along the curve can be described by at least four evolutionary stages—exploration, infrastructural development, settlement expansion, and (a levelling off stage of) maturation—with the potential of a fifth (landuse intensification) if levels of recreational demand remain high enough to warrant higher density development. Each of the evolutionary stages may also be described by a characteristic urban morphology. These patterns of evolving resort morphology may, in turn, be schematically modelled (Figure 9). Modelling of the
environmental aspects of resort evolution proved to be less accurate because of the high amount of variability in physical parameters such as winds, wave energy, shore erosion vs accretion, and storm frequency, among others. In the case of erosional shorelines, the greatest magnitude of structural modification was found to fall more within the settlement expansion stage than in the higher, levelling off, stages.

Whereas the exploration stage is characterized by day use visitation and perhaps a sprinkling of beachfront cottages (see Figure 9), in the stage of infrastructural development a conscientious decision has been made by one or more entrepreneurs to recreationally develop the site. At the beach terminus of the access corridor, a recreational business district (RBD) develops, and one or more hotels may be built nearby. If recreational demand exists, the site will enter a stage of settlement expansion whereby the RBD will expand laterally along the beach, the access corridor will become more commercially developed, and the distal beachfront zones and more interior sites will fill in with recreational housing (mainly with single-family structures while real estate values are still relatively low). Residential canal subdivisions may characterize the backbarrier if conditions warrant and if demand exists. Eventually, all available land will fill in, and the resort may enter a stage of landuse intensification if recreational demand remains high. Developers may replace low density forms of landuse with highrise hotels and condominiums. The level at which a resort reaches a growth plateau represents the stage of maturation.

Summary

Comparison of U.S. resorts with Mexican resorts reveals mostly similarities in patterns of development, although the Mexican Gulf Coast study sites (Tecolutla and Progreso) are still in earlier stages of development. While the U.S. resorts were classified as being in advanced stages of development (either active landuse intensification or having reached plateaus at varying levels of maturation), the Mexican Gulf Coast resorts fell into varying degrees of the settlement expansion stage of the model. A smaller Mexican leisure class, a depressed national economy, perceived adverse physical conditions, and alternative tourism opportunities (e.g. the Pacific resorts for Mexico City recreationists) may all be held accountable for the slow rates of growth along the Gulf Coast. However, development pressures are locally high, as in the vicinities of Veracruz and Progreso. During the stage of settlement expansion along the eroding shoreline west of Progreso, (unauthorized) human modification of the shoreline by groin construction was widespread, and considerable beach degradation has been the result. At the other major recreational shorelines in the state of Veracruz, the rivermouth resorts (e.g. Ciudad Madero, Tuxpan, Tecolutla, Casitas, Chachalacas, and Boca del Río) have benefited from accretion due to both natural processes and jettying of channels.

In view of the Mexican government emphasis on developing international tourism in the Club Mex enclaves along the Pacific and Caribbean coasts, it is likely that the past recreational development trends along the Gulf Coast will
continue as outlined above. In Tabasco, the rerouting of the main highway from an inland location to along the barriers (projected for completion in late 1988) may stimulate minor resort development, but growth within the three resort clusters in Veracruz and Yucatán is expected to remain the dominant trend.

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