PROSPECTS FOR EXPANDED ALTERNATIVE TOURISM IN LOS CUMBRES DE MONTERREY NATIONAL PARK REGION, NUEVO LEON AND COAHUILA, MEXICO

THESIS

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CHAPTER 1

INTRODUCTION TO THE STUDY

"Here is an under-explored region, 150 airline miles from Texas,
a completely different world..."

- Roland Wauer, *A Naturalist's Mexico*

During the summer of 2003, under a fellowship from the Mexico-Norte Research Network, I conducted research in Saltillo, Coahuila, in Big Bend National Park, and in the Sierra Madre Oriental between Saltillo and Monterrey, Nuevo Leon. A three hour drive from Laredo, Texas, these very rugged mountains present recreational and educational opportunities undreamt of by typical Anglo-Americans. The study area encompasses two very large national parks: Los Cumbres de Monterrey, enfolding Monterrey to the south and west, and Sierra Arteaga, which is the adjacent national park on the western side of the Sierras, in Coahuila.

The goal of this research was to assess the prospects for the expansion of alternative tourism from the United States.

The project has three main components -

1) Characterize existing tourism resources [Chapter 2], define alternative tourism and briefly discuss how efforts to attract visitors from the U.S. mesh with proposed management plans for the region [Chapter 3],

2) Assess changing demographic and cultural variables that favor an increase in international alternative tourism to the region [Chapter 4], and

3) Identify and survey a pool of potential visitors on their relevant attitudes and perceptions concerning travel to natural areas in Mexico [Chapter 5].

Each of these questions is intimately related to the implied practical question: "To increase the flow of northerners, where should scarce resources be invested?" For Mexican agencies and small business owners concerned with this issue, gaining a better understanding of the interests and concerns of their potential visitors is critical. The results of this research suggest actions that could be taken to increase the draw from the United States.

Each year, the state of Texas generates billions of dollars from tourism. The Texas Department of Economic Development surveyed non-Texans, asking them to identify top vacation attributes. "Attractive scenery" topped the lists. Los Cumbres de Monterrey contains some of the most visually stunning landscapes within hundreds of miles of central Texas. The standard geographic distance-decay model leads us to expect greater economic ties and greater flows of information between relatively nearby regions. Yet, this resource remains virtually unknown in the north. In fact, no sites in northeastern Mexico rank in the Top 20 destinations for U.S. tourists in Mexico (Gillard, 1991.) This is an extremely curious statistic, given the close proximity to the large population centers of Texas, the volume of immigrants regularly crossing the border, and our highly mobile population.

A number of interesting questions follow from this curiosity:

- What are the barriers that impede the flow of visitors?

- What are the likely impacts of changes in U.S. demographics and personal "meanings of tourism"?
- How could information about the region's tourism resources be conveyed in a more culturally appropriate fashion?
- What steps can local communities take to increase revenues from tourism, while avoiding some of the ecological problems plaguing the more "standard" tourist locales?

Several factors combine to make Los Cumbres de Monterrey/Sierra Arteaga region a good case study for answering these types of questions. First, the area is remarkably rich in resources (Wauer, 1992.) Consisting of many different ecological zones, the park forms part of a vast transnational wildlife corridor generally recognized as one of the world's most important eco-regions (SEDESOL, 2003.) Tourism resources include wildlife and bird watching, fishing, canoeing, caving, climbing, horseback riding, hiking, camping, adventure racing, and orienteering; as well as numerous types of educational travel: social/cultural, historical, archaeological, geological, horticultural. The mountains and surrounding desert hold fossil evidence of ancient animal life, along with petroglyphs and other traces of ancient human inhabitants. The national park designation and the ruggedness of the sierras have preserved the interior regions from extreme commercial exploitation, despite the fact that they virtually encircle Monterrey. These interior park regions have not suffered significant ravages from mining or commercial forestry, and large carnivores such as bears, eagles, mountain lions and jaguars still stalk the heights. Hundreds of plant and animal species are both rare and endemic (Museo del Desierto, 2003.)

Second, the parks are quite close to the U.S. border. Many Houston, Dallas and Austin residents who, out of love of the Northern Chihuahuan Desert, make annual

pilgrimages to a sometimes crowded Big Bend National Park (NPS, 2002) would be very surprised to learn where a slightly shorter drive could lead.

Third, Mexican local and state governments currently engage in various forms of English language advertising, including web sites and U.S. based visitor centers, but to date these efforts have met with limited success. Governing agencies, especially on the relatively underdeveloped Coahuila side, have just begun to view eco-tourism as a critical part of the plan for developing the region (Strozzi, 2003.)

The assets of the region, as documented by naturalists from both the United States and Mexico, are striking, and knowledge of the area in the states is so sparse that almost any successful diffusion of information about the region has the potential to cascade quickly. The largest impediments to date have revolved around the lack of *any* diffusion of information from south to north, principally because the local residents do not appreciate the degree to which the area could attract northerners. An interesting race is underway as social movements within Mexico try to impart appreciation for these resources, as in some cases they are being overused and degraded. U.S. visitors to the region could help these local movements enhance the ecological consciousness of the population. It is to be hoped too that by gaining familiarity with both well-functioning ecosystems and environmental failures, U.S. visitors can return home with greater sensitivity to each.

CHAPTER 2

SITE DESCRIPTION

General Administrative Context of Northern Mexico's Natural Protected Areas

In "El sistema de areas naturales protegidas en la frontera de Mexico y EEUU", Reval and Espejol (1993) discuss some of the historical challenges facing Natural Protected Areas in the border regions. *Areas Naturales Protegidas* (ANP's) in Northern Mexico cover less than 3% of the land area of the border states; ecologists (Reval and Espejol, 1993) would prefer to see closer to 5% of the land in this region protected. Mexico is signatory to numerous bi-national and international environmental agreements, addressing issues ranging from air pollution to endangered species protections. The consensus view among Mexican ecologists (Reval and Espejol, 1993) is that two critical areas have been systematically under-addressed: habitat protections and sources of funding for agreed upon protections. International NGO's, such as World Wildlife Fund (WWF) and Ducks Unlimited of Mexico (DUMAC) can provide important ecological expertise for conservation projects, but, arguably, their more important contributions take the form of money to help close the gaps in protection funding, and to provide seed funds for local initiatives.

For an area to be designated an ANP, each of the following criteria must be met: a) representative biosphere, b) fragile ecosystem, c) high genetic diversity, d) possibility

for scientific investigation, education, eco-recreation, e) support poor rural development, f) self-financing. The final requirement, *self-financing*, represents a significant and obvious problem. In addition to lack of financial support, Reyal and Espejol (1993) contend Mexican ANP's also suffer from "overexploitation, ambiguous land ownership, ambiguous administrative jurisdictions, poor administration, under-enforcement, and lack of regulation." Lack of ANP vigilance in the border regions has led to problems with fires, insect plagues, wildlife theft and overuse. Despite the recognition of the need to involve locals early, there are still very few cases where natives have been heavily involved in ANP conceptualization from outset. The Ley General de Vida Silvestre (General Wildlife Law) prohibits extraction of plants and animals, opening new trails, and spotlighting animals, but in many cases, permits can be bought for damaging development projects. This has led to a feeling that conservation is applied inconsistently, favoring people in positions of power, while jeopardizing important habitats (Calegari, 1997.)

Unlike in US parks, rural populations are considered "part of the wilderness" and deserve certain protections. While more recent ANP management programs seek significantly more input from locals over reserve use, there are still significant political problems with declaring more lands "inutil". In addition to the fact that some ecological problems can actually be made worse under a poorly administered ANP regime, people have lived in these regions for many generations. These residents typically live marginal existences, and the prospects of protecting animals – and, from the native perspective, even more bizarrely, plants and cacti - at the expense of livelihoods is still regarded as

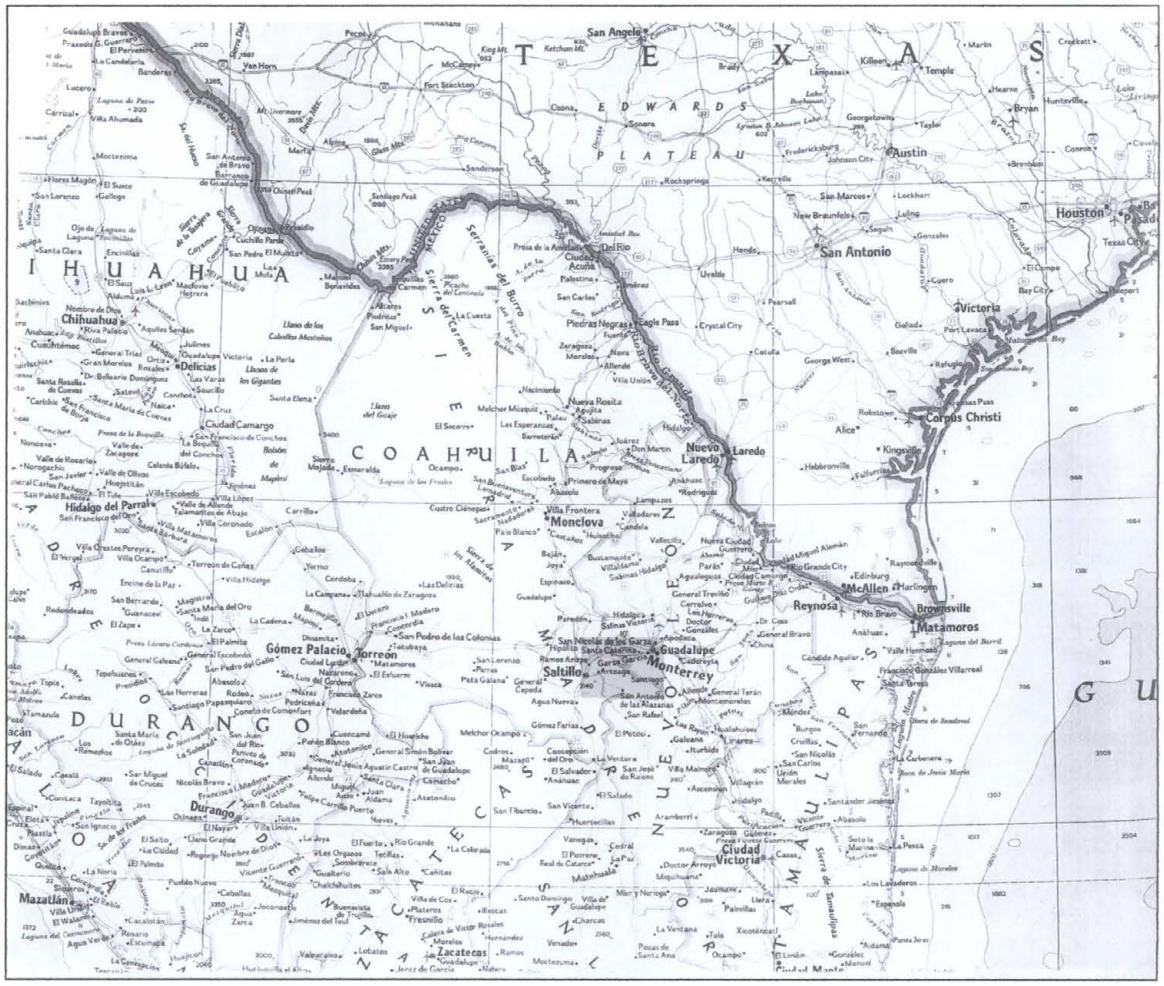
quite alien. In summary, the important role that ANP's can play in Mexico's rural development is still not completely recognized.

National Parks of the Sierra Madre Oriental

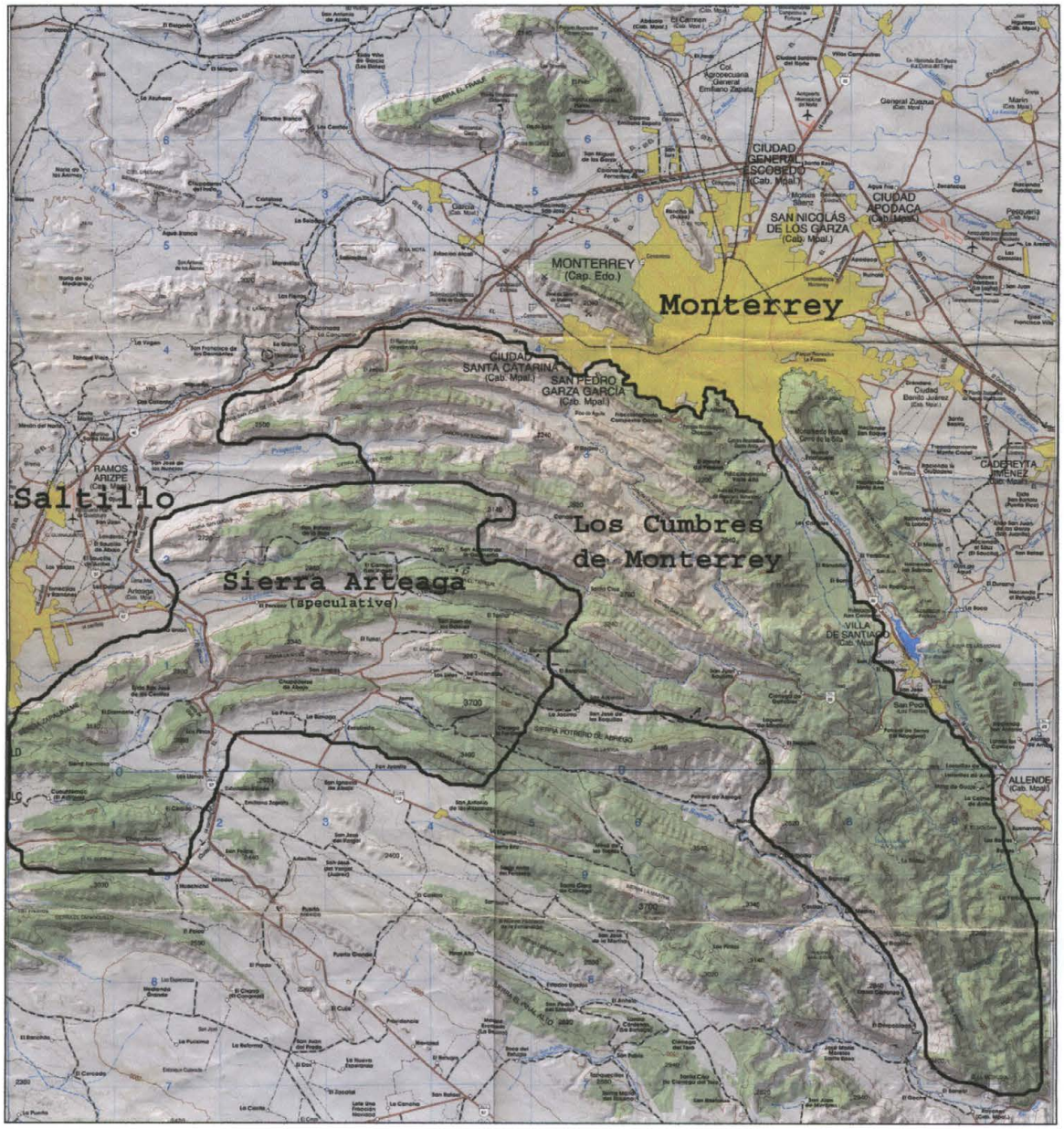
In the early 1500s when Spanish conquistador Hernan Cortez was asked to describe Mexico, he is said to have crumpled up a piece of paper and set it on the table. This serves as a particularly apt metaphor for the jagged Sierra Madre Oriental (SMO) between Saltillo and Monterrey. These ranges consist almost exclusively of sedimentary layers, principally limestone, dolomite and sandstone from the late Triassic in the heights, down through late Cretaceous exposures in the valleys. In the lowlands, more recent conglomerates and breccias are also common (INEGI, 2002.) What gives the region such a distinctive character is the fact that in many places these sedimentary layers were rotated by orogenic forces to almost exactly 90 degrees. This near-vertical landscape has greatly constrained human exploitation of resources in the park region. Travel is generally possible only along the east to west running valley floors. Points in Los Cumbres which are less than 20 airline miles southwest of Monterrey can be a full travel day away by high-clearance vehicle. The tallest ridges exceed 12,000 feet in elevation and provide Los Cumbres further isolation and insulation from industrial Monterrey by blocking essentially all of the city's occasionally severe air pollution problems.

The lowest elevation in the park region, near Monterrey, lies at just over 2,000 feet. This dramatic variation in elevation over such a short range, including in some cases sheer 3,000 foot headwalls, translates into a wide range of climates, many different habitats, and a high degree of biodiversity. Rainfall totals exceed 40" per year on the

eastern slopes, where moisture from the Gulf of Mexico is captured othrographically by the increasing elevation (INEGI, 2002.) In spring and summer, this rainfall supports ecotourism companies specializing in kayak trips and waterfall plunges (Territorio Aventura, 2003.) Most of the region lies in the rain shadow and often sees 75% less annual rainfall. This makes efficient use of water resources perhaps the most critical environmental concern for human settlements in the mountains. As the Sierra Madre slopes down toward Saltillo on the west, the flora and fauna gradually merge into forms characteristic of the Chihuahuan Desert, the highest and most biologically rich desert in the Americas (Museo del Desierto, 2003.)



[Figure 1 –Northern Mexico and Southern Texas,
Source: National Geographic, 2001]



[Figure 2 – Map of the Park Region, *source: INEGI, 1997*]

The eastern national park of the two, Los Cumbres de Monterrey (Summits of Monterrey), is officially listed as 616,250 acres. No less than eight different boundary maps for the park are in current circulation, so the exact size is in question. The park borders were initially designated in October of 1939, making it Mexico's oldest as well as its largest national park. In 1942, the park decree was essentially abandoned as

government recognized the economic hardship for people living there and the need for increasing agricultural production (SEDESOL, 2003.) Beginning in 1993, several organizations, ITESM, DUMAC, SEDESOL, and UANL (see glossary for descriptions), initiated new management projects. These efforts led to the publication of new boundary limits for the park in 2000, superseding 1939 and 1942 decrees. General objectives of the 2003 SEDESOL Management Plan are to conserve the functions and values of the present ecosystems in the Summits of Monterrey National Park, to promote sustainable activities of development and of environmental education. Sadly, northern stretches of the park, near Monterrey have become urbanized, privatized, mined and converted to industrial park. Even within the much more pristine central and southern stretches, park protections and enforcement are uneven.

Sierra Arteaga, on the Coahuila side, is arguably Mexico's newest national park, and here the protections and boundaries are even more ill-defined – the state agencies are still developing the first park management plan. These national parks are administered mostly by state agencies, but they receive significant assistance from local NGO's, such as PROFAUNA. The parks are a poorly delineated patchwork of private, public, and ejidos (communally held lands), with a number of well-maintained "sub-parks" inside the main administrative units. Less than 1% of the park area is considered federally owned land, marking a sharp departure from the U.S. model. Fewer than 10 state rangers patrol an area of approximately 400,000 acres in Sierra Arteaga, and their primary responsibilities include: fire suppression, preventing illegal timber harvests and trying to keep people from removing endangered plants and animals from the region. They are also

concerned with overgrazing, litter abatement and water quality issues, but their capabilities are overstretched in these areas.

Given the enormous size of the park region and the limited resources for enforcement, a significant portion of conservation efforts have devolved to the smaller "sub-parks." These smaller parks also contain much of the tourist infrastructure that visitors from the U.S. would expect in a national park, including a modest number of descriptive kiosks and signs, designated camping areas and well-marked trails. Ecoparque Chipinque is a forested preserve, owned by several businesses, featuring a hotel and restaurant looking directly down upon Monterrey from the south. Manzana is a public campground near the eastern slope, built and maintained by a private company. Zapaliname is a communally owned campground and vegetation restoration project to the east of Saltillo; most of the city's water supply comes from this area, so reforestation here has impacts that extend beyond the immediate park region. El Taray, in southern Sierra Arteaga, is the site of a large bird sanctuary, owned and operated by the Museo de las Aves (Museum of the Birds) in Saltillo. These smaller units are capable of limiting, monitoring and charging for access, an advantage not shared by the national parks.

As many as 200,000 people live in settlements on the park periphery. By contrast, the core of the park region supports perhaps two dozen small villages, generally consisting of fewer than 70 inhabitants. Population within Los Cumbres in the 2000 census was officially listed at 2,236 villagers and campesinos (SEDESOL, 2003.) The population living within Sierra Arteaga is somewhat larger, due to the wider valleys, and to the large number of apple orchards that are possible at the higher and cooler elevations found in the west.

All roads in the core regions are unpaved; stretches are very steep and frequently impassible during and after heavy rainfalls. Transportation is very slow, whether by bus, mule, burro or high clearance vehicle. The vast majority of the population does not own a personal vehicle. In fact, as much as 60% of the population may live outside of the formal economy altogether. Some small schools exist, but children must leave for the cities for anything beyond the most basic first few years. Literacy rates average 85%, with higher rates among children. Basic health care is poor and provided by touring medical busses which are sent through by the municipio (county government) at monthly intervals. Publicly-generated electricity is generally not available in the core regions, although small solar panels see occasional use. Water for humans and animals comes mostly from wells, and is frequently ported over long distances via PVC pipes. Many kilometers of arroyos that previously held some water are now dry, partly from deforestation, partly from extended drought.

The population supports itself through a combination of small-scale farming, (permitted on lands with less than a 10% slope), animal husbandry, the collection of pine nuts and assorted fruits and plants, forestry products, tourist services and small businesses. Corn, sorghum and wheat are the main seasonal agricultural products; apples, peaches, nuts and avocados are the perennials. (Marquez, 1995, SEDESOL, 2003.)

While these mountains were never an engine of great wealth, a number of factors over the past 30 years have combined to make life here even more tenuous. The eastern region's timber was devastated by regional fires in 1984 and 1998, both followed by insect infestations. Recent agricultural dumping from the U.S. and the generally more

competitive global commodity markets have dropped the prices for apples, the most important cash crop. The orchards, initially established in the 1920's using varieties from France, have further suffered from a series of unseasonable freezes, drought and battering hailstorms. Small-scale commercial wheat, barley and oat production in the central regions has been ruined by extended drought. Enforcement of bans on illegal timber harvests and small-scale mining have also grown more effective over time; in many communities in Los Cumbres, SEMARAT actually prescribes the timber harvest to the meter. The exact numbers are unknown, but since the 1980's, there has been a stream of migrants from the park regions to adjacent cities and to the U.S., as people seek better economic opportunities. Emigrants provide a critical source of support by sending funds back into the region.

CONAZA is a federal organization which partners with regional technical institutes to collect research on commercially viable uses for desert plants. CONAZA then disseminates these techniques to people living in arid, poverty-stricken, rural areas. These techniques allow people to remain on their ancestral lands, despite the generally depressed local economy, although some of these uses put humans in conflict with conservation goals. These conflicts include the depletion of rare plants, conversion of endangered species habitat, and in many cases direct competition with endangered species for food.

The park region does have environmental problems. Historically in Mexico, the needs of urban areas have been privileged over the rural, at great social and ecological cost. Mining of gypsum and dolomite in the northern part of Los Cumbres serves as a fine example. Las Mitras, a mountain to the northwest of Monterrey, is essentially

disappearing to provide building materials within the city. Within the core regions, apple orchards, grazing and logging have all displaced endangered species. Villagers have been known to shoot bears and eagles. Litter is a regional problem. The importation of Western European ranching styles to North America is widely viewed as one of the principle causes of land degradation; overgrazing contributes to soil loss and even to road damage from erosion. Areas near the major cities have water and air pollution. Water resources are scarce and in decline in some areas. In Zapaliname, the mountainous area immediately southeast of Saltillo, low-income housing developments are replacing a forested region that serves as the source for 70% of the city's water supply (El Norte.com, 2001.)

In spite of these problems, the SMO remains a tremendous reservoir of genetic diversity, with many wild cousins of cultivated plants. Although no comparable assessment has been attempted for Sierra Arteaga, biologists have identified 588 distinct species of fauna in Los Cumbres (Subsecretaría Forestal y de Fauna Silvestre, 1994.) This area contains a bewildering number of pine species. 40% of the world's pine species and over 200 oak species occur in Mexico; this region is recognized as Mexico's 2nd richest in pine and oak species. Jaguars have been spotted in the southern reaches of the park, in oak and mixed oak/pine forests. Other rare or endangered species include the black bear, ocelot, lynx, puma, jaguarundi, purple-breasted parrot, and several varieties of owls, falcons and eagles. Appendix A gives a complete list of wildlife species in Los Cumbres which have been classified by the Mexican Subsecretariat of Wildlife and Forestry as *endangered, threatened, vulnerable, rare and endemic* or *under special protection.* Table 1 gives a concise summary of these rare Cumbres species - a cursory

glance reveals some of the potential the region has for attracting birdwatchers. Mexico supports 40% more bird species than US and Canada combined, and the SMO serves as a migration corridor for hundreds of them (Museo de las Aves, 2003.) Coahuila alone is also home to 38 different bat species (ICE, 2003.)

Table 1 - Los Cumbres Wildlife Species Subject to Special Conservation

Species in danger of extinction:
Ruby-crowned Kinglet, Golden Eagle, Maroon-fronted Parrot, Jaguar.

Threatened species:
Prairie Falcon, American Robin, Cedar Waxwing, Nine-banded Armadillo, Ocelot, Margay, Jaguarundi, Elegant Trogon, Black Bear.

Rare and endemic species:
Muscovy Duck, Neotropical Rattlesnake.

Vulnerable species:
Sharp-skinned Hawk, Cooper's Hawk, Harris' Hawk, Grey Hawk, Red-tailed Hawk, Crested Hawk, American Kestrel, Wild Turkey, Red-billed Pigeon, Band-tailed Pigeon, Barn Owl, Eastern Screech Owl, Whiskered Screech Owl, Northern Pygmy Owl, Spotted Owl, Blue-throated Hummingbird, Magnificent Hummingbird, Green Kingfisher, Golden-Olive Woodpecker, Olive-backed Warbler, Golden-cheeked Warbler, Blue-crowned Motmot, Green Parakeet, Black Vulture.

Species under special protection:
Northern Mockingbird, Northern Cardinal, Scott's Oriole, House Finch, Bobcat, Puma.

Chihuahuan Desert plants are frequently found up to 7,000 to 8,500 ft in elevation, so in many respects, the SMO can be considered Chihuahuan Desert with islands of pine and oak forests in the highlands (Wauer, 1992.) 3500 vascular plant species are found in the in Chihuahuan Desert, and 28.5% are endemic (Reyal, et al, 1993.) The desert contains 89 speices of cactus and another 54 of agave, with 10% rare or endangered. According to Wauer (1993), a skilled naturalist can deduce their location

to within a few miles anywhere in the region by the unique distribution of cacti and agave.

Because of the close proximity to the large city of Monterrey, studies of Los Cumbres have produced over 100 masters' theses in the biological sciences at just one technical institute in Monterrey (Universidad Autónoma de Nuevo León.) Students and faculty at the Earth Sciences Department of U.A.N.L. have assembled a similarly thorough academic picture of the physical geography of the region, including paleontology. However, surprisingly little of this knowledge has been translated into English or diffused north of the border.

CHAPTER 3

ALTERNATIVE TOURISM AND REGIONAL DEVELOPMENT PLANS

The most common definitions of eco-tourism include broad statements, such as: "responsible travel to natural areas, which conserves the environment and sustains the well-being of local people." Alternative tourism is often regarded as a superset which includes eco-tourism, community-based tourism, cultural and educational travel. The term eco-tourism has developed many unwanted connotations as it has been used to market enterprises of dubious sustainability, so for purposes of this discussion, alternative tourism is preferred. The label should be understood principally in terms of what it is not - traditional tourism, with its package ski trips, beach tours, cruises, luxury hotels, et al. Examples later in this chapter will illustrate some of the difficulties inherent in cleanly classifying tourism activities as either "traditional" or "alternative", "bad" or "good". Ultimately, such labels can only serve as a very rough guide to the complex web of costs and benefits, and to the potential winners and losers from any form of tourism development.

Because of the potential economic benefits, the prospects that these benefits could be widely distributed, and the possibility of conducting the trade in a relatively sustainable manner, alternative tourism holds great promise for providing resources to developing communities. Non-standard tourism encourages people flows across borders and assists in the creation of cultural hybridizations. It encourages all parties to develop

an interest in environmental education, which in addition to ecological benefits, can increase social capital and cohesion.

Developing Mexico was a small, open economy where natural resources served as a poor substitute for skilled labor. The Neoclassical growth model predicts low income countries should automatically see higher growth rates until eventual convergence results: freer trade leads to faster trade which leads to faster economic growth. The Endogenous growth model is a competing model and a critique of globalization. It advises nations to focus their resources on development of new technology and education, not on exports (Bautista, 2000.) Tourism development represents an endogenous growth pattern.

Unsurprisingly, given the serial blows suffered by the agricultural sector, various forms of tourism are regarded by many as the best hope for economic development in the Cumbres region. Two sites in Los Cumbres have long been conventional tourist meccas for people from Monterrey – Huasteca Canyon, just south of the city, and the area around an eastern slope waterfall known as Cola de Caballo (Horsetail Falls.) On the western side of the mountains the resort community of Monterreal markets itself as "The Switzerland of Mexico"; it features a faux ski slope and alpine lodges. These sites all lie on the periphery of the park region, and the number of visitors to these areas has been increasing year after year. Independent of any ecological problems associated with their construction, these developments have served to polarize communities to some degree - locals complain of not seeing benefits, but seeing trash, traffic and air quality problems instead (SEDESOL, 2003.)

Traditionally, tourism development in Mexico has meant large-scale projects. The federal government took a central role in creating tourist destinations such as

Acapulco, Puerto Vallarta, and Cabo San Lucas. Even a cursory review of the tourism literature shows a universal recognition of the limitations and problems that have resulted from conventional tourism. In the case of some of the older beach destinations, it would not be unfair to assert that the natural resource initially serving as the attraction has now in large part been depleted by congestion and pollution.

Small-scale tourism business in the Sierra Madre Oriental (SMO) generally revolves around the cabanas (rental cabins). The amenities and costs associated with the cabanas vary widely by region. In some areas, electricity and indoor plumbing are available; in many, they are not. Prices can range from $7 to $70 or more a night, and the price seems more closely related to remoteness than to amenities or to the quality of the surrounding scenic landscapes. The cabanas can be found in clusters of up to half a dozen, but this is the exception rather than the rule. Typically, they are found in isolation, and this greatly curtails the occurrence of secondary services, such as restaurants, horseback riding and bicycle rentals. Cabana renters today are almost exclusively Mexican nationals, but in many areas, especially on the eastern slope, this activity represents a significant portion of the local economy. In general, cabanas are more common on private land than on communal lands. In most cases, the owners are locals, and so the profits are reinvested locally. There is generally not an "off season". But they are not a panacea. Lack of economic activity forces campesinos to sell to private owners who may change the land use from agricultural or woodlands to cabanas, possibly destroying wildlife habitat. And according to SEDESOL, a 'tourism disaster' befell the community of El Olimpi, when the community donated land for 50 cabanas in exchange for the promise of jobs which never materialized.

The Municipio of Santa Catarina has in the past year proposed cabana construction in San Antonio to give locals work, but the locals would prefer to build the cabanas on their own terms, to protect their forest resources and to own and administer the cabanas, rather than just service them. In general, locals have had very little input into the damaging large-scale production projects; also, large new ranches have begun barricading canyons and reducing the locals' access to firewood.

Locals view any sort of tourist development as something that will bring enhanced services for them, partially from the government, partially from developers (Strozzi, 2003.) The park regions with greatest tourism traffic, generally those to the east, also have higher literacy rates, better medical care, better roads, better water, wastewater and electricity services (SEDESOL, 2003.)

Hotel owners and businessmen in Saltillo have traditionally been skeptical of the idea that eco-tourists will spend much money or bring much benefit to them. However, weekend occupancy rates are lower than weekdays, so they have begun funneling a small percentage of profits into a joint marketing fund, administered by the Coahuila state tourism agency (CT.) Recently, recognition has begun to dawn on the Saltillo tourism business community that people drawn to backpacking in the mountains may have multiple identities - urban tourists and shoppers - at different points in their vacation. To date, CT has not had the resources to generate good statistics, so the relationships remain speculative. Travel agencies calling CT asking about alternative tourism opportunities are told the infrastructure is still under development (Strozzi, 2003.) There are a small number of eco-tourism companies already operating on the Coahuila side of the mountains, although far fewer than on the eastern side. Their promotional material

indicates a good use of educational themes, primarily ecological but also including historical and cultural assets. Their main problems, as would be expected, are limited resources for equipment and promotion. Colorful "ecotourism maps" have existed since at least 2002, and these draw attention to businesses, roads, trails and campsites within the park region. In many instances, the "roads", "trails" and "campsites" prove to be much better developed on the map than in actual practice.

Ecological managers for Sierra Arteaga have been - and remain - skeptical over the idea that bringing more people into the mountains will make their conservation work easier. Across northern Mexico, a strong correlation has been established between the number of visitors to a preserve and the number of exotic species within the preserve (Calegari, 1997.) Camping can degrade fragile desert ecosystems. ICE is particularly concerned by the risks posed to wildlife by automotive traffic and theft. In Los Cumbres, by contrast, park managers have begun to view ecotourism companies as a conduit for delivering environmental education materials; in the future, they should be sought for help with planning, promotion and more significant environmental education initiatives.

Conservation managers were also initially very skeptical of the role to be played by eco-tourists in helping to preserve Cuatro Cienegas, a Protected Natural Area (ANP), which was formally established in 1994. Cuatro Cienegas is an oasis of spring fed lagoons in the heart of Coahuila's Chihuahuan Desert, 180 km north of Sierra Arteaga. Many scientists considered nature tourism to pose a greater threat to the valley than traditional tourism because nature tourists by definition are drawn to the most sensitive areas of the valley (Calegari, 1997.) But in 2003, a proposal to permit excessive water

mining for ranching in the valley was defeated by a coalition that included ecotourism businesses.

There is a potentially intractable problem in distinguishing alternative tourism from some forms of conventional tourism that may have some benefits but with non-obvious negative impacts (Butcher, 2003.) For example, if a family drives from San Antonio, Texas to a bird sanctuary in Sierra Arteaga, buys food and gifts locally, steals no parrots, leaves no trash, but sleeps in some of the very large, corporate lodgings at Monterreal in the southern part of Sierra Arteaga, dwellings that the Instituto Coahuilenese Ecologico (ICE) considered an ecological disaster, have they engaged in alternative tourism? This is a difficult philosophical question, and there are very few pure cases – especially since transportation generally means taking personal vehicles into the mountains. The issue is complicated by the fact that some forms of development may actually be able to increase the sustainable carrying capacity of an area. Water resources will always be a matter of critical concern in these arid environments, and over-extraction from wells there will always be a threat. Traditional land usage patterns have created and will continue to create problems.

This gives a feel for some of the complexities involved in declaring alternative tourism an unmitigated "good". These mountains will continue to be changed over time by human users. Various forms of small-scale tourism development, especially those approached from a community-based perspective, offer some of the greatest opportunities for cultural and ecological sustainability, and for a widespread diffusion of economic benefits.

Working models for community-based tourism development can already be found in Northern Mexico (Calegari 1997, Walker 1997, Lewitski 2002.) The mid and late 1990's saw a general recognition among park administrators that substantial buy-in and cooperation from the people living in a Protected Natural Area (ANP) is a critical component of any successful management plan (Reyal, et al, 1993.) Interviews conducted after the establishment of the Cuatro Ciengas ANP demonstrated that locals who had been consulted beginning in the early stages of planning and development supported the designation, while the majority of the population described themselves as "conservation victims" (Calegari, 1997.) State officials simply do not have resources available for enforcing draconian or highly unpopular mandates (ICE, 2003.) Also, modern management theory predicts that the most efficient decisions about resource utilization are generally made the lowest possible levels, by the people who have the most direct information. ICE conservation managers strongly push the proposition that the best conservation generally occurs at the level of the individual landowner.

Research by Walker (1997), Lewitski (2002) and others document how village-scale cooperatives profit from tourism to the Rancho El Cielo Biosphere Reserve, some 150 km to the southeast of Los Cumbres. These ventures address many of the best criteria for culturally and ecologically sustainable development, but to date they only marginally meet the requirements of economic sustainability, principally due to periods of very low traffic. Marketing has been cited as a critical factor in the success of community-based eco-tourism projects in other parts of Mexico (Roach, 2001.) Walker documents higher average expenditures by visitors from the United States for El Cielo. These constitute less than 25% of El Cielo visitors, and although meaningful visitor

statistics for the Cumbres region are unavailable, this percentage for Los Cumbres is almost certainly[1] much lower. Increasing this population can clearly have significant implications for marginally viable enterprises in economically depressed areas.

However successful these small-scale community-based projects may be culturally and ecologically, their ability to attract international visitors remains contingent upon the efforts of regional actors, such as state tourism agencies and businesses with resources for regional promotion. These efforts, in turn, are constrained by a limited understanding of the fears and motivations of these potential visitors.

Obstacles to International Travel

A number of cultural barriers impede the flow of tourists across the US-Mexico border. Some, like language and safety concerns, are obvious, while others are much less so. The most significant barrier appears to be the astounding lack of awareness among Texas residents that parks exist in northern Mexico. Part of this problem stems from the inadequate financial resources for public and private promotion efforts (Stozzi, 2003.) Part of it reflects a different cultural sensibility by people from the region. Typical Mexican perceptions of nature are different than those of typical Americans; this slows diffusion of place knowledge across the border. To give an example, even among lifelong Texans who will never travel to Big Bend National Park, there is still a broad awareness of why people travel to this area; a general understanding of the attraction has permeated the entire culture. Local Mexican knowledge of the parks directly impacts diffusion of knowledge north, and many Cumbres/Sierra Arteaga residents are unaware

[1] For an area as large as the park region and with as many possible entrances, good usage statistics may never be possible. Several times, locals told me that I was the first norteño they had ever encountered in the mountains.

they live in a national park. Even locals who do appreciate the area's special nature fail to appreciate the appeal the area could have for northerners.

American perceptions are excessively biased by the border regions. By any of a number of metrics, this is the starkest border in the world (Stea, 2004.) Disparities in wealth, education, life expectancy, pollution and general opportunities on each side of the border present a striking contrast. Many Texans are familiar with the border regions and extrapolate these impressions across all of Northern Mexico. The idea that the majority of urban residents in Northern Mexico may enjoy an essentially U.S. middle class standard of living is nearly incomprehensible, and this directly impacts perceptions of safety. Further, the U.S. Consulate reinforces belief that "Mexico is a dangerous country" (U.S. Dept of State, 2004) by focusing on individual non-representative incidents. The mordida problem (small-scale extortion, literally: "little bite") with police near the border has not been resolved. Other, less common but more severe forms of police corruption still appear. Although the disappearance of several hundred Juarez residents seems to have made little impression on the public consciousness north of the border, the idea of foreign police corruption is one with which Americans have very little patience. For Americans, this is a problem which calls into question the very fabric of the social contract where ever it occurs outside the U.S., and consequently it adds an element of grave uncertainty.

As noted above, the traditional interpretive devices favored by Anglos (Meis, 1983), such as: pamphlets, brochures, interpretive centers, audio/visual presentations, roadside signs, posted maps and clearly delineated trail networks remain in a primitive stage of development and are erratic in coverage. No controlling governmental authority

has yet been charged with developing a management plan for Sierra Arteaga. The management plan, and in many cases tourism infrastructure, for Los Cumbres is relatively advanced, but still very different than the U.S. norm. For example, much of the land in the park region is privately or communally held, and this can impair free movement. Valid campsites are not always obvious.

Another barrier comes in the form of simple travel logistics. While the absolute distance is not great, a perception of great distance is fostered by the lack of reasonable flight options and uncertainty over roads. Airfare costs are excessive for the distance traveled, and direct flights from major Texas cities are less common than would be expected given the populations and proximity. U.S. class prejudices may also be in play, preventing more people from exploring bus travel options. Texans have little knowledge of the Mexican system of toll roads, which are comparable in quality and safety to the U.S. interstate highway system. Several years ago, the federal government of Mexico briefly imposed very high fees for bringing personal vehicles into Mexico. Although the policy was almost immediately rescinded, an unpleasant signal was sent and widely publicized. Finally, travel in the U.S. is income elastic; a stagnant U.S. economy, coupled with high fuel prices, will affect even driving vacations.

Mexican Initiatives

Many governmental and non-governmental players in the region are engaged in a number of activities to help increase international tourism. Some of these initiatives reveal a high degree of sophistication in identifying where scarce resources could be usefully employed. The national government has dropped tourist visa fees and large

vehicle deposits for short-term (less than one week) visitors. The national government is also taking visible steps to reduce problems of police corruption. This is a critical step, because these problems are central to Americans' safety apprehensions.

The Coahuila state tourism agency plans presentations to eco-tourism businesses in all major Texas cities in the upcoming year, as well as features of regional attractions in large volume U.S. adventure magazines (Strozzi, 2003.) Competitive events, such as races, to sell eco-adventure are in early stages, but initial responses suggest good potential here. These are near ideal target demographics.

The SEMARNAT/SEDESOL Cumbres management plan proposes interpretive centers and field stations in the heart of the park region (SEDESOL, 2003.) The management plan also proposes a number of databases for tracking park usage and web pages to distribute information on services, as well as a registry and certification process for all tourism companies working within the park.

Ecotourism resources in the region are generally under-appreciated and under-utilized by people from the major population centers of northern Mexico, and this strongly affects the amount of information which filters north. The cultural reasons for this lack of appreciation are complex. There are lingering class issues, with camping not traditionally assuming the middle-class associations it enjoys in the U.S. Cultural tourism, the idea of visiting people living traditional lives, is also regarded as a fairly alien concept to urban sophisticates in Mexico. And a simple look at the prevalence of litter in some places, a fact which drives ecological managers to distraction, reveals a dramatically different sensibility toward the environment.[2]

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[2] Mexican anthropologists frequently assert that Hernan Cortes brought the concept of litter to the New World. His usage of crumpled paper to emphasize a point was noted above.

Multiple initiatives are underway to raise Mexican society's ecological consciousness, and a better awareness of ecotourism resources will certainly speed the transfer of knowledge of them across the border. A new emphasis has been placed on educating youth, to impress them with both the importance of ecological relationships and the value of their surroundings (Museo del Desierto, 2003.) Museo de las Aves and Museo del Desierto and others serve as de facto interpretive centers for region, and these are increasingly well advertised. Zapaliname provides campgrounds for large groups of visiting schoolchildren, and a large fraction of the environmental education materials produced by ICE target youth.

Environmental education has a fundamentally subversive agenda: changing behavior. The underlying assumption is that people act in a manner that jeopardizes their long-term interests because of a lack of understanding of ecological relationships. This does not address the fact that there are circumstances where the short-term needs may be sufficiently acute that informed, rational actors sacrifice long-term possibilities; nor does it address the question of how to balance the conflicting needs of groups competing over resources. Nevertheless, this excerpt from Valeria Calegari's study on Quarto Cienegas presents a nice summary of the higher goals of environmental education:

> Environmental education offers people a chance to develop an expanded definition of the natural resources of their surroundings, and with this expanded sense of possibility people might begin to accept the tenets of conservation. At the same time, it is crucial that those implementing environmental education programs recognize the predominant cultural viewpoint that says the purpose of the land is to provide resources for people. Environmental education must make clear the fact that conservation does not require that people give up the extraction of resources, but only asks that resource use be reassessed and modified in light of the sustainability and fragility of the resources themselves, and that people consider the long-term consequences and the future significance of their own actions.

If undertaken in the right spirit, environmental education does not to tell people how to behave or what to believe. Instead, by providing people the details of legal declarations, by introducing them to places, species, and the ecological relationships between them, environmental education can help people to develop their own informed opinions as to how resources should be used or managed. When carried out in this manner, environmental education can be a tool which empowers, rather than indoctrinates, local people.

CHAPTER 4

REVIEW OF TRAVEL PSYCHOLOGY LITERATURE

Any attempt to answer our central questions presumes we can first answer the general question: "Why do people travel?" Much of our theoretical framework comes from *The Psychology of Leisure Travel* (Mayo and Jarvis, 1981) and is bolstered by a review of more recent journals of travel research. These works catalog a wide array of qualifying and determinative factors impacting travel decisions. Personal perception factors include the Ulysses Factor, interests, needs, and status. External influences include roles and family, culture and subculture, social classes and reference groups. Groups strengthen and stabilize attitudes. Awareness – a reduction in perceptual ambiguity - translates into greater likelihood of visiting a place, even if the clarified picture contains real negatives. Formal, social and commercial sources of education all serve to reduce ambiguity and different sources carry different weight (Norman and Daniels, 2001.)

Travel represents some of the most symbolic of social purchases. Social prestige can be enhanced both by the novelty of a destination and by "morality" of travel style (Butcher, 2003.) The "meaning of tourism" has shifted subtly over the past decade (Godfrey, 2000) - in addition to the increasing interest in ecological and cultural tourism, "place assimilation" is now a form of fashion statement. Travel purchases can often be made on educational grounds when purely hedonistic reasons are insufficient, and since

2000, travel researchers have documented a spike in self-described "educational travel" (AP, 2004.)

This upsurge in the popularity of educational travel parallels a development noted by a wide range of sociologists. Ray and Anderson (2000) administered over 100,000 professional surveys and hundreds of focus groups throughout the 1990's. Performing factor analysis on responses, they feel they have identified a new, emerging group, which they termed the Cultural Creatives. In their view, this new demographic consists of about ¼ of the current U.S. population, and is characterized by a worldview markedly different than that of conventional groups – the traditionalists and moderns. While studiously avoiding the New Age label, members of this group commonly to subscribe to forms of spirituality where meaning is sought in novel places and novel modes of living, and often informed by serious ecological considerations. While they present no hard evidence explicitly tying this population to ecotourism per se, they do provide data showing interests and concerns consonant with those of an idealized model eco-tourist. They give good indirect reasons for believing that ecotourism will be a growth industry drawing heavily from this population. While Ray and Anderson claim to have found a newly emerging demographic, clear outlines of some of these behavioral patterns extend back well beyond the 1960's.

Sociologist Victor Turner (1978) documented universal features of people engaged in ritualized behaviors such as pilgrimages, and some of the similarities are quite interesting - particularly because many of the mountainous regions in the Chihuahuan Desert already enjoy groups of pilgrims visiting them for spiritual reasons. Semi-annual religious festivals see entire villages close down and walk scores of miles across the

desert to mountain sanctuaries. Some of these sanctuaries may pre-date Catholicism (Solis, 2003.) According to Turner, the experience of an individual in ritual actually transcends cultural categories and social structures, becoming "anti-structure", through which structural conflicts are muted and resolved. Put more prosaically, the pace and pressures of modern industrial life require periods of abandoning ordinary activities and social relationships. Ascent into the mountains, possibly with some form of self-sacrifice, serves as a metaphorical element in many religious traditions. Across traditions, mountain campfires present opportunities for the transmission of oral histories, moments of quiet reflection and the opportunity for redefinition of self.

Tourism literature makes reference to a mode of information filtering that alternative tourists adopt, called "mindfulness". It is loosely defined as an especially active engagement with one's surroundings, and it relates to The Ulysses Factor - a physical and intellectual search for knowledge, often pursued at the cost of personal risk. Prestige and self-esteem can be enhanced by self-narratives relating "risk and adventure" (Elsrud, 2001.)

Travelers prefer physical and emotional diversity, a mix of simplicity and complexity (Pearce, 1988.) Distance can serve as both a deterrent and an attraction – and in general, the greater the distance, the greater the expectation. Different activities attract different types of tourists; the first tourists to an area are very different from those attracted after extensive development.

These general, theoretical considerations will be applied to the specific case of Texans traveling to the Cumbres region for alternative tourist activities. Many

demographic and cultural shifts in American society collaborate to enhance the desirability of the Cumbres region.

Encouraging Growth

Ecotourism is the fastest growing segment of the tourism industry, supporting annual increases of 10-30% throughout the late 1990's – with most of this in international travel. (Vincent and Thompson, 2002) Tourist destinations follow a curve of discovery, popularity, obsolescence; mankind is on an unending quest to find the next new sites to replace the old ones. Globally, mountain vacations, to places such as the Andes, Nepal and the Alps are exploding in popularity. Tourism to the Alps currently attracts over $52 billion each year. There are, of course, many different types of alternative tourist, and length of stay and dollars spent per capita vary dramatically with activity. The aging Baby Boom generation and generally improving retirements means larger populations with more time and more money for travel. A weak U.S. labor market means larger populations of youth with less money but more time for travel.[3]

U.S. knowledge of the region is currently so low, any increase can precipitate a cascading effect. The Internet now provides a transmission medium for non-commercial (hence, more trusted) information on place. Informal information sharing is a precondition for reducing perceptual uncertainty on both the physical risks and financial/purchase risks, and a growing amount of English language information about the area now comes from non-commercial websites. Ongoing immigration and emigration by friends and family will continue to spread information.[4] To a certain extent, the popularity of a tourism destination is self-driven. Once a region receives a

[3] Obviously, local hotel and restaurant owners are more excited by the idea of retired bird watchers than by the prospect of waves of unshaven, Ramen noodle-cooking backpackers.

[4] Each of the norteños I encountered within the region discovered it during visits to Mexican friends and family.

certain critical mass of visitors, word of mouth fuels a further expansion and flight options increase.

Ongoing conventional commercial tourism development, while less than ideal in many respects, will generate greater knowledge of more pristine eco-tourism resources. The historical importance of travel agents, with a vested interest in selling air package tours, is declining with the increased use of Internet. Irritations with air travel security may also begin to favor driving vacations. The area currently has few tour operators, but the number is increasing over time.

The U.S. administration decision to devalue the dollar against major world currency makes travel to Europe and Asia less attractive. The peso is much more tightly coupled to the dollar, minimizing this effect. The historical year-over-year trend of increasing work hours in the U.S. translates into shorter vacations. The average stay in Big Bend is now only 2.2 days (NPS, 2002). This trend favors nearby destinations. The Law of Travel – "The greater the distance, the greater the expectation" - privileges nearby destinations which can offer unexpected attractions. Stagnant wages and a shrinking U.S. middle class should also favor more inexpensive, driving vacations.

Mountain parks are a very low crime area, especially relative to more popular Mexican tourist destinations (Strozzi, 2003, U.S. Dept of State, 2004.) And in many respects, the area compares favorably to similar areas on the Texas side of the border, such as Big Bend National Park. The closeness of major cities with hotels and emergency medical and vehicle services creates an "isolated but not dangerously remote" environment, relative to Big Bend. Cumbres region offers a more moderate climate than Big Bend, which is essentially vacant during summer, *the peak U.S. travel season* (NPS,

2002.) And the prevalence of cybercafes, even in remote villages, offers opportunities to be "isolated but connected" while traveling.[5]

[5] Cibercafes are a phenomenon correlated with an intermediate level of development. Countries at low levels of development have little or no computer capability. With the development of reliable digital capcity, but inadequate income, opportunities for Cibercafes appear. As electricity, private PC ownership and Internet connectivity become commonplace in an area, the market drops (Stea, 2004.)

CHAPTER 5

SURVEY OF POTENTIAL VISITORS

Research Methods

For surveying attitudes of Texans toward travel to national parks in northern Mexico, a pool of potential visitors was interviewed at Big Bend National Park in July of 2003 and May of 2004. Big Bend is the only comparable region in Texas. It includes: excellent Chihuahuan desert scenery with mountains, similar ecological features, few standard tourist amenities, and it generally requires a long drive[6]. These similarities make this population especially useful for determining why people interested in desert and mountain ecotourism might or might not consider visiting the more central reaches of the Sierra Madre Oriental. Some will charge that this is an inherently biased survey, since our sample universe consists of those who are already interested in this kind of landscape and tourism. While this is true, it gives us insight into the attitudes of the most likely visitors, which is particularly valuable because of the dearth of knowledge about the place north of the border. Almost all Texans have acquired some level of knowledge of the essential features of Big Bend, for example, from the minority of regular visitors. And if there is to be a similar dissemination of knowledge about Cumbres, this population is likely to be one of the critical constituencies.

[6] Long drives are generally required for Texans visiting either park region. Los Cumbres differs from Big Bend in that some areas bordering Monterrey are essentially "urban parks".

43 surveys were administered over the two summers. The list of questions and a more extensive summary of results with commentary is included as Appendix B. The surveys consisted of 26 questions, which were completed by anonymous subjects. For ease of analysis, most questions were Likert scale, with 1 indicating strongest disagreement and 7 indicating strongest agreement with a statement. But there were also open-ended questions to solicit more detailed and thoughtful opinions, when available. On average, under 15 minutes was spent completing the survey. The survey was administered in Big Bend National Park, at the trailhead for The Window, an approximately 5 mile round trip hike in The Chisos Mountain Basin. Doubtless, more "adventurous" responders could have been found in more primitive parts of the park, but collecting an adequate sample would have been dramatically more difficult at this time of year. The only screening criterion was Texas residency – non-residents are of less interest because the drive from Texas cities to Big Bend is generally comparable in length to the drive to Los Cumbres. Fortunately, the majority of the park's 325,000 annual visitors are in fact from Texas.

The goals of these surveys were 1) to characterize the features that draw people to such regions, 2) to reveal cultural impediments to transnational travel, and 3) to ascertain limitations of existing educational and advertising efforts for the Mexican national parks.

The surveys were subjected to both qualitative and quantitative analysis. The quantitative analysis takes three forms, 1) averages of scores from the Likert scale questions (table 2, below), 2) regression analysis with self-reported likelihood of visiting a Mexican national park treated as the dependent variable, and responses to questions rating perceptions of known "barriers to travel" are regression tested for significance as

independent variables (table 3), 3) finally, we present a simple matrix of pair-wise correlations between self-reported likelihood of visiting a Mexican national park (table 4.)

Survey Results

Open-ended queries on the attractions that drove them to make such a long trip were generally greeted with short answers, such as: "attractive scenery", "the trails", "wildlife viewing". A minority (30%) were aware of the existence of Mexican national parks, to the extent that they had heard of a proposal for a southern counterpart to Big Bend. Almost no respondents, including Latinos, had visited a park in Mexico. Almost all had traveled to natural areas outside the United States.

Table 2 - Likert-Scale Averages (1=least, 7=most agreement)
Combined 2003 and 2004 Survey Results (n=43)

Positive Measures	***Response***
If I were aware of a similar park in Mexico, I would be inclined to visit	5.01
Education is an important part of the national park experience	4.80
Comfort level negotiating camping and lodging arrangements	3.91
Language skills adequate for travel in northern Mexico	3.89
Negative Measures	
Traveling in Mexico, food and beverage safety are of great concern	4.59
Interior Mexico shares the border regions problems w/ crime	4.04
Potential police harassment is of great concern	3.96
Air and water pollution make nature travel in Mexico less attractive	3.95
Potential border delays act as a deterrent	3.01
Natives living in a national park area makes it less attractive	2.01

"If I were aware of a park with scenery and wildlife comparable to Big Bend, south of the Mexican border but at similar driving distance to Big Bend, I would be inclined to visit" received an average response of 5.01, with only 3 responses less than

4.0. This suggests a good deal of interest. **In regression analysis, this response will be treated as our dependent variable.** The goal is to determine what impact various perceptions and attitudes have on self-reported likelihood of visiting a national park in Mexico.

Concern over problems with police received a score of 3.96, with very few outliers, suggesting a highly ambiguous perception of the potential for problems with police in interior Mexico. The problems with police soliciting bribes are, in fact, very real in the border areas, but less of an issue closer to the Cumbres study area.

"Potential border delays act as a deterrent" received a relatively low score. People who have been across and acquired the various governmental permissions get more efficient with the border crossing each time. People who have not been across probably tend to underestimate the first-time annoyance factor, and the risks of "holiday" traffic.

Table 3 – Regression Analysis (dependent variable: self-reported likelihood of visiting Mexican park)	**Beta**	**p**
Education is an important part of the national park experience	0.34	0.03
Comfort level negotiating camping and lodging arrangements	0.18	0.17
Air and water pollution make nature travel in Mexico less attractive	-0.36	0.09
Food and beverage safety is of great concern	-0.13	0.40
Interior Mexico shares the border regions problems w/ crime	-0.13	0.51
Multiple R = .564, Standard Error=1.2, n=43		

Table 4 – Simple Pair-Wise Correlations (with self-reported likelihood of visiting a Mexican park)	**p**	**beta**	**Multiple R**
Overestimation of distance to Monterrey	0.046	-0.39	0.31
Border areas are representative of crime problems throughout Northern Mexico	>.050	-0.21	0.20
Educational component an important part of travel to national parks	>.050	0.24	0.23
Concern over physical safety	>.050	-0.15	0.25
Concern over personal vehicle	>.200	0.01	0.02
Concern over food and beverage safety	>.050	-0.25	0.20
Air and water pollution make Mexico a less attractive destination	0.010	-0.50	0.39
My language skills are probably adequate for travel in Northern Mexico	>.200	-0.05	0.05
Comfort level arranging camping or cabin rentals from locals	0.019	0.30	0.36

Americans typically expect national parks to consist of larger blocks of continuous wilderness, but as an unexpected sign of how alternative tourism has become a complex blend of pure ecological tourism and cultural tourism, respondents displayed an astonishingly high tolerance for the idea of a national park with inhabitants making a living by traditional means. Many respondents, even those with poor Spanish skills, also showed a surprising willingness to interact directly with individual landowners, to work out camping or cabin rental arrangements [table 2]. This served as the first of four significant predictors of self-reported likelihood of travel to a Mexican national park, revealed by the pair-wise correlation [table 4]. Those claiming a willingness to engage

and negotiate with local landowners within the park region also appear more likely to visit (b=.30,R=.36,p=.019.)

Simple lack of prior exposure to any information whatsoever appears to constitute the single greatest barrier to travel. Survey respondents indicated an almost universal use of the Internet for researching travel decisions. No comprehensive, Internet-based, English resources draw attention to the full range of opportunities within the park region. Existing Internet resources suffer from a lack of "spatial context" that also serves as an impediment to "understanding of place." Geographic Information Science provides tools for conveying information about place in ways that have yet to be well explored even for U.S. parks, but U.S. parks do not need advertising. Obviously, these technologies could be of much greater value highlighting the features of Mexican national parks.

Interviewees displayed a relatively high degree of concern over vehicle safety (averaging 6.8 on a scale of 1 to 10) and personal safety (7.9/10), including high concern over food and beverage safety. This appears to serve as partial confirmation of Coahuila Tourism officials' theory: "Americans do not travel here because they are afraid they will be killed." But, the total lack of statistical correlation between "highly fearful" and "willing to try a Mexican park" serves as confirmation that some fears and uncertainties - or weakly-held negative perceptions - are not necessarily determinative. Irritations associated with border crossings and the language barriers were generally of lesser concern. There was little knowledge of either northern Mexican parks or the fine system of Mexican toll roads. The qualitative responses showed a dramatic underestimation of the quality of life enjoyed by northern Mexico's urban middle class. According to anthropologist Cecelia Sheridan (2003), roughly half of the population of northern

Mexico enjoys an essentially middle-class standard of living, not too dissimilar from that of the American middle class. This is an assertion that most Texans would have difficulty believing. Correcting these misunderstandings can have direct impact on perceived safety. Respondents overestimated the distance from the border to the Monterrey area by 2-3 hours on average. Also, there was a significant negative correlation between estimated distance and likelihood of visiting a national park in Mexico ($b=-.38$, $R=.31$, $p=.046$.) People with more accurate perceptions of the distance reported a greater likelihood of travel.

There was also an explicit acknowledgement by some that the problems with crime in border cities are probably not representative of northern Mexico in general, but the average score for this question was 4.04, where 4.0 indicates "Not Sure." Clearly, this is an ambiguous perception.

Interestingly, concern over personal safety, though high, did not show a statistically significant correlation with self-reported likelihood of travel to a Mexican national park. Coupled with responses about social relationships, we can infer that these respondents feel they enjoy a degree of prestige from "risk and adventure" narratives. Group travel is also frequently used by this population for social reasons, and this further minimizes actual risk. Most of the survey participants were traveling in groups, but the responses to the following statement were surprisingly low:

"Friends I sometimes camp with have Spanish skills that are probably good enough to travel comfortably in northern Mexico."

In many cases, the score given for the group of camping companions was lower than the score the individuals gave themselves. This result was unexpected. We anticipated

seeing the well-known "safety in numbers" effect and hoped to demonstrate the potential impact of group travel on reducing anxiety with respect to a specific unknown. It's possible this concept could be tested better in some other way.

In the 2003 survey, agreement with the statement: "an educational component is an important part of why I visit national parks" showed a very strong positive correlation with likelihood of visiting a Mexican park [table 3.] In fact, this was the only variable with clear statistical significance in our multiple regression model. Other variables in the regression model have signs in the direction that would be expected, but the modest sample size prevents us from putting too much stock in the exact magnitude of the betas. The "education" correlation, however, strongly suggests that advertising efforts with an explicit educational component should have great impact in attracting eco-tourists. Educational efforts that tie into critical environmental issues, such as scarcity and quality of water resources, air pollution, endangered species habitat loss and ecological relationships, can add a depth and richness to the educational experience that should make it more attractive to our target constituency. For reasons that are not clear, the 2004 survey did not find as pronounced a relationship.

The 2004 surveys also found a strong negative correlation between a general perception of Mexico as polluted and likelihood of travel ($b=-.50$, $R=.39$, $p=.011$.) There were a fair number of respondents who strongly disagreed with the air and water pollution statement and a great deal of perceptual ambiguity by the remainder. It's unclear whether this is more the result of a general ignorance of some of the environmental problems in the Monterrey area, or if it is more the result of a basically accurate assessment that: "there must still be some pristine places somewhere, if you

know where to look". In Big Bend, special kiosks with monitoring equipment draw visitors' attention to the decline in air quality in the park, resulting, in part, from coal burning power plants in Northern Mexico. This presents an example of a spin-off benefit the Mexican tourism industry might enjoy as a result of greater pollution abatement expenditures.

The survey found a pronounced desire on the part of national park visitors to use local businesses whenever possible. Tourism literature makes repeated references to a state of mind in alternative tourists labeled as "Mindful", and this is probably something we were picking up in the survey. An unrelated question asked participants to rank order types of local tourism amenities (and business offerings) that would be preferred: brochures/pamphlets, guided tours, interpretative centers or roadside exhibits. Each interpretative device found roughly similar levels of support. No discernable patterns emerged from the responses.

I expected the open-ended question: "Have you had any strongly negative or strongly positive personal experiences traveling in Mexico?" to elicit interesting responses and yield colorful insights into American's perceptions of Mexico. There were no horror stories related here. There were many short answers, possibly the result of questionnaire - and summer heat - fatigue. One inference that could be drawn from these responses is that existing attitudes toward travel within Mexico derive in large measure from indirect sources.

One of the curious facts that initially spawned this research is the relatively high comfort level Americans have flying into Mexican beach cities. Clearly, getting there is

more than half the battle. The following question attempted to dig into the nexus of prejudices surrounding various modes of transportation:

"In northern Mexico, buses serve essentially any area with even a handful of residents, while air and rail service is much more limited. How would you rate your willingness to try various types of travel in Mexico?"

	Very Uncomfortable			Not Sure			Very Comfortable
Airplane	1	2	3	4	5	6	7
Bus	1	2	3	4	5	6	7
Train	1	2	3	4	5	6	7
Driving	1	2	3	4	5	6	7

Data analysis proved frustrating. There was a rather bizarre clustering of highly opinionated responses for the different travel modes. Many people gave strong answers (far-flung outliers) with no discernable pattern. Different methods of travel were variously seen as very comfortable or very uncomfortable by the same people, with little consistency from one participant to the next. A larger sample might permit some useful forms of factor analysis, but in general not much time was spent responding to this question, given the impression people failed to give this question much thought.

A much better question was added for the 2004 survey, asking whether a Mexican tourism company willing to pick up visitors at the U.S. border would overcome many of their safety concerns and make them more likely to engage in such travel. 89% of the sample replied "Yes". Tour companies willing to provide transport, help visitors negotiate the Mexican tourist visa system, and provide basic safety assurances could reduce perceptual uncertainty greatly and potentially reap great rewards.

Targeting an audience of potential visitors already keenly interested in ecological and cultural preservation is the best way to attract low-impact tourists, and numerous Mexican initiatives are underway to do just this. These tourists will not necessarily have

the highest per capita expenditures, and their travel choices will not be ecologically ideal, but their interests should be the most sustainable, especially if some of the planned educational campaigns can be successfully developed and deployed for visitors to the region.

The park managers could further enhance international travel by sponsoring a clearinghouse of eco-friendly lodging options. The 2002 Cumbres management plan calls for a database cataloging lodging sites, and if an Internet reservation system were linked to it, this could benefit all parties and provide another excellent point of contact for educating both visitors and cabin owners. Our results suggest that expanded use of the Internet to advertise park features should also help surmount some of the perceptual ambiguities related to an unknown environment. Ecotourism companies in other parts of Mexico make novel use of clickable maps, with photos to convey a sense of place, but no one has developed this type of presentation for this region. Ron Mader's Planeta website, in addition to serving as an excellent general resource on ecotourism in Mexico, has a host of practical suggestions for the designers of both governmental and commercial sites seeking to disseminate information on ecotourism.

Further Research

Follow-up surveys could attempt to measure factors which were suggestive but not statistically significant in the initial surveys. Additional open-ended questions could extract information about why Mexican beach areas are inaccurately considered less dangerous than desert and mountain natural areas. Determining the types of educational and interpretive experiences that attract visitors most strongly will be of great interest.

Transportation issues are another critical area, not well explored by these surveys. Further research should determine what set of transportation options would be necessary to meet an international demand. Much of the transportation infrastructure already exceeds minimal requirements. An existing body of research addresses attempts to publicize domestic mass transit projects. Perhaps some applicable ideas could be generalized from that field.

Tourism is a very visual activity. The mountains create their own weather, and dramatic desert lighting changes occur rapidly. The target market identified in this study consisted almost exclusively of people who use the Internet for researching travel decisions. Professional photographic exhibits can be displayed via the Internet, with clickable maps of the park. Various website designs displaying the wonders of the region could be graded by focus group as a method of testing for effectiveness.

Some of the most exciting technological developments in recent years have been the suite of electronic devices that help convey a *sense of place*: GPS, digital photography, geo-visualization tools, etc. This region would be an excellent candidate for synthesizing ecological and geographical material into digital media for virtual field courses in any of a number of disciplines. These could also provide an ideal platform for developing and testing Geographic Information Science and Geographic Education theories relating how people learn about place.

GLOSSARY

- ANP - Areas Naturales Protegidas (Protected Natural Area)
- CIESAS-Noreste - Centro de Investigaciones y Estudios Superiores en Antropología Social (Center for Research and Advanced Study in Social Anthropology)
- CONAZA – Comisión Nacional de las Zonas Aridas (National Commission for Desert Zones)-Mexico
- DUMAC – Ducks Unlimited of Mexico (An international NGO which supports conservation efforts in Mexico)
- ICE - Instituto Coahuila de Ecología (Coahuila Institute of Ecology)-Mexico
- INE - Instituto Nacional de Ecología (National Institute of Ecology)-Mexico
- INEGI - Instituto Nacional de Estadística Geográfica e Informática (National Institute of Statistical and Geographical Information)-Mexico
- NGO - Non-Governmental Organization
- PROFAUNA - Protección de la Fauna Mexicana A. C. (An NGO dedicated to Protection of Mexican Fauna)-Mexico
- PROFEPA - Procuraduria Federal de Protección al Ambiente (Federal Attorney General's Office for Environmental Protection)-Mexico
- SECTUR - Secretaria de Turismo (Secretariat of Tourism)-Mexico
- SEDESOL - Secretaría de Desarrollo Social (Secretariat of Social Development)-Mexico
- SEDUE - Secretaria de Desarrollo Urbano y Ecología (Secretariat of Urban Development and Ecology)-Mexico
- SEMARNAP - Secretaria de Medio Ambiente, Recursos Naturales, y Pesca (Secretariat of the Environment, Natural Resources, and Fisheries)-Mexico, name changed to SEMARNAT in 2001.
- SEMARNAT - Secretaria de Medio Ambiente, Recursos Naturales (Secretariat of the Environment and Natural Resources)-Mexico
- WWF - World Wildlife Fund (An international NGO which supports conservation efforts in Mexico)

APPENDIX A

Los Cumbres Wildlife Species Subject to Special Conservation

Source: *Subsecretaría Forestal y de Fauna Silvestre, 1994.*
Diagnóstico del Parque Nacional Cumbres de Monterrey, Nuevo Leon.

This appendix lists animal species classified by the Mexican Subsecretariat of Wildlife and Forestry as *in danger of extinction, threatened, rare and endemic, vulnerable* or *under special protection.* They are grouped according to which of the six principal ecological zones of the park they occupy. These zones are named for the predominant type of vegetation in the area.

Desert Scrub / Matorral desértico rosetófilo.

14 species from this ecological zone fall into one or more of the categories mentioned above. 3 are *threatened,* 8 are *vulnerable* and 3 are *under special protection.*

Threatened species: *Falco mexicanus* (Halcón pálido / Prairie Falcon), *Dasypus novemcinctus* (Armadillo / Nine-Banded Armadillo), *Felis yagouarundi* (Jaguarundi).

Vulnerable species: *Coragyps atratus* (Carroñero común / Black Vulture), *Parabuteo unicinctus* (Halcón de Harris / Harris' Falcon), *Buteo jamaicensis* (Aguililla colirroja / Red-Tailed Hawk), *Polyborus plancus* (Caraccara común / Crested Hawk), *Falco sparverius* (Halcón cernícalo / American Kestrel), *Tyto alba* (lechuza de campanario / Barn Owl), *Bubo virginianus* (Buho coronado americano / Great Horned Owl).

Species under special protection: *Mimus polyglottos* (Cenzontle aliblanco / Northern Mockingbird), *Icterus parisorum* (Bolsero parisino / Scott's Oriole), *Lynx rufus* (Gato montés / Bobcat).

Submontaine Scrub / Matorral submontano.

38 species from this ecological zone fall into one or more of the categories mentioned above. 1 is *in danger of extinction,* 9 are *threatened,* 23 are *vulnerable* and 6 are *under special protection.*

Species in danger of extinction: *Regulus calendula* (Reyesuelo sencillo / Ruby-crowned Kinglet).

Threatened species: *Falco mexicanus* (Halcón pálido / Prairie Falcon), *Trogon elegans* (Trogon colicobrizo), *Turdus migratorius* (Zorzal pechirrojo / American Robin), *Bombycilla cedrorum* (Ampelis americno), Dasypus novemcinctus (Armadillo / Nine-Banded Armadillo), Ursus americanus (Oso negro / Black Bear), *Felis pardalis* (Ocelote / Ocelot), *Felis wiedii* (Margay o Tigrillo / Margay), *Felis yagouarundi* (Jaguarundi).

Vulnerable species: *Accipiter striatus* (Gavilán pechirrufo menor / Sharp-Skinned Hawk), *Accipiter cooperii* (Gavilán pechirrufo mayor / Cooper's Hawk), *Parabuteo unicinctus* (Halcón de Harris / Harris' Hawk), *Buteo nitidus* (Aguililla gris), *Buteo jamaicensis* (Aguililla colirroja / Red-Tailed Hawk), *Polyborus plancus* (Caraccara común / Crested Hawk), *Falco sparverius* (Halcón cernícalo / American

Kestrel), *Meleagris gallopavo* (Guajolote / Wild Turkey), *Columba flavirostris* (Paloma morada / Red-billed pigeon), *Columba fasciata* (Paloma collareja), *Aratinga holochlora* (Perico aliverde / Green Parakeet), *Tyto alba* (Lechuza de campanario), *Otus asio* (Tecolote nororiental / Eastern Screech Owl), *Otus trichopsis* (Tecolote rítmico / Whiskered Screech Owl), *Glaucidium gnoma* (Tecolotito Serrano / Northern Pygmy Owl), *Strix occidentalis* (Búho serrano ventrilistado / Spotted Owl), *Lampornis clemenciae* (Chupador gorgiazul / Blue-Throated Hummingbird), *Eugenes fulgens* (Chupador coronimorado / Magnificent Hummingbird), *Momotus momota* (Momoto mayor / Blue-crowned Motmot), *Chloroceryle americana* (Martín pescador menor / Green Kingfisher), *Piculus rubiginosus* (Carpintero verde tropical, Golden-olive Woodpecker), *Parula pitiayumi* (Chipe azul-olivo tropical / Olive-backed Warbler), *Dendroica chrysoparia* (Chipe negriamarillo dorsinegro / Golden-cheeked Warbler).

Species under special protection: *Mimus polyglottos* (Centzontle aliblanco / Northern Mockingbird), *Cardinalis cardinalis* (Cardenal rojo), *Icterus parisorum* (Bolsero parisino / Scott's Oriel), *Carpodacus mexicanus* (Carpodaco doméstico / House Finch), *Lynx rufus* (Gato montés / Bobcat), *Felis concolor* (Puma / Eastern Cougar).

Pine Forest / Bosque de Pino.

16 species from this ecological zone fall into one or more of the categories mentioned above. 3 are *in danger of extinction*, 4 are *threatened*, 1 is *rare and endemic*, 7 are *vulnerable* and 1 is *under special protection.*

Species in danger of extinction: *Aquila chrysaetus* (Aguila real / Golden Eagle), *Rhynchopsitta terrisi* (Cotorra serrana oriental / Maroon-Fronted Parrot), *Felis onca* (Jaguar).

Threatened species: *Trogon elegans* (Trogón colicobrizo / Elegant Trogon), *Dasypus novemcinctus* (Armadillo / Nine-Banded Armadillo), *Ursus americanus* (Oso negro / Black Bear), *Felis pardalis* (Ocelote / Ocelot).

Rare and endemic species: *Crotalus durissus neolonensis* (Víbora de cascabel / Neotropical Rattlesnake).

Vulnerable species: *Meleagris gallopavo* (Guajolote / Wild Turkey), *Columba fasciata* (Paloma collareja / Band-tailed Pigeon), *Aratinga holochlora* (Perico aliverde / Green Parakeet), *Otus asio* (Tecolote nororiental / Eastern Screech Owl), *Glaucidium gnoma* (Tecolotito Serrano / Northern Pygmy Owl), *Strix occidentalis* (Búho serrano ventrisilado / Spotted Owl), *Momoto momota* (Momoto mayor / Blue-crowned Motmot).

Species under special protection: *Felis concolor* (Puma / Eastern Cougar).

Oak Forest / Bosque de Encino.

14 species from this ecological zone fall into one or more of the categories mentioned above. 2 are *in danger of extinction*, 3 are *threatened*, 1 is *rare and endemic*, 7 are *vulnerable* and 1 is *under special protection.*

Species in danger of extinction: *Rhynchopsitta terrisi* (Cotorra serrana oriental / Maroon-Fronted Parrot), *Felis onca* (Jaguar).

Threatened species: *Dasypus novemcinctus* (Armadillo / Nine-Banded Armadillo), *Ursus americanus* (Oso negro / Black Bear), *Felis pardalis* (Ocelote / Ocelot).

Rare and endemic species: *Crotalus durissus neoleonensis* (Víbora de cascabel / Neotropical Rattlesnake).

Vulnerable species: *Meleagris gallopavo* (Guajolote / Wild Turkey), *Columba fasciata* (Paloma collareja), *Aratinga holochlora* (Perico aliverde / Green Parakeet), *Otus asio* (Tecolote nororiental / Eastern Screech Owl), *Glaucidium gnoma* (Tecolotito Serrano / Northern Pygmy Owl), *Strix occidentalis* (Búho serrano ventrisilado / Spotted Owl), *Momoto momota* (Momoto mayor / Blue-Crowned Motmot).

Species under special protection: *Felis concolor* (Puma / Eastern Cougar).

Chaparral.

10 species from this ecological zone fall into one or more of the categories mentioned above. 3 are *in danger of extinction*, 2 are *threatened*, 1 is *rare and endemic*, 3 are *vulnerable* and 1 is *under special protection*.

Species in danger of extinction: *Aquila chrysaetus* (Aguila real / Golden Eagle), *Rhynchopsitta terrisi* (Cotorra serrana oriental / Maroon-Fronted Parrot), *Felis onca* (Jaguar).

Threatened species: *Trogon elegans* (Trogón colicobrizo / Elegant Trogon), *Ursus americanus* (Oso negro / Black Bear).

Rare and endemic species: *Crotalus durissus neolonensis* (Víbora de cascabel / Neotropical Rattlesnake).

Vulnerable species: *Meleagris gallopavo* (Guajolote / Wild Turkey), *Columba fasciata* (Paloma collareja / Band-tailed Pigeon), *Aratinga holochlora* (Perico aliverde / Green Parakeet).

Species under special protection: *Felis concolor* (Puma / Eastern Cougar).

Vegetación de Galería.

30 species from this ecological zone fall into one or more of the categories mentioned above. 1 is *in danger of extinction*, 7 are *threatened*, 1 is *rare and endemic*, 16 are *vulnerable* and 5 are *under special protection*.

Species in danger of extinction: *Regulus calendula* (Reyesuelo sencillo / Ruby-crowned Kinglet).

Threatened species: *Falco mexicanus* (Halcón pálido / Prairie Falcon), *Turdus migratorius* (Zorzal pechirrojo / American Robin), *Bombycilla cedrorum* (Cedar Waxwing), *Dasypus novemcinctus* (Armadillo / Nine-banded Armadillo), *Felis pardalis* (Ocelote / Ocelot), *Felis wiedii* (Margay o Tigrillo / Margay), *Felis yagouarundi* (Jaguarundi).

Rare and endemic species: *Cairina moschata* (Pato real mexicano / Muscovy Duck).

Vulnerable species: *Parabuteo unicinctus* (Halcón de Harris / Harris' Hawk), *Buteo nitidus* (Aguila gris / Grey Hawk), *Buteo jamaicensis* (Aguila colirrufa / Red-tailed Hawk), *Polyborus plancus* (Caraccara común / Crested Hawk), *Falco sparverius* (Halcón cernícalo / American Kestrel), *Meleagris gallopavo* (Guajolote / Wild Turkey), *Columba flavirostris* (Paloma morada / Red-billed pigeon), *Tyto alba* (Lechuza de campanario / Barn Owl), *Otus asio* (Tecolote nororiental / Eastern Screech Owl), *Otus trichopsis* (Tecolote rítmico / Whiskered Screech Owl), *Lampornis clemenciae* (Chupador gorgiazul / blue-throated hummingbird), *Eugenes fulgens* (Chupador coronimorado / magnificent hummingbird), *Chloroceryle americana* (Martín pescador menor / Green Kingfisher), *Piculus rubiginosus* (Carpintero verde tropical / Golden-olive Woodpecker), *Parula pitiayumi* (Chipe azul-olivo tropical / Olive-backed Warbler), *Dendroica chrysoparia* (Chipe negriamarillo dorsinegro / Golden-cheeked Warbler).

Species under special protection: *Mimus polyglottos* (Centzontle aliblanco / Northern Mockingbird), *Cardinalis cardinalis* (Cardenal rojo / Northern Cardinal), *Icterus parisorum* (Bolsero parisino / Scott's Oriole), *Carpodacus mexicanus* (Carpodaco doméstico / House Finch), *Lyns rufus* (Gato montés / Bobcat).

APPENDIX B

Alternative Tourism Survey – National Parks in Northern Mexico

This survey designed by G. Shane Lewis (gsl@mail.utexas.edu) for Master's Thesis in Applied Geography at Southwest Texas State University (San Marcos)

1) What do you consider Big Bend's greatest attractions?

Answers to #1 were generally very short and commonly involved: "the scenery", "the wildlife", "the trails", with specific trails occasionally cited.

2) Are you aware of any national parks on the Mexican side of the border?

A significant fraction (30%) was aware of the Maderas del Carmen, to the extent that they knew there was a proposed park, just south of Big Bend. No one was aware of other parks in northern Mexico.

3) Have you visited any parks in northern Mexico?

Almost all "no".

4) If I were aware of a park with scenery and wildlife comparable to Big Bend, south of the Mexican border but at similar driving distance to Big Bend, I would be inclined to visit.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

An average answer of 5.01, with only 3 responses below 4, suggests a good deal of interest. **In regression analysis, this response has been treated as our dependent variable.** The goal is to determine what impact various perceptions and attitudes have on self-reported likelihood of visiting a national park in Mexico.

5) Most locations in interior Mexico share the border cities problems with crime.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

An average answer of 4.03 suggests a highly ambiguous perception of crime problems in interior Mexico.

6) If I were traveling to natural areas in northern Mexico, safety of food and beverages would be of great concern.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

An average answer of 4.59 suggests a mild to moderate level of concern. No significant correlation with likelihood of visiting.

7) If I were traveling in northern Mexico, I would be concerned over possible harassment by the police.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

An average answer of 3.96, with very few outliers, suggests a highly ambiguous perception of the potential for problems with police in interior Mexico. The problems with police soliciting bribes are, in fact, very real in the border areas, but less of an issue closer to the Cumbres study area.

8) My language skills are probably good enough to travel comfortably in northern Mexico.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

An average answer of 3.89, with a fair number of outliers, suggests a moderately ambiguous perception of the level of language proficiency required for travel in interior Mexico.

9) Friends I sometimes camp with have Spanish skills that are probably good enough to travel comfortably in northern Mexico.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

I was expecting to see the well-known "safety in numbers" effect, and hoping to demonstrate the potential impact of group travel on reducing anxiety with respect to a specific unknown. Most of the survey participants were traveling in groups, but the responses for this question were surprisingly low. In many cases, the score given for the group of camping companions was lower than the score the individuals gave themselves. This result was unexpected. It's possible the concept could be tested better in some other way.

10) Problems with air and water pollution in rural Mexico make camping there less attractive.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

An average response of 3.95, with two responses over 5. There were a fair number of respondents who strongly disagreed with the statement and a great deal of perceptual ambiguity by the remainder. It's unclear whether this is more the result of a general ignorance of some of the environmental problems in the Monterrey area, or if it is more the result of a basically accurate assessment that: "there must still be some pristine places somewhere, if you know where to look". The 2004 survey found a strong negative correlation between agreement on this question and likelihood of visiting a Mexican park (b=-.5,R=.39,p=.01.)

11) In northern Mexico, buses serve essentially any area with a handful of residents, while air and rail service is much more limited. How would you rate your willingness to try various types of travel in Mexico?

	Very Uncomfortable			Not Sure			Very Comfortable
Airplane	1	2	3	4	5	6	7
Bus	1	2	3	4	5	6	7
Train	1	2	3	4	5	6	7
Driving	1	2	3	4	5	6	7

The question was attempting to determine if prejudices existed for certain means of travel, but the data analysis proved very frustrating. There was a rather bizarre clustering of highly opinionated responses for the different travel modes. Many people gave strong answers (far-flung outliers) with no discernable pattern. Different methods of travel were variously seen as very comfortable or very uncomfortable by the same people, with little consistency from one participant to the next. A larger sample might allow us to do some type of factor analysis, but I had the feeling people weren't giving this question much deep thought. Probably should have re-conceptualized the question.

12) National parks in northern Mexico are a patchwork of public land and sparsely-populated private land. How comfortable would you feel asking permission to pitch a tent or renting a cabin from a private landowner?

Very Uncomfortable			Not Sure			Very Comfortable
1	2	3	4	5	6	7

An average score of 4.65 in the 2003 survey showed a surprising willingness to engage in a potentially challenging and unfamiliar social interaction, particularly considering relatively poor self-reported language skills. The average score for the 2004 survey was 3.26. This sample size is probably too small to make sweeping generalizations about a year-over-year increase in U.S. rates of xenophobia. The second population was definitely more fearful on average, across the survey.

13) The presence of a small population of individuals residing in a national park and making a living by traditional means makes the destination less appealing.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

Respondents showed very, very strong disagreement with this statement, averaging just over 2.0. I think the question may have been somewhat too leading, but it's still clear there's something interesting at work here.

14) Potential delays at the U.S. and Mexican border crossings act as a deterrent to travel across the border.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

Generally low scores here: around 3.0. People who have been across and gotten the various governmental permissions get more efficient with the border crossing each time. People who have not been across probably tend to underestimate the first-time annoyance factor, and the risks of "holiday" traffic.

15) Are you familiar with the network of Mexican toll roads?

Yes **No**

Mostly (85%) No.

16) Do you use the Internet to research travel decisions to unfamiliar places?

Yes **No**

100% Yes. Significant marketing implications.

17) Do you occasionally participate in running or bicycle races?

Yes **No**

A fair split of Yes and No. Several of the people responding positively pressed for more information on athletic events in the study region.

18) Have you traveled to natural areas outside the U.S.?

Almost all answered: Yes.

19) An educational component is an important part of why I travel to national parks.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

An average score of 4.80 shows agreement. But, this question was particularly interesting because it was the only data element that showed a statistical correlation with self-reported likelihood of traveling to a Mexican national park in the 2003 sample. The correlation was quite strong: r=.57, p=.004. Strangely, this correlation disappeared completely in the combined 2003/2004 sample. The sample size is too small to make definitive, sweeping generalizations about a rapid decline in U.S. curiosity levels or the public education system.

20) If I can photographic a bear or a mountain lion in the mountains, my friends will be very impressed.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

The genius of this question was not generally appreciated by the participants. Many people were surprisingly uninterested in impressing their friends with this type of exploit. I'd hoped to demonstrate the relationship between self-image and "risk and adventure" that the literature cites as a motivating factor in travel decisions for a certain sub-culture. Evidently, that sub-culture is currently busy exploring East Timor.

21) Make a guess of the distance from Laredo, Texas to Monterrey (and mountains over 12,000 ft.)

2-3 hours **4-5 hours** **6-7 hours** **8-9 hours** **10+ hours**

With extremely bad lines at the border crossing and two stops to bribe the Laredo area police, the trip takes approximately 4 hours to Monterrey and another hour or two to very high mountains near Saltillo. Monterrey was generally thought to be 6 hours from the border. Here is an obvious misconception that costs them visitors.

22) My preferred style of camping is:
(1=least preferred, 10=most preferred):

__ primitive/backpacking to backcountry
__ some camping near car, some backpacking
__ car camping or RV's
__ some camping, some hotels
__ exploration and hiking by day, hotels by night

Two distinctive groups emerged: those preferring primitive, and those enjoying hotels. The question is poorly conceived because most participants were engaged in "car camping", but there was a surprising level of contempt and derision bestowed upon the concept of RV travel. Some type of simplification would have improved analysis prospects.

23) Rate the following sources of information about a park area by personal preference (with 1=least preferred, 10=most preferred):

__ Brochures/Pamphlets
__ Guided Tours
__ Internet Sites
__ Interpretitive Centers
__ Roadside Exhibits

All listed elements were preferred by some groups. A larger pool could possibly enable some factor analysis and more useful results.

24) When traveling to a new place, I general try to use local businesses.

Strongly Disagree		Disagree	Not Sure	Agree	Strongly	Agree
1	2	3	4	5	6	7

Generally very strong agreement – but who is going to admit that they are a "bad person" within the framework of the morality of their sub-culture? It probably would have been more useful to rate each participant based on the count of McDonald's wrappers in the floorboard.

25) Have you had any strongly negative or strongly positive personal experiences traveling in Mexico?

I expected this question to elicit more interesting responses. There were no horror stories related here. Many Yes/No answers, possibly the result of questionnaire (and summer heat) fatigue.

26) Rate the following potential barriers to visiting national parks in Mexico (with 1=least concern, 10=most concern):

__ Border crossing
__ Lack of known destinations
__ Lack of services
__ Language barrier
__ Personal safety
__ Safety of vehicle
__ Other: _____

"Personal Safety" rated 7.9, and "Vehicle Safety" rated 6.8, with other scores dramatically lower. This serves as partial confirmation of Coahuila tourism officials' theory: "Americans do not travel here because they are afraid they will be killed." But, the lack of correlation with Question #4 (willingness to try a Mexican park) serves as confirmation that some fears and uncertainties (or weakly-held negative perceptions) are not necessarily determinative.

We received little useful feedback from "Other:_____".

The entire survey took 10-12 minutes on average. Most were administered by handing the participant pen and paper, but for some, the questions were read by an interviewer and answers recorded. The interview process solicits more information about attitudes, but it seems difficult to keep the inflections consistent from person to person, and answers may vary some as a result of subtle verbal queues.

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VITA

Born in Irving, Texas, to proud parents Nancy E. and Gerald R. Lewis, G. Shane Lewis graduated from Irving High School in 1985. Recipient of the prestigious Ernest J. Cockrell, Jr. Engineering Scholarship at the University of Texas at Austin, in 1991 he finally secured a bachelor's degree in Astronomy. This paved the way for a glamorous career in computer programming which has featured work for environmental and human rights organizations in Rome, San Francisco, Sydney, Ottawa and Vancouver, as well as a very brief, aborted contract with the fearsome Las Vegas 4th Street Syndicate. In 1997-98, he served as Producer for *Exploring the Planets*, a multi-million dollar project that harnessed the efforts of world-renowned writers, artists, programmers and NASA scientists and engineers to produce an incomparable educational CD set documenting the U.S. unmanned space program. He has received money both for problem solving using Kepler's Laws and for playing trumpet with the Austin Lyric Opera. A lifelong passion for game theory has resulted in a total of exactly one casino ejection, the consequence of winning too carelessly at Blackjack.

Mr. Lewis subsists on a modest sinecure from the University of Texas at Austin, where he acts as itinerant senior systems analyst, roaming the campus for the common good. Although his most recent work has been with the Vice President for Research, the College of Natural Sciences has served as home base in some form or fashion since 1987. As a result of his ongoing efforts to streamline and automate business processes

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Academic interests – aside from tourism in scenic mountain regions with *tacos al pastor* - include: Geographic Information Science, sustainable development, air pollution issues and epidemiology. He remains deeply interested in the processes by which Non-Governmental Organizations and government agencies pursue their political goals via "environmental education." He lives and plays in Austin's highly-coveted Crestview neighborhood, with State Cup winning goalie Lisa Barden and three dogs of indeterminate genealogy.

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