

Economic Impact of Nature Tourism on the Rio Grande Valley: Considering Peak and Off-Peak Visitation for 2011



Report prepared for the South Texas Nature Marketing Coop by:

**Department of Recreation, Park & Tourism Sciences and
Department of Agricultural Economics
Texas A&M University
College Station, Texas 77843**



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Report Authors

Kyle M. Woosnam, Ph.D.
Assistant Professor
Department of Recreation, Park & Tourism Sciences
Texas A&M University
College Station, Texas 77843

Rebekka M. Dudensing, Ph.D.
Assistant Professor and Extension Economist
Department of Agricultural Economics
Texas AgriLife Extension Service
College Station, Texas 77843

Dan Hanselka
Extension Associate
Department of Agricultural Economics
Texas AgriLife Extension Service
College Station, Texas 77843

Kayode Aleshinloye
Graduate Student
Department of Recreation, Park & Tourism Sciences
Texas A&M University
College Station, Texas 77843

For questions or further information, please contact:

Dr. Kyle M. Woosnam
979.845.9781
woosnam@tamu.edu

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There is something special about waking up at 5:00 in the morning in anticipation of the migrating birds passing through the Rio Grande Valley. Thankfully with each passing day, more and more individuals realize the beauty that exists in the region and join the campaign to preserve the unmatched lands and natural resources that comprise “the Valley.” Many thanks go to the South Texas Nature Marketing Coop members and local volunteers for aiding in the collection of data for this project. For numerous months during both the off-peak and peak nature tourist seasons, they tirelessly and selflessly gave of their time on weekends and endured high temperatures in the process to have every potential survey instrument completed by visitors. The authors appreciate local, state, and federally managed sites that allowed us to collect data on-site as well. Finally, we acknowledge the numerous visitors to the study locations that completed each survey instrument. This project would not have been possible without so many hands helping to complete it.

Executive Summary

Few can dispute the importance of nature tourism in Texas, especially within the Lower Rio Grande Valley (the Valley). According to Mathis and Matisoff (2004), “Texas is the number one bird-watching state/province in North America, and the Valley is often considered the number two bird-watching destination in North America. The four counties of the Valley—Hidalgo, Starr, Willacy, and Cameron—together have recorded almost 500 bird species—more than all but four states (p. 2).” The purpose of this study was to provide an examination of the economic impact of this niche form of tourism throughout the Rio Grande Valley during both the peak and off-peak tourist seasons during 2011.

During twelve weeks throughout 2011 (six weeks in May and June over the off-peak season and six weeks in October, November, and December in the peak season), data were collected from visitors at seven sites: Estero Llano Grande State Park and World Birding Center, Bentsen Rio Grande State Park and World Birding Center, Santa Ana National Wildlife Refuge, Edinburg Scenic Wetlands and World Birding Center, Alamo Inn (a lodging establishment frequented among nature tourists), and Frontera Audubon in Hidalgo County and South Padre Island World Birding Center in Cameron County. Additionally during the peak season (in November), data were collected from visitors to the 18th Annual Rio Grande Valley Birding Festival in Harlingen. Overall, 870 visitors at the seven sites (and festival) were contacted and asked to participate. Of those, 129 declined to participate and an additional 55 were repeat visitors at other sites. The remaining 686 visitors accepted the survey instrument, yielding an overall response rate of 84.2%. Of the 686 survey instruments, 193 were completed by locals (i.e., residents of the RGV) and 493 were completed by non-locals (i.e., individuals residing outside of the RGV). Of the non-local visitors, 107 reported that nature tourism was neither the primary purpose of their trip nor an impetus to spend extra time in the RGV, so they were excluded from the economic impact analysis. An additional 22 survey instruments were excluded because participants provided insufficient information (e.g., did not provide days, party size, expenditures, etc.), leaving 311 survey instruments representing intentional non-local nature tourists and 53 instruments representing casual visitors who were in the region for other reasons but extended their stay to enjoy nature tourism.

Peak visitors ($M = 57.0$) were slightly older, on average, than off-peak visitors ($M = 47.4$). Nearly three out of four peak and off-peak visitors had either an undergraduate or graduate degree, with off-peak visitors having slightly higher incomes.

The group size for peak visitor parties was on average, 2.3 persons, whereas for off-peak visitors, the average party size was 2.6 individuals. Concerning travel behavior—for nearly three of four peak visitors, the primary purpose of traveling to the Valley was to engage in nature tourism, compared to a little more than 50% of the off-peak visitors. Peak visitors were planning to stay 19.8 days on their current trip versus the 7.3 days that off-peak visitors planned to stay. A majority of peak visitors (74.5%) and off-peak visitors (64.0%) had been to the Valley before, having visited 9.1 and 14.5 times prior, respectively. Most of the visitors, peak (68.6%) and off-peak (80.3%) arrived in the Rio Grande Valley by either private or rental auto. Nearly 85% of both the peak and off-peak visitors indicated they would either “likely” or “highly likely” return to the RGV on future trips.

Visitors’ perceived relationship with Valley residents were also collected during the peak season. Overall, visitors indicated a strong level of agreement with the items concerning their feelings toward RGV residents. Most notably, visitors indicated the highest level of agreement with the item, “I treat residents of the RGV fairly.” Items pertaining to closeness (e.g., making friends with some residents and feel close to some residents) were agreed with the least.

Finally, visitors reported their perceived safety in the Valley. By and large, visitors during the peak season agreed that the RGV is safe. In fact, they agreed it was just as safe as other destinations they could choose to visit. Visitors indicated a level of disagreement with the items, “I will tell other people to be careful of crime in the RGV” and “I feel worried about my personal safety in the RGV.”

On average, peak season “intentionals” reported spending \$822.08 per person on nature tourism experiences in the region and \$1,505.20 per capita outside the region. Off-peak intentional nature tourists reported spending \$494.72 per person in the region and \$552.48 on nature tourism outside the Valley. When considering spending per visitor-day in the region, peak season intentionals spent an estimated \$133.22 per visitor-day, and off-peak intentionals spent an estimated \$128.22. Based on Texas travel volume estimates formulated by D.K. Shifflet & Associates (2011), 10.1 million leisure person-days occurred in the McAllen-Edinburg-Pharr (4.09 million) and Brownsville-Harlingen (5.92 million) MSAs in 2010. The report indicates that 23.5% of visitors experienced nature tourism in McAllen and 23.3% of visitors in Brownsville did so. Estimated total annual expenditures by intentionals for 2011 were \$307,052,400. This direct economic contribution from RGV nature tourism led to a total county-level economic output of \$463.0 million and 6,613 full- and part-time jobs annually. This total contribution includes a \$266.6 million contribution to gross regional product and a \$163.0 million contribution to labor income across the region. Local taxes generated from direct nature tourist expenditures for 2011 was \$2,560,300 for sales tax and \$7,512,900 for hotel tax.

While locals were not considered in estimating the economic impact of nature tourism in RGV, many reported nature tourism expenditures. Residents surveyed during the peak season averaged \$346.86 in local nature tourism expenditures, and locals surveyed during the off-peak season averaged \$461.17 in annual nature tourism spending within the region. They spent another \$131.56 (peak respondents) to \$159.58 (off-peak respondents) outside the region.

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Introduction

According to the Texas Parks and Wildlife Department (2011), nature tourism is defined as, “responsible travel to natural areas, which conserves the environment and improves the welfare of local people.” Minimizing negative environmental impacts (e.g., preserving resources) and even maximizing positive environmental impacts (e.g., education about resources) is evident through nature tourism, which takes the form of birdwatching, photography, stargazing, camping, hiking, and visiting parks. In addition to the protection of vital natural resources, nature tourism can also have a profound economic impact on local communities, which then provides incentives for individuals to conserve their remaining natural areas for wildlife and wildlife enthusiasts. This is especially true for one of the most vital regions of Texas contributing to nature tourism, the Rio Grande Valley (the Valley), comprised of Starr, Willacy, Cameron, and Hidalgo Counties.

Given that the most current economic impact findings for nature tourism in the Valley are somewhat dated, having been conducted approximately 15 years ago, the purpose of this study was to provide an examination of the economic impact of this niche form of tourism throughout the Rio Grande Valley for the entire year of 2011. The findings presented within this work serve to provide an annualized snapshot of the economic impact of nature tourism based on off-peak and peak visitation in the Valley for the 2011 calendar year.

Data Collection, Sampling, and Survey Instrument

To assess the economic impact of nature tourism in the Rio Grande Valley (RGV), an on-site self-administered survey was distributed to visitors in numerous locations throughout the RGV during twelve weekends in the off-peak nature tourist season (six weekends in May and June) and peak nature tourist season (six weekends in October, November, and December) throughout 2011. Such weekends were selected given they corresponded to off-peak and peak birding seasons. Volunteers and Texas A&M University personnel intercepted visitors in seven sites throughout the RGV on both Saturdays and Sundays (between 9:00am and 5:00pm) during the study period. In addition, volunteers at the study sites collected data on weekdays from visitors during the six-week period to capture a more random, representative sample. The seven sites included Estero Llano Grande State Park and World Birding Center, Bentsen Rio Grande State Park and World Birding Center, Santa Ana National Wildlife Refuge, Edinburg Scenic Wetlands and World Birding Center, Alamo Inn (a lodging establishment frequented among nature tourists), and Frontera Audubon in Hidalgo County and South Padre Island World Birding Center in Cameron County. Additionally, during the peak season (in November), data were collected from visitors to the 18th Annual Rio Grande Valley Birding Festival in Harlingen. Using a simple random sampling scheme, each researcher initially approached every other visitor (later this was modified to intercept every visitor given the time of year) and asked her/him if they were willing to complete the two-page survey instrument.

The survey instrument (available upon request) included a front page consisting of questions concerning participants' zip code, number in party, primary purpose for visiting the RGV, length of stay in the RGV to participate in nature tourism, number of days spent in the RGV in 2011, and 2011 nature tourism expenditures in the RGV and elsewhere. These questions were pivotal in determining direct, indirect, and induced economic impacts of nature tourism as it relates to employment, labor income, value-added, and total output in the RGV. The back page of the survey instrument consisted of questions concerning first time visitation to the RGV, means of transportation used to visit the RGV, likelihood of returning to the RGV, perceptions of the region, gender, age, education level, and annual household

income. These questions were important in determining travel behavior, attitudes about the region, and socio-demographic characteristics.

Throughout the year, 870 visitors at the seven sites (and birding festival) were contacted and asked to participate. Of those, 129 declined to participate and an additional 55 were repeat visitors at other sites. The remaining 686 visitors accepted the survey instrument, yielding an overall response rate of 84.2%. Of the 686 survey instruments, 193 were completed by locals (i.e., residents of the RGV) and 493 were completed by non-locals (i.e., individuals residing outside of the RGV).

These numbers can be further broken down by tourist season. During the peak season, 486 visitors were contacted and asked to participate. Fifty-four individuals declined to participate, while 49 were repeat visitors at one of the other sites. The remaining 383 individuals accepted the instrument, which resulted in a response rate of 88.5% for the peak season. Of the 383, 82 were locals with the remaining 301 were non-locals. Throughout the off-peak season, 384 visitors at the seven sites were contacted and asked to participate. Of those, 75 declined to participate and an additional six were repeat visitors at other sites. The remaining 303 visitors accepted the survey instrument, yielding a response rate of 80.2% for the off-peak season. Of the 303 survey instruments, 111 were completed by locals and 192 were completed by non-locals.

Of the non-local visitors reported, 107 that nature tourism was neither the primary purpose of their trip nor an impetus to spend extra time in the RGV, so they were excluded from the economic impact analysis. An additional 22 survey instruments were excluded because participants provided insufficient information (e.g., did not provide days, party size, expenditures, etc.), leaving 311 survey instruments representing intentional non-local nature tourists and 53 instruments representing casual visitors who were in the region for other reasons but extended their stay to enjoy nature tourism.

Definition of Symbols

Within the following sections, a number of symbols and terms are used to explain particular statistics. The following are such symbols with corresponding definitions:

- Local = individuals who have primary residence within the Rio Grande Valley
- Non-local = individuals who have primary residence outside of Rio Grande Valley
- n = sample size; number of respondents that answered a particular question
- M = mean; mathematical average score
- Intentionals = those non-locals whose primary purpose for visiting the Rio Grande Valley was for nature tourism
- Casuals = those non-locals whose primary purpose for visiting the Rio Grande Valley was not for nature tourism, however stayed in region extra time to do so
- MSA = metropolitan statistical area as determined by the U.S. Census Bureau
- Direct effect = component of an economic multiplier; initial non-local expenditures
- Indirect effect = component of an economic multiplier; results from the purchase of inputs among local industries
- Induced effect = component of an economic multiplier; results from the expenditure of institutions such as households and governments benefitting from increased activity among local businesses
- IMPLAN = IMPact analysis for PLANning; statistical program utilized in conducting economic impact analysis

Sample Description

Study participants were asked to complete a series of socio-demographic and socio-economic questions (Table 1). Comparisons can be drawn between peak and off-peak non-local visitors to RGV sites. The average age for peak season visitors (57.0 years) was considerably higher than the average age for off-peak visitors (47.4). Gender for both groups was nearly identical, with females and males comprising nearly 50% of all peak and off-peak non-locals. Education level among peak and off-peak non-locals was comparable, with roughly three out of four individuals in each group having at least an undergraduate degree. Overall, peak and off-peak non-locals had very similar annual household incomes, with off-peak visitors having slightly higher incomes. The incomes of nature tourists in this study were also higher than the average income of South Texas tourists in general, as reported by D.K. Shifflet & Associates (2011).

Table 1. Descriptive Sample Summary of Peak and Off-peak Non-local Nature Tourists in RGV, 2011

<i>Socio-demographic or Socio-economic Variable</i>	Peak (%)	Off-peak (%)
Age ($n_{\text{peak}} = 298, M_{\text{peak}} = 57.0$) ($n_{\text{off-peak}} = 184, M_{\text{off-peak}} = 47.4$)		
Gender ($n_{\text{peak}} = 298; n_{\text{off-peak}} = 190$)		
Female	49.3	50.5
Male	50.7	49.5
Education level ($n_{\text{peak}} = 297; n_{\text{off-peak}} = 190$)		
Less than high school	0.0	0.5
High school	11.8	9.5
Technical/vocational school/junior college	13.1	13.2
Undergraduate degree	31.3	40.5
Graduate degree	43.8	36.3
Annual household income ($n_{\text{peak}} = 269; n_{\text{off-peak}} = 180$)		
Less than \$50,000	20.1	23.3
\$50,000-74,999	20.8	17.2
\$75,000-99,999	20.1	15.0
\$100,000-149,999	23.8	25.0
\$150,000 or more	15.2	19.4

The group size for peak visitor parties was on average, 2.3 persons, whereas for off-peak visitors, the average party size was 2.6 individuals. In addition to this, a number of travel behaviors are notable for the non-local visitors to the RGV (Table 2). For nearly three of four peak visitors, the primary purpose of traveling to the Valley was to engage in nature tourism, compared to a little more than 50% of the off-peak visitors. Peak visitors were planning to stay 19.8 days on their current trip versus the 7.3 days that off-peak visitors planned to stay. A majority of peak visitors (74.5%) and off-peak visitors (64.0%) had been to the Valley before, having visited 9.1 and 14.5 times prior, respectively. Most of the visitors, peak (68.6%) and off-peak (80.3%) arrived in the Rio Grande Valley by either private or rental auto.

Table 2. Travel Behavior for Peak and Off-peak Non-local Nature Tourists in RGV, 2011

<i>Travel Behavior Variable</i>	Peak (%)	Off-peak (%)
Primary purpose for visiting the RGV was for nature tourism		
No ($n_{\text{peak}} = 74, n_{\text{off-peak}} = 94$)	25.1	49.0
Yes ($n_{\text{peak}} = 221, n_{\text{off-peak}} = 98$)	74.9	51.0
Number of days plan to stay in the RGV for nature tourism on current trip ($n_{\text{peak}} = 276, M_{\text{peak}} = 19.8$) ($n_{\text{off-peak}} = 184, M_{\text{off-peak}} = 7.3$)		
Number of days plan to stay in the RGV for nature tourism in 2011 ($n_{\text{peak}} = 272, M_{\text{peak}} = 19.0$) ($n_{\text{off-peak}} = 174, M_{\text{off-peak}} = 4.7$)		
First time visiting the RGV		
No ($n_{\text{peak}} = 219, n_{\text{off-peak}} = 121$)	74.5	64.0
Yes ($n_{\text{peak}} = 75, n_{\text{off-peak}} = 68$)	25.5	36.0
For returning visitors, number of times visited the RGV in past ($n_{\text{peak}} = 205, M_{\text{peak}} = 9.1$) ($n_{\text{off-peak}} = 101, M_{\text{off-peak}} = 14.5$)		
Mode of transportation for current trip to the RGV		
Private auto	51.9	70.2
Rental auto	16.7	10.1
Plane	24.9	17.6
Tour bus	1.7	0.0
Other	4.8	2.1

Non-locals were also asked about the likelihood of returning to the RGV (Table 3). Nearly 85% of both the peak and off-peak visitors indicated they would either “likely” or “highly likely” return to the RGV on future trips.

Table 3. Attitudes about Returning to the RGV among Peak and Off-peak Non-local Nature Tourists, 2011

<i>Attitude Variable</i>	Peak (%)	Off-peak (%)
Likelihood of returning to the RGV ($n_{\text{peak}} = 291, n_{\text{off-peak}} = 184$)		
Highly unlikely	5.8	7.6
Unlikely	1.7	1.6
Unsure	10.0	7.1
Likely	26.1	32.1
Highly Likely	56.4	51.6

Visitors’ perceived relationship with Valley residents were also collected during the peak season. Overall, visitors indicated a strong level of agreement with the items concerning their feelings toward RGV residents (Table 4). Most notably, visitors indicated the highest level of agreement with the item, “I treat residents of the RGV fairly.” Items pertaining to closeness (e.g., making friends with some residents and feel close to some residents) were agreed with the least.

Table 4. Peak Visitors' Feelings toward RGV Residents, 2011

<i>Variable*</i>	<i>M</i>
I treat residents of the RGV fairly (<i>n</i> = 289)	6.13
I am proud to be welcomed as a visitor to the RGV (<i>n</i> = 288)	5.92
I feel residents appreciate contributions visitors make to local economy (<i>n</i> = 289)	5.58
I feel residents appreciate benefits associated with me coming to community (<i>n</i> = 289)	5.56
I feel affection toward residents of the RGV (<i>n</i> = 288)	5.49
I identify with residents of the RGV (<i>n</i> = 288)	5.19
I have a lot in common with residents of the RGV (<i>n</i> = 289)	5.01
I understand RGV residents (<i>n</i> = 289)	4.99
I have made friends with some residents in the RGV (<i>n</i> = 288)	4.96
I feel close to some residents I have met in the RGV (<i>n</i> = 287)	4.74

* Each item asked on scale of 1 to 7, where 1 = *strongly disagree* and 7 = *strongly agree*

Finally, visitors reported their perceived safety in the Valley. By and large, visitors during the peak season agreed that the RGV is safe (Table 5). In fact, they agreed it was just as safe as other destinations they could choose to visit. Visitors indicated a level of disagreement with the items, “I will tell other people to be careful of crime in the RGV” and “I feel worried about my personal safety in the RGV.”

Table 5. Peak Visitors' Perceived Safety in Valley, 2011

<i>Variable*</i>	<i>M</i>
The RGV is safe (<i>n</i> = 288)	5.22
The RGV is just as safe as other destinations (<i>n</i> = 287)	5.17
People have told me that the RGV is dangerous (<i>n</i> = 287)	3.61
I might fall victim to crime in the RGV (<i>n</i> = 287)	3.01
I will tell other people to be careful of crime in the RGV (<i>n</i> = 286)	2.82
I feel worried about my personal safety in the RGV (<i>n</i> = 286)	2.80

* Each item asked on scale of 1 to 7, where 1 = *strongly disagree* and 7 = *strongly agree*

Nature Tourist Expenditure and Impact Methodology

Each survey respondent was asked whether his/her primary reason for visiting the RGV was for nature tourism. Participants who visited the Valley primarily to enjoy nature tourism were considered intentional nature tourists, or simply “intentionals,” in the region. If nature tourism was not the primary reason for the trip but the respondent spent extra time in the region specifically to enjoy nature tourism, s/he was considered a “casual” nature tourist and was excluded from the economic impact portion of this report. Casual nature tourists’ expenditures are not included in this report due to data inconsistencies. Casuals reported expenditures \$35.95 higher than intentional tourists during the off-peak season. Casuals’ daily expenditures were \$15.28 smaller than intentionals’ expenditures in the peak season, but only if a large response from an international visitor was omitted. Concerns about the reliability of casuals’ data are probably the result of one or more of four issues: (1) there are relatively few casual respondents, decreasing the reliability of their data; (2) casuals may not have reported their expenditures for nature tourism only as requested in Question 7 of the survey (this is less likely to be a concern for intentional visitors for whom nature tourism expenditures may have been the only regional expenditures or for whom such expenditures were top-of-mind); (3) people visiting the region for other reasons likely have different spending patterns, and (4) casuals usually reported fewer trip days and, in the off-peak season, smaller

travel parties, which are generally associated with higher per person expenditures. Respondents who visited the region for reasons other than nature tourism and did not spend extra time in the area to enjoy nature were also excluded from the economic impact portion.

Survey respondents were asked to report both the number of days they planned to stay in the region to engage in nature tourism on their current trip and the number of days they planned to engage in nature tourism in the RGV over the year, as well as the number of people for whom they were paying expenses on the trip. They were then asked to estimate their annual nature tourism expenditures in the RGV and elsewhere for 2011. Categorized expenditures per travel party and per capita, based on group size, were first calculated for both intentional and casual visitors, although expenditures for casual visitors were later discarded due to concerns about reliability. Expenditures per visitor-day were then calculated from travel party expenditures, days spent in nature tourism, and travel party size.

Intentional peak season nature tourists reported spending \$1,786.96 per travel party in the RGV, and off-peak nature tourists reported expenditures of \$1,307.81 per party (Table 6). Peak season casuals spent an additional \$3,271.86 per travel party on nature tourism outside the region, although that number dropped considerably for off-peak visitors.

Table 6. Total 2011 Average Travel Party Expenditures Reported by RGV Intentional Nature Tourist Respondents within and outside the Region for Peak and Off-Peak Seasons.

<i>Expenditure Category</i>	In RGV		Elsewhere	
	Peak	Off-Peak	Peak	Off-Peak
Access fees	\$174.80	\$59.25	\$404.74	\$84.93
Food services	\$351.14	\$236.09	\$487.77	\$227.67
Auto expenses	\$313.02	\$238.56	\$644.44	\$222.57
Lodging	\$592.90	\$410.79	\$847.14	\$569.46
Nature tourism merchandise	\$140.04	\$129.26	\$330.26	\$131.49
Other retail	\$162.16	\$158.56	\$181.64	\$163.47
Other entertainment	\$26.09	\$52.43	\$34.98	\$45.05
Miscellaneous items	\$26.81	\$22.87	\$340.90	\$15.89
Overall total	\$1,786.96	\$1,307.81	\$3,271.86	\$1,460.52

Peak season intentional nature tourists in the RGV spent \$822.08 per visitor, and off-peak intentional spent \$494.72 per person (Table 7). Per capita expenditures reflect an average of 2.17 visitors per peak season travel party and 2.64 visitors per off-peak season travel party among respondents providing spending data. Long-term stays and expenditures by Winter Texans and other long-term tourists are included in these per capita values. Although intentional peak season visitors spent more money in the RGV than did off-peak visitors, they spent a smaller share of their total nature tourism expenditures in the RGV.

Table 7. Total 2011 Average per Capita Expenditures Reported by RGV Intentional Nature Tourist Respondents within and outside the Region for Peak and Off-Peak Seasons.

<i>Expenditure Category</i>	In RGV		Elsewhere	
	Peak	Off-Peak	Peak	Off-Peak
Access fees	\$80.42	\$22.41	\$186.20	\$32.13
Food services	\$161.54	\$89.31	\$224.40	\$86.12
Auto expenses	\$144.00	\$90.24	\$296.47	\$84.19
Lodging	\$272.76	\$155.39	\$389.72	\$215.41
Nature tourism merchandise	\$64.42	\$48.90	\$151.93	\$49.74
Other retail	\$74.60	\$59.98	\$83.56	\$61.84
Other entertainment	\$12.00	\$19.83	\$16.09	\$17.04
Miscellaneous items	\$12.33	\$8.65	\$156.83	\$6.01
Overall total	\$822.08	\$494.72	\$1,505.20	\$552.48
Percent of total nature tourism	35.32%	47.24%	64.68%	52.76%

Casual nature tourists during the peak season reported annual nature tourism expenditures of \$1,420.52 per travel party within the RGV, and during the off-peak season casuals reported spending \$830.95 per party (Table 8). Unlike intentional tourists, peak season casuals spent about the same amount of money on nature tourism outside the region as in the RGV.

Table 8. Total 2011 Average Travel Party Expenditures Reported by RGV Casual Nature Tourist Respondents within and outside the Region for Peak and Off-Peak Seasons.

<i>Expenditure Category</i>	In RGV		Elsewhere	
	Peak	Off-Peak	Peak	Off-Peak
Access fees	\$61.57	\$102.72	\$149.13	\$65.17
Food services	\$198.91	\$136.24	\$252.17	\$213.28
Auto expenses	\$147.61	\$99.83	\$253.91	\$120.52
Lodging	\$518.09	\$272.41	\$626.09	\$256.90
Nature tourism merchandise	\$54.35	\$62.76	\$44.57	\$75.34
Other retail	\$359.57	\$90.52	\$64.13	\$73.10
Other entertainment	\$75.65	\$38.53	\$86.96	\$45.52
Miscellaneous items	\$4.78	\$27.93	\$8.70	\$1.72
Overall total	\$1,420.52	\$830.95	\$1,485.65	\$851.55

Peak season casuals had annual nature tourism expenditures of \$495.03 per visitor in the region, and off-peak casuals reported spending \$376.52 per visitor (Table 9). These per capita expenditures reflected 2.87 visitors per travel party during the peak season and 2.21 during the off-peak season. Again, spending by long-term tourists is included in these per capita figures. While intentionals' travel party size was smaller during the peak season, casuals had more people in the travel party during the peak season, suggesting differences in travel patterns between the groups. Casuals during both the peak and off-peak seasons made about half of their nature tourism expenditures in the RGV.

Table 9. Total 2011 Average per Capita Expenditures Reported by RGV Casual Nature Tourist Respondents within and outside the Region for Peak and Off-Peak Seasons.

<i>Expenditure Category</i>	In RGV		Elsewhere	
	Peak	Off-Peak	Peak	Off-Peak
Access fees	\$21.45	\$46.55	\$51.97	\$29.53
Food services	\$69.32	\$61.73	\$87.88	\$96.64
Auto expenses	\$51.44	\$45.23	\$88.48	\$54.61
Lodging	\$180.55	\$123.44	\$218.18	\$116.41
Nature tourism merchandise	\$18.94	\$28.44	\$15.53	\$34.14
Other retail	\$125.30	\$41.02	\$22.35	\$33.13
Other entertainment	\$26.36	\$17.46	\$30.30	\$20.63
Miscellaneous items	\$1.67	\$12.66	\$3.03	\$0.78
Overall total	\$495.03	\$376.52	\$517.73	\$385.86
Percent of total nature tourism	48.88%	49.39%	51.12%	50.61%

Because the total number of visitors to the area was not known, visitor-day estimates from the 2010 Texas Visitor Profile (D.K. Shifflet & Associates, Ltd., 2011) were used to estimate total annual nature tourism spending based on the survey responses. This methodology required estimating spending per visitor per day. A weighted estimate of spending per visitor-day was used to prevent Winter Texans who reported spending more than a month engaged in nature tourism (sometimes more 120 days) from dominating the spending per visitor-day calculations. These individuals are unlikely to be true tourists for each day of an extended stay and are thus not likely included in the Shifflet numbers to the same level that they self-report tourism activity. Intentional nature tourists responding during the peak season spent an estimated \$133.22 per visitor-day within the RGV, and those responding during the off-peak season spent \$128.22 (Table 10).

Table 10. Total 2011 Average Expenditures per Visitor-Day Reported by RGV Intentional Nature Tourist Respondents within and outside the Region for Peak and Off-Peak Seasons.

<i>Expenditure Category</i>	In RGV		Elsewhere	
	Peak	Off-Peak	Peak	Off-Peak
Access fees	\$8.72	\$5.55	\$15.14	\$5.77
Food services	\$30.14	\$28.34	\$22.04	\$15.63
Auto expenses	\$23.39	\$22.89	\$26.98	\$15.47
Lodging	\$46.89	\$44.33	\$45.93	\$41.59
Nature tourism merchandise	\$9.24	\$9.89	\$14.57	\$9.35
Other retail	\$10.32	\$11.42	\$9.98	\$10.66
Other entertainment	\$3.17	\$4.39	\$3.46	\$4.12
Miscellaneous items	\$1.35	\$1.40	\$10.65	\$0.59
Overall total	\$133.22	\$128.22	\$148.75	\$103.19
Percent of total nature tourism	47.25%	55.41%	52.75%	44.59%

Expenditures reported among intentional nature tourists appear valid relative to Texas travel report spending estimates. Expenditures per person-day in 2010 averaged \$79.80 for the McAllen-Edinburg-Pharr MSA (Hidalgo County) and \$111.50 for the Brownsville-Harlingen MSA (Cameron County). Slightly higher spending among survey respondents may reflect potentially higher 2011 prices. Also, the 2010 figure from the 2010 Texas Visitor Profile averages expenditures from all types of visitors,

not just nature tourists, and the incomes of respondents in this study are higher than the incomes of average tourists in the region.

On a visitor-day basis, peak season intentionals made about 47.25 percent of their nature tourism expenditures within the RGV, similar to the share calculated on a per capita basis. On the other hand, off-peak intentionals spent about 55.41 percent of their nature tourism budget in the region on a visitor-day basis, which was a larger share than on a per capita basis. There may be some room for the regional nature tourism industry to capture a larger share of visitors' nature tourism spending, particularly by encouraging longer stays to encourage additional regional spending and encouraging day-trippers, weekenders, and other short-stay parties during the peak season. Both intentional and casuals reported spending less on access fees and lodging prices in the Valley relative to other locations, both annually and on a per-person-day basis. Price increases should be evaluated carefully as higher prices generally decrease demand for products and services, which can mitigate the effect of price increases or even reduce total spending.

Casuals' average expenditures per visitor-day are reported in Table 11. However, casuals' data suffered reliability issues, as detailed above. Thus this data was not included in the total spending or economic impact calculations but is presented in Table 11 for the sake of completeness.

Table 11. Total 2011 Average Expenditures per Visitor-Day Reported by RGV Casual Nature Tourist Respondents within and outside the Region for Peak and Off-Peak Seasons.

<i>Expenditure Category</i>	In RGV		Elsewhere	
	Peak	Off-Peak	Peak	Off-Peak
Access fees	\$3.78	\$12.01	\$13.47	\$14.91
Food services	\$20.14	\$27.03	\$15.02	\$27.84
Auto expenses	\$19.82	\$24.81	\$26.77	\$30.19
Lodging	\$54.73	\$64.38	\$46.36	\$50.74
Nature tourism merchandise	\$5.85	\$10.30	\$4.33	\$10.39
Other retail	\$19.90	\$16.67	\$6.84	\$12.00
Other entertainment	\$4.66	\$5.94	\$7.79	\$9.39
Miscellaneous items	\$0.39	\$3.03	\$0.99	\$0.86
Overall total	\$129.26	\$164.17	\$121.57	\$156.32
Percent of total nature tourism	51.53%	51.23%	48.47%	48.77%

The D.K. Shifflet & Associates (2011) report for the Texas Office of the Governor (Economic Development and Tourism Division) estimates that 10.01 million leisure person-days occurred in the McAllen-Edinburg-Pharr (4.09 million) and Brownsville-Harlingen (5.92 million) MSAs in 2010. The report indicates that 23.5% of visitors experienced nature tourism in McAllen and 23.3% of visitors in Brownsville did so. Nature tourism, as defined by this project, includes the categories nature/culture observation, park attendance, camping, and hiking/biking from the D.K Shifflet reports. Visitors may select more than one activity during their vacations; however, the percentages are consistent with total nature tourism shares as aggregated by the tourism division. Those tourism division shares include visiting beaches, which is likely to include a large amount of non-nature tourism activities, especially near Brownsville and South Padre Island. Because it does not reflect observational nature tourism, beach-going was excluded as a nature tourism activity for this study. Only leisure visitors are considered in this study to account only for intentional nature tourism person-days, which are estimated at 2.34 million annually across the region, based on total leisure person-days and the share of nature tourism stays.

Personal communication with RGV nature tourism industry representatives indicated that approximately 60% of annual nature tourism visits occur during the peak season from mid-November or December through April or mid-May (although the share ranged from 35% to 85% at various locations). The 2010 person-days by intentional nature tourists from the D.K. Shifflet (2011) report were multiplied by the shares of peak and off-peak visitors. An estimated 1.4 million nature tourism visitor days occurred during the peak season and 936,000 during the off-peak season. The peak and off-peak visitor-days were then multiplied by reported person-day expenditures from the RGV survey to estimate total annual spending in each of the categories during each season. Total estimated expenditures per category are provided in Table 12.

Table 12. Estimated Total Annual Expenditures by Intentional Nature Tourists to RGV, 2011.

<i>Expenditure Category</i>	Peak	Off-Peak	Total
Access fees	\$12,240,300	\$5,194,800	\$17,435,100
Food services	\$42,313,900	\$26,526,200	\$68,840,100
Auto expenses	\$32,842,700	\$21,425,000	\$54,267,700
Lodging	\$65,834,600	\$41,492,900	\$107,327,500
Nature tourism merchandise	\$12,969,800	\$9,257,000	\$22,226,800
Other retail	\$14,492,300	\$10,689,100	\$25,181,400
Other entertainment	\$4,446,800	\$4,109,000	\$8,555,800
Miscellaneous items	\$1,898,000	\$1,310,400	\$3,208,400
Overall total	\$187,038,500	\$120,013,900	\$307,052,400

Economic Impact

Impact analysis is based on the idea that a dollar spent in a region stimulates additional economic activity, or multiplies as it circulates through the economy. This *multiplier effect* recognizes that the total effect on output, employment, personal income, and government revenue in the region is greater than the initial dollar spent. A tourist's expenditure at a souvenir shop contributes not only to that business, but to its suppliers, its suppliers' suppliers, each of their employees' incomes, and tax revenues. Of course, some of the original expenditure leaks out of the regional economy, for example as inventory is imported from other regions, employees commute from other regions, and businesses and households pay state and federal taxes. The portion of the money that remains in the local economy throughout these transactions constitutes the net economic gain. Larger regions contain more economic linkages, which is why large cities and multi-county regions generally have larger multipliers than do small towns or single counties. Multipliers are calculated based on the purchasing patterns of industries and institutions in the regional economy.

Multipliers include three components. The *direct effect* on the economy is the initial non-local expenditure. The direct effect results in two types of secondary effects. The *indirect effect* results from the purchase of inputs among local industries. The *induced effect* results from the expenditure of institutions such as households and governments benefitting from increased activity among local businesses. The total effects are the sum of direct, indirect and induced for each of the outcomes: employment, labor income, total value added (contribution to gross regional product) and output (gross sales).

Categorized total expenditures from Table 12 (direct effects) were entered into IMPLAN (2010) to estimate the economic impact of intentional nature tourists to the region (Table 13). The original \$307.1 million direct economic contribution from RGV nature tourism led to a total county-level economic output of \$463.0 million and 6,613.4 full- and part-time jobs annually. This total contribution

includes a \$266.6 million contribution to gross regional product and a \$163.0 million contribution to labor income across the region. Labor income is a component of value added, which is a component of output, so the figures in Table 13 cannot be summed. Because the figures are estimates, they are reported as rounded to the nearest hundred.

Table 13. Annual Impacts of Intentional Nature Tourists in RGV based on Both Peak and Off-peak Season Expenditures, 2011

<i>Impact Type</i>	Employment	Labor Income	Value Added	Output
Direct effect	5,158.9	\$111,712,700	\$181,289,900	\$307,052,400
Indirect effect	535.6	\$19,930,300	\$31,132,600	\$63,443,500
Induced effect	918.8	\$31,366,400	\$54,148,600	\$92,502,800
Total effect	6,613.4	\$163,009,400	\$266,571,100	\$462,998,700

Visitors' expenditures include taxes paid to the city and county governments, most often in the form of sales and hotel taxes. Tax estimates are provided in Table 14 based on direct expenditures and tax rates listed by the Texas Comptroller (Combs, 2011). Only taxes on direct expenditures are measured. Indirect economic effects result in few local taxes as inputs are not generally subject to taxes. Property taxes are a fixed cost and are excluded here.

Table 14. Local (City and County) Taxes Generated from Direct Nature Tourist Expenditures, 2011

<i>Tax Type</i>	Amount
Sales tax	\$2,560,300
Hotel tax	\$7,512,900

A Look at Local Residents

The survey captured 81 local residents in the peak season and 110 local residents (only six of whom failed to complete the survey instrument) in the off-peak season in addition to tourists. These results could not be used to calculate the economic impact of nature tourism, which relies on visitors and money from *outside* the region. However, many residents reported nature tourism expenditures. Table 15 describes the annual per capita nature tourism spending by RGV residents visiting regional birding sites over the year. Residents questioned during the peak season reported spending \$346.86 per person on local nature tourism and \$131.56 outside the region. Residents responding during the off-season averaged \$461.17 in annual nature tourism spending within the region. They spent another \$159.58 outside the region. Residents likely spent less money on nature tourism outside the Valley because they have different tourism motivations than do nature tourists visiting the region. A strong local nature tourism industry may be capturing the interest of locals who would not otherwise be nature tourists. Some residents may have moved to the region, at least on a part-time basis, to take advantage of excellent nature tourism opportunities, thus reducing their desire to engage in nature tourism elsewhere.

These direct expenditures are also multiplied as money circulates through the local economy. However, statistically, most local expenditures would have been spent on other local goods and services in the absence of the nature tourism spending, and those other expenditures would also circulate money

through the economy. Hence, assigning an economic impact to local residents' naturalist expenditures is not appropriate.

Table 15. Expenditures per Person for Resident Naturalists in RGV, 2011.

<i>Expenditure Category</i>	In RGV		Elsewhere	
	Peak	Off-Peak	Peak	Off-Peak
Access fees	\$18.92	\$12.60	\$7.73	\$11.97
Food services	\$83.63	\$95.24	\$23.72	\$41.18
Auto expenses	\$101.86	\$109.41	\$31.21	\$24.74
Lodging	\$22.53	\$49.40	\$30.67	\$41.28
Nature tourism merchandise	\$14.39	\$29.55	\$7.67	\$9.60
Other retail	\$62.28	\$106.05	\$16.01	\$16.38
Other entertainment	\$41.28	\$33.88	\$14.55	\$11.05
Miscellaneous items	\$1.95	\$25.05	\$0.00	\$3.38
Overall total	\$346.86	\$461.17	\$131.56	\$159.58
Percent of total nature tourism	72.50%	74.29%	27.50%	25.71%

Study Limitations and Future Research

The definition of nature tourism used in this study relies on nature tourism shares identified by the D.K. Shifflet (2011) reports and is broader than just birders. Total annual person-days from D.K. Shifflet (2011) will continue to be estimates. However, the methods followed assure that the estimated impacts from nature tourism are conservative. This study excludes data from casual nature tourists because the spending reported could not be validated. A further study may shed further light on casuals' expenditures; on the other hand, a larger share off-peak season birders are likely to be intentional nature tourists rather than casuals.

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