

Nature-Oriented Visitors and Their Expenditures: Upper San Pedro River Basin



Photo provided courtesy of Bureau of Land Management, San Pedro RNCA



**Agricultural
Resource Economics**

**The University of Arizona - College of Agriculture and Life Sciences
Tucson, Arizona 85721**

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Photograph by Patricia Orr

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Introduction

This report summarizes the demographics, travel patterns, and local expenditures of visitors to two key birding sites in the Upper San Pedro River Basin. Researchers and trained volunteers administered surveys to 843 visitors who reside outside the Upper San Pedro River Basin study area, as defined by the map below (Figure 1). The data were collected over two time periods in 2001: February through May (the spring bird migration season) and in August (the return migration season). The two survey sites, the Nature Conservancy's Ramsey Canyon Preserve and the Bureau of Land Management's San Pedro Riparian National Conservation Area (SPRNCA), are among the best-known birding sites and natural areas in the Upper San Pedro River Basin of southeastern Arizona. A small portion of the surveys (less than 5%) were collected at the 2001 Southwest Wings Birding Festival hosted in Sierra Vista. Visitors were randomly contacted at these sites. Only one respondent was solicited per household and no more than three or four members of a group were asked to complete the survey. Of those asked to complete the survey, 84% agreed while 16% declined.

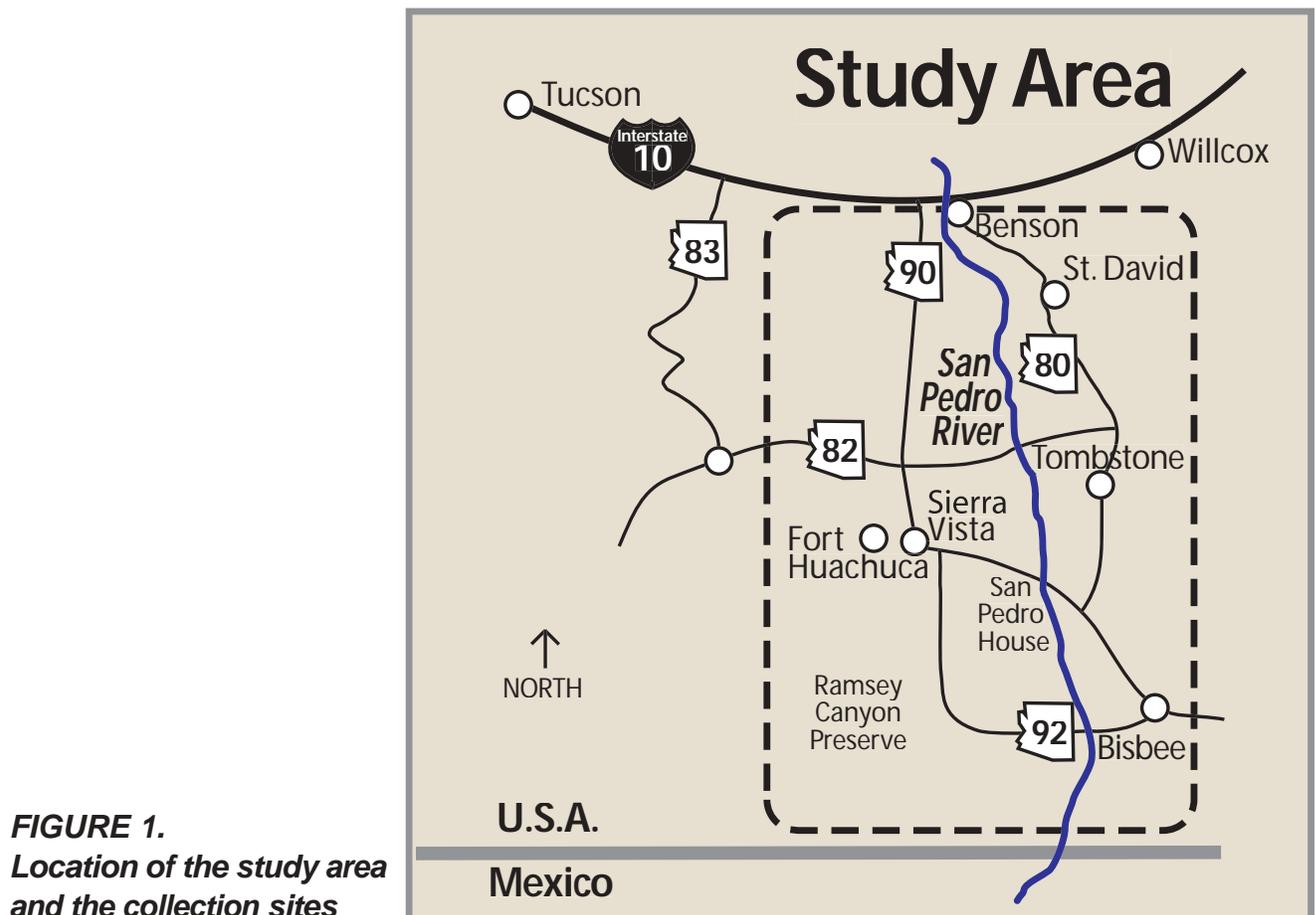


FIGURE 1.
*Location of the study area
and the collection sites*

Visitor Demographics

The visitors surveyed ranged in age from 18 to 92 years (Table 1). The mean age of the visitors participating in the survey was 55 years, and almost half had completed graduate or professional school (Table 2). The survey population was evenly divided between full-time and retired persons (Table 3). The mean household income of these respondents (before taxes) in the year 2000 was \$94,000. Over 72% of the survey respondents indicated they were members of organizations that support conservation or wildlife concerns. The organizations most often cited were the Nature Conservancy, the Audubon Society, and the Sierra Club.

TABLE 1.
Age distribution of survey respondents.

Age	Frequency	%
18-29 years	14	1.7
30-39 years	79	9.8
40-49 years	165	20.5
50-59 years	224	27.8
60-69 years	217	26.9
70-79 years	93	11.6
80-89 years	12	1.5
90 and older	1	0.1

TABLE 2.

Level of education of the survey respondents.

Level of Education	Frequency	%
High School	39	4.8
Some College/Technical School	102	12.7
Completed College/Technical School	197	24.5
Some Graduate/Professional School	102	12.7
Completed Graduate/Professional School	364	45.3

TABLE 3.

Employment status of survey respondents.

Employment Status	Frequency	%
Employed full-time	358	43.9
Employed part-time	80	9.8
Retired	335	41.1
Homemaker	23	2.8
Unemployed	14	1.7
Student	5	0.6

Visitors to the two sites came individually, in couples and small groups, and in large groups up to 40 persons. The mean group size was 3.6 persons and the median was 2.0. During the research period, larger groups observed at the San Pedro House and the Ramsey Canyon Preserve included the Elder Hostel, Geronimo Educational Travel Studies, Cub Scouts, BLM researcher trainees, Columbia University and University of Arizona student field trips, locally organized equestrian tours, Botanical Gardens Society of Tucson, Friends of the San Pedro guided tours, and many school groups.

Visitor Lodging Choices

On average, overnight visitors spent 4.7 nights in the study area. During their stay, 66% of the visitors chose accommodations in Sierra Vista, 16% in Benson, and the remainder stayed in St. David, Bisbee, Tombstone and other locations (Figure 2). The overnight visitors primarily chose hotels and motels (38%) and recreational vehicle (RV) parks and campgrounds (35%) for their accommodation (Figure 3). The remaining visitors stayed at the homes of family or friends, at bed and breakfast inns, or used other types of accommodation.

Figure 2.
Accommodation Locations

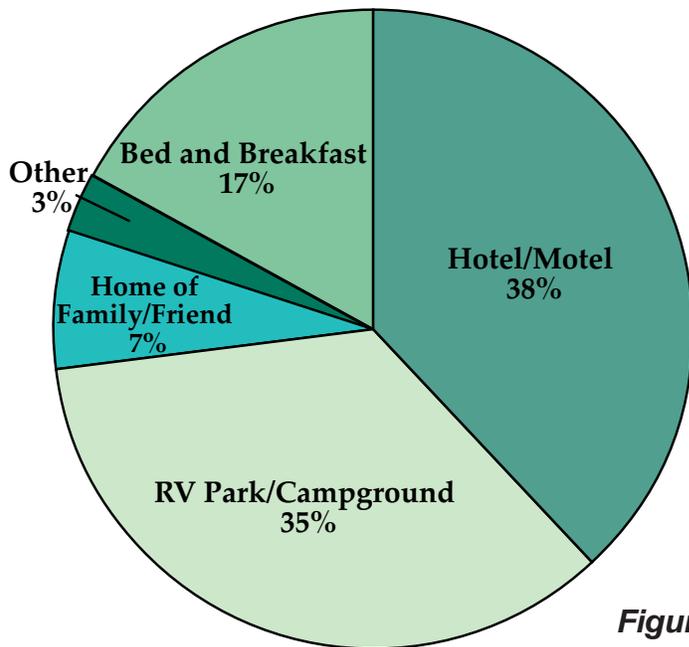
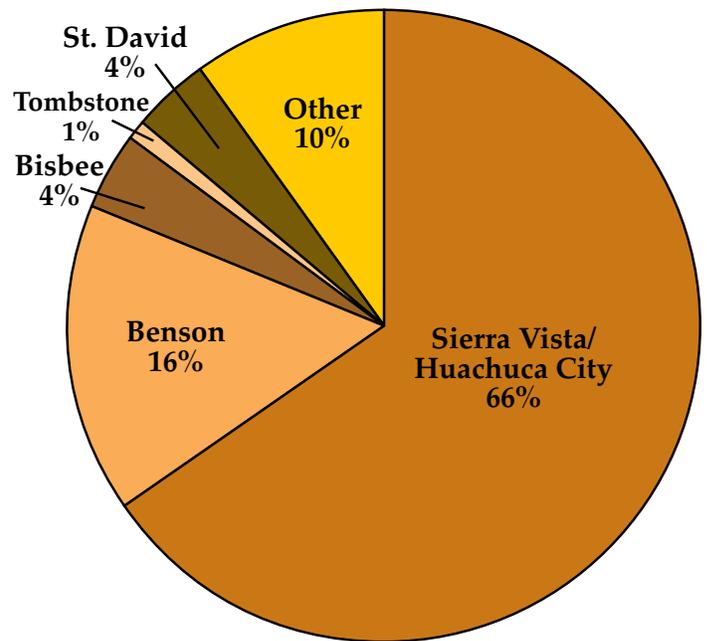


Figure 3.
Accommodation Types

Annual Visitation Estimates

The monthly visitation patterns at the Ramsey Canyon Preserve were estimated using a sign-in log at the visitor center, the only entrance point to the Preserve. Visitors are invited to sign the log upon arrival at the Preserve. They are asked to note where their trip originated and this information was used to distinguish resident and non-resident visitors, as well as to estimate an annual non-resident visitor count for the Preserve. These logs document sign-ins for 16,150 non-resident visitors in the twelve-month period from June 2000 to May 2001 (Table 4). It is estimated that one in five visitors is not represented by the visitor book sign-ins, resulting in an annual visitation estimate of 19,380.

Visitation in the early 1990s reached as high as 28,000 at the Ramsey Canyon Preserve (Crandall, Leones, and Colby 1992). Staff familiar with Preserve visitation patterns suggest that the stock market decline and its financial ramifications for retirees, along with the introduction of an entrance fee at the Preserve in August 2000, have contributed to the more recent lower visitation numbers.

TABLE 4.
Ramsey Canyon Monthly non-resident visitor counts.

Month	Non-Resident	%
June 2000	1,250	7.7
July 2000	1,550	9.6
August 2000	1,150	7.1
September 2000	1,050	6.5
October 2000	850	6.3
November 2000	1,000	6.2
December 2000	800	5.0
January 2001	725	4.5
February 2001	1,200	7.4
March 2001	2,100	13.0
April 2001	2,450	15.2
May 2001	2,025	12.5
Total per log book	16,150	100%
Estimated one in five visitors who did not sign the log	3,230	+20%
Total estimated visitation	19,380	

Estimating an annual visitor count for the SPRNCA is more challenging. Visitor records are not collected for the SPRNCA. In addition, the San Pedro House access point (the survey contact point for this study) represents just one of several access points to the 56,000-acre conservation area. To provide an estimate of total annual visitation at the site, we compared our daily visitor counts on survey collection days at the San Pedro House to the more formal visitor records maintained at the Ramsey Canyon Preserve. This comparison indicated that the non-resident visitor count is similar at both Ramsey Canyon and the San Pedro house entry point to SPRNCA. However, this count does not include visitors entering the SPRNCA through other access points. Knowledgeable staff estimate that visitation through other access points likely accounts for one-third more SPRNCA visitors (5,814 visitors). The annual visitation at the SPRNCA is, therefore, estimated at 25,194.

To estimate local spending by non-resident visitors to the SPRNCA and Ramsey Canyon, each non-resident visitor to the two sites must be counted only once. To avoid a double count of visitors who went to both sites, the total visitation estimate was adjusted. The survey results indicate 48% of the Ramsey Canyon visitors also visited SPRNCA. Total non-resident visitor estimates for the two sites have been adjusted downward to 35,272 (for the year June 2000 to May 2001) in order to count each non-resident visitor only once.¹

Visitor Expenditures in Local Area

In terms of direct spending, 774 of the surveyed visitors documented their spending patterns while in the study area. A total of 639 visitors (83%) indicated they were staying overnight while 135 respondents (17%) indicated they were on day trips to the study area. The overnight visitors spent, on average, \$97.18 per night, while the day-trip visitors spent \$24.42 per day. Overnight visitors averaged 4.7 nights in the study area, while day-trip visitors spent an average of 4.9 hours.



Photograph by Patricia Orr

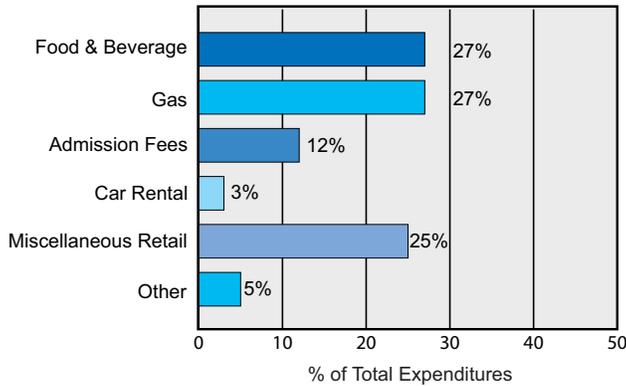


FIGURE 4.
Expenditure categories for day-trip visitors

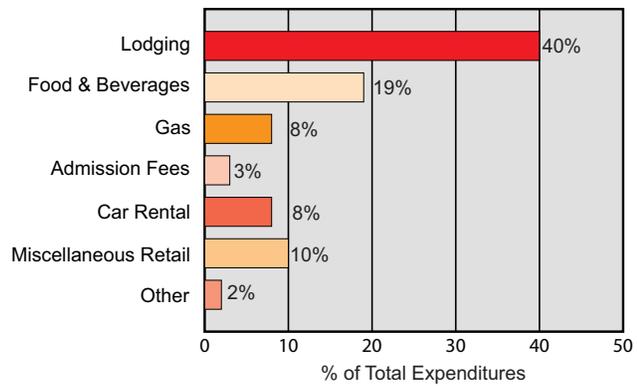


FIGURE 5.
Expenditure categories for overnight visitors

Expenditures on food and beverage (27%), gas (27%) and miscellaneous (25%) represented the larger spending categories for day-trip visitors (Figure 4). Overnight visitors spent more on lodging (40%) and food and beverage expenses (19%) (Figure 5). Direct visitor spending in the study area is calculated by multiplying the mean per person expenditure by the number of days or nights spent in the study area for the estimated annual visitation at the Ramsey Canyon Preserve and SPRNCA. We present our expenditure estimates using a range of visitor counts in order to reflect the variability in visitation patterns since the 1990s (Table 5). The lower estimate represents a 25% decrease from the annual visitation estimates (June 2000 to May 2001). The high estimate represents a 25% increase in visitation compared to the June 2000 through May 2001 estimate. Visitors to the SPRNCA and Ramsey Canyon spent from \$10.1 to \$16.9 million during their stay in the study area.² This spending range provides a good basis for predicting annual local expenditures by visitors to these two sites over the next few years.

TABLE 5.
Visitor Spending.

	Annual Visitor Estimates	Day-trip Visitors (17%)	Day-trip Visitor Spending (\$)	Overnight Visitors (83%)	Overnight Visitor Spending (\$)	Total Visitor Spending
High (+25%)	44,090	7495	168,045	36,595	16,714,483	16,882,528
Middle	35,272	5996	134,430	29,276	13,371,586	13,506,016
Low (-25%)	26,454	4497	100,823	21,957	10,028,690	10,129,513

*Day trip visitor counts were multiplied by \$22.42 (average expenditure).

**Overnight visitor counts were multiplied by \$97.18 per night for the mean visitation period (4.7 nights).

Visitor Expenditures and Local Economic Activity

The total direct expenditures of visitors to an area is valuable economic information. However, it is also important to know the effects of these expenditures on total output for the local economy (Crandall, Leones, and Colby, 1992). The expenditures of non-resident visitors represent an inflow of revenues to the local economy, in contrast to local resident expenditures which represent the circulation of money that is already in the local economy. By examining the direct, indirect, and induced effects of visitor expenditures, the total economic activity resulting from visitor spending can be estimated.

The actual amount spent by visitors to the two sites (from outside the local area) at businesses within the area represents direct visitor spending. Direct visitor spending occurs when visitors purchase goods and services, such as groceries and gas, from local businesses. Indirect and induced effects occur when the local businesses and their employees use their revenues from visitor spending to purchase goods and services from other local businesses. This creates a chain of increased economic activity within the local economy. These “multiplier” effects create the total economic impact of visitor expenditures on the local economy.

A multiplier is a ratio, which can be defined as the total (direct plus indirect plus induced) effects divided by the direct effect. The magnitude of the direct, indirect, and induced economic impacts depends on: the number of visitors traveling to an area, their expenditures, the structure and diversity of the local economy, and the quantity of goods and services that are purchased by local businesses and households within the local community (National Park Service 1996). Computerized input-output models such as the USDA Forest Service’s IMPLAN (Input-Output Model for Planning and Analysis) software often are used to derive multipliers. New input-output modeling was beyond the scope of this study and the most recent IMPLAN model for the study region available to us was the 1992 Crandall, Leones and Colby study.³ That model generated an output multiplier of 1.68.⁴ The application of the output multiplier (1.68) indicates that the annual increase in local economic output over the period June 2000 to May 2001 that is attributable to Ramsey Canyon and SPRNCA visitor expenditures ranges from \$17.0 to \$ 28.3 million (Table 6).⁵ New jobs linked to spending by visitors to the two sites are in the range of 350-590 jobs, also relying on the 1991-92 economic model developed by Crandall, Leones and Colby.⁶

TABLE 6.
Total Economic Impact.

Visitation Estimates (Range)	Annual # of Visitors	Direct Expenditures (\$)	Total Economic Output (\$)
High Visitation (+25%)	44,090	16,822,528	28,261,847
Middle Visitation	35,272	13,506,016	22,690,107
Low Visitation (-25%)	26,454	10,129,513	17,017,582

Recreation Choices and Visitation Patterns



Photograph by Patricia Orr

The majority of visitors traveling to these two sites in the Upper San Pedro River Basin are enthusiastic bird-watchers (Table 7). These visitors spend an average of 53 days per year bird watching. They are part of a growing population of what the Fish and Wildlife Service estimates to be more than 50 million bird-watchers in the United States, outnumbering hunters and anglers combined (Relly, 2001). The vast majority of respondents (87%) cited birdwatching as either the main purpose of their trip (63%) or one of several important reasons (24%) (Table 7).

TABLE 7.
Purpose of the trip to the Upper San Pedro River Basin.

Reason	Frequency	%
1. Visiting birding sites/natural areas is the main purpose for this trip.	528	63
2. Visiting birding sites/natural areas is one of several important reasons for this trip.	205	24
3. I visited the study area for other reasons and just happened to make a side-trip to birding sites/natural areas.	109	13

The respondents were also asked to indicate the primary reason for visiting birding sites and natural areas, as opposed to visiting the study area in general. A total of 468 (51%) respondents noted general birding as the single most important reason for visiting specific birding sites and natural areas (Table 8). A further 65 respondents (8%) noted that looking for a specific bird was the most important reason. The specific species attracting visitors to the birding sites and natural areas in the Upper San Pedro River Basin included the Elegant Trogon, Montezuma Quail, Rufous Copper Warbler, Vermillion Flycatchers and the Blue-throated, Magnificent, and White-eared hummingbirds. Walking, hiking, viewing wildlife, enjoying the riparian area, and visiting archeological and historical sites accounted for the remaining visitors.

TABLE 8.
Reason for visiting birding sites and natural areas.

Reason	Frequency	%
1. General birding	468	57
2. To look for a specific bird	65	8
3. Walking, hiking, and viewing wildlife	210	25
4. To enjoy the riparian area environment	42	5
5. To visit historical/archeological sites near these areas	12	1
6. Other	29	4

The other birding sites and natural areas visited were Garden Canyon, Carr Canyon, Coronado National Memorial, Beatty's Orchard, Miller Canyon, and Kartchner Caverns (Table 9). Of all the visitors sampled, 52% were repeat visitors to the Upper San Pedro River Basin.

TABLE 9.
Other birding sites and natural areas visited.

Birding Sites and Natural Areas	# of Survey Respondents Visiting the Site
Garden Canyon (Fort Huachuca)	254
Carr Canyon	139
Coronado National Memorial	140
Beatty's Orchard	190
Miller Canyon	215
Kartchner Caverns State Park – Birding and hiking trails	75
– Cave tours	79
Other birding sites and natural areas in the study area: French Joe Canyon and the Saint David Monastery were frequently mentioned.	85

When asked about their opinion of information displays at the San Pedro House and the Ramsey Canyon Preserve, the majority responded favorably. The majority of visitors were very satisfied with the informational displays found at the Ramsey Canyon Preserve and San Pedro House. Over 73% found the informational displays very interesting, with the remaining visitors (27%) finding the displays somewhat interesting or reporting that they did not see the displays during their visit.

In contrast to the 1992 study, visitors did *not* express difficulty with obtaining lodging in the local area. However, visitors did indicate there were several types of goods and services that they wished to purchase but were unable to acquire locally. These items included binocular rental, global positioning systems (gps), topographic maps, hiking socks and boots, butterfly and bat guides for Arizona, and picture postcards. Additional coffee shops and lower-end restaurants also were suggested.

To summarize, visitors to two key birding sites in the Upper San Pedro River Basin are highly educated, relatively affluent and often are repeat visitors to the area. Visitor characteristics, summarized in Appendix A, are consistent across the survey collection sites. On an annual basis, non-resident visitors to Ramsey Canyon and the SPRNCA spent an estimated \$10.1 to \$16.9 million in the local area, increasing total economic output in the study area by \$17.0 to \$28.3 million, and generating 350-590 jobs. The range of visitor expenditures reported here and the increased local economic output and jobs reflect the fluctuations in visitor numbers over the past decade and provide a good basis for anticipating future local economic inflows generated by these riparian preserves.



Photograph by Patricia Orr

Endnotes

¹ The forty-eight percent of Ramsey Canyon visitors who visited *both* sites are counted in the SPRNCA visitor count, in order to count them only once for the purposes of calculating local expenditures.

² This estimate of direct expenditures is significantly higher than the estimated \$1.6 million annual spending by visitors to these two sites in 1991-92. This increase in estimated expenditures is due to several factors. Non-resident visitor estimates are much higher in 2001 for the SPRNCA. Also, lodging expenditures for overnight guests are much higher than reported in 1992. In the earlier study, many respondents indicated they were unable to obtain lodging in the study area. At that time, Fort Huachuca was expanding and had booked many local motel rooms. Moreover, local lodging capacity was smaller overall. The typical visitor to these two sites in the early 1990s averaged only about \$20 per day in local lodging expenditures (most visitors did *not* stay in the study area) compared to about \$40 per person per day for the 2001 visitors. Visitors tend to stay overnight in the local area in greater proportions, and for more nights, than in the early 1990s. Finally, changes in methodologies for estimating visitor spending in the study area also account for differences between this study and the earlier study.

³ The late Dr. Julie Leones was one of the University of Arizona's primary experts on IMPLAN. Her presence and expertise are sorely missed by her colleagues and friends.

⁴ According to the National Park Service, for recreation expenditures the total economic effects are typically approximately one-and-a-half to three times more than the amount of the actual recreation-related expenditures (National Park Service, 1996). The New Jersey Audubon Society suggest that on average a multiplier of 2:1 can be used in calculating the total economic impact of nature visitors for economies around natural area destinations. This means that for every additional dollar spent by the nature visitor, two additional dollars are spent by the local residents and businesses in the local economy (NJAS 1996). The Cochise County general multiplier of 1.7 has been used in other studies to estimate the fiscal impacts of nature visitors to the area (personal communication Ken Jones, Center for Economic Research, Cochise College).

⁵ Readers may well ask why the range of the local economic output is so large. The wide range reflects the uncertainty in actual numbers of non-resident visitors to the SPRNCA where there are multiple entry points and no official visitor counts.

About the Authors

Patricia Orr has bachelor's and master's degrees in agricultural and resource economics from the University of Arizona, the latter completed in December 2001. Her Master's thesis focused on measuring economic values linked to riparian area preservation in the Upper San Pedro River Basin in southeastern Arizona. In 1999, she conducted a study on "Agricultural Water Use Challenges and Opportunities in Pima County, Arizona." That project was sponsored by the Office of the President as one component of the University of Arizona's Water Sustainability Initiative.

Bonnie G. Colby is Professor of Agricultural and Resource Economics at The University of Arizona, where she has been a faculty member since 1983. She has authored numerous publications on the economics of water issues, including the books *Water Markets in Theory and Practice* and *Indian Water Rights: Negotiating the Future*. She has provided invited testimony on these matters to state legislatures around the West, and to Congress. She served on the National Research Council's Committee on Western Water Management, the Committee on Managing Glen Canyon Dam, and on the National Academy of Science committee investigating use of economic methodology by the Army Corps of Engineers for billion-dollar proposed projects on US waterways.

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The University of Arizona Department of Agricultural and Resource Economics strives for excellence in teaching, research, and outreach. The Department offers undergraduate and graduate degrees focusing on natural resource economics, international trade and development, econometric methods, agribusiness, and management. Faculty members have been honored on many occasions for their outstanding teaching, research, outreach, and public service. Additionally, the Department's graduate students have achieved much recognition and work worldwide as professionals in water management, agriculture, advanced data analysis, natural resource economics, and international development.

APPENDIX A. Summary Statistics by Collection Site

Summary Statistics	Ramsey Canyon Preserve	San Pedro RNCA	Southwest Wings Festival
Age	55 years	55 years	55 years
Household Income	\$92,000	\$96,500	\$84,000
Education (% of total)			
High School	4%	6%	2%
Some College	14%	11%	19%
Completed College	26%	23%	23%
Some Graduate/Professional School	12%	13%	9%
Completed Graduate/Professional School	44%	47%	47%
Employment (% of total)			
Full-time	44%	43%	43%
Part-time	10%	9%	11%
Retired	41%	42%	39%
Homemaker	2%	4%	2%
Unemployed	2%	1%	5%
Student	1%	1%	0%
Accommodation Types (% of total)			
Bed and Breakfasts	22%	13%	11%
Hotels/Motels	36%	37%	69%
RV/Campgrounds	29%	43%	9%
Home of Family or Friends	12%	3%	0%
Other	1%	4%	11%
Accommodation Locations (% of total)			
Sierra Vista and Huachuca City	58%	69%	90%
Benson	22%	12%	2%
Bisbee	5%	3%	2%
Tombstone	1%	1%	0%
St. David	1%	7%	0%
Other (Hereford was most often cited)	13%	8%	6%
Previously Visited the Upper San Pedro River Basin (USPRB) (% of total)			
	45%	51%	59%
Expenditure Per Person Per Day (while in USPRB)			
Day-trip Visitors	\$28.18	\$21.18	\$29.58
Overnight Visitors	\$102.86	\$92.03	\$95.26
Number of Nights Spent in the USPRB	3.9 nights	5.4 nights	4.3 nights
Rating of Displays (% of total)			
Very informative	73%	55%	67%
Somewhat informative	22%	28%	23%
Did not see or not informative	5%	17%	10%

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