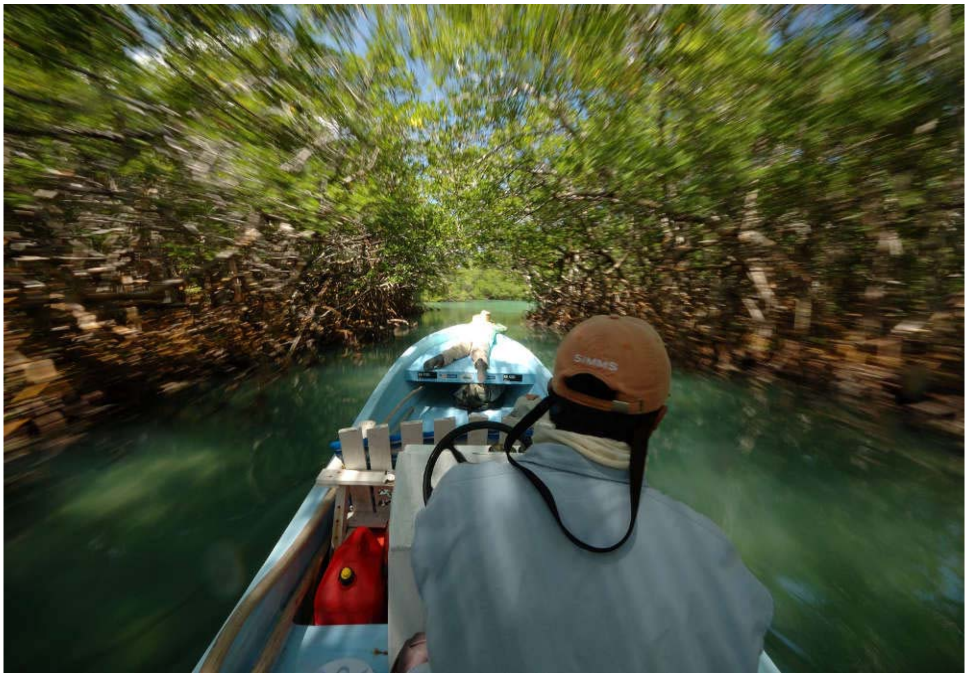
2013 ECONOMIC IMPACT OF FLATS FISHING IN BELIZE



Prepared for:
Bonefish and Tarpon Trust
P.O. Box 644257
Vero Beach, FL 32964

Prepared by:
Anthony J. Fedler, Ph.D.
Human Dimensions Consulting
9707 SW 55th Road
Gainesville Florida

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2013 ECONOMIC IMPACT OF FLATS FISHING IN BELIZE
Executive Summary

Belize is a world-class flats fishing destination that has grown in popularity over the past decade. The protection of bonefish, permit and tarpon from commercial harvest was a cornerstone in this advancement and has been a key message in marketing the country's fishing experiences throughout North America and Europe. However, fishing lodge owners, fishing guides and conservationists are concerned about persistent and spreading threats to the quality of flats fishing in Belize. These concerns have focused on inadequate fisheries management and enforcement, deterioration of water quality, and habitat destruction.

The sport fishery supports an extensive array of independent fishing guides, fishing lodges and hotels, and other support services in Belize. A 2007 study of flats fishing in Belize showed that the economic impact totaled $56 million (BZD) and comprised about 6.3% of all tourist expenditures (Fedler 2008). Because of changes in both the economy and enhanced perception of flats fishing in Belize since the 2007 study and growing concerns over fisheries sustainability and habitat protection, a new economic study was undertaken to update the understanding and value of flats fishing to the tourism economy of Belize.

This study of 2013 flats fishing in Belize used interviews with independent fishing guides, tour operators, and fishing lodge owners and managers to identify the number of anglers and their days fishing in Belize. Angler expenditures were estimated based on reported days fishing, guide fees, lodge rates, and daily tourist expenditures. Anglers guided by independent guides spent an average of $722 BZD per day while fishing and lodge anglers spent about $1,079 per day. Flats anglers spent $32 million while fishing in Belize during 2013. These expenditures were supplemented by another $11 million during non-fishing days while in the country bringing the total direct expenditures made by anglers in Belize to $41 million. The multiplier or ripple effect of angler's direct expenditures in the Belize economy amounted to another $70 million. Overall spending by anglers resulted in $34 million in wages and salaries and 2,100 full-time equivalent jobs for Belizeans. Spending by flats anglers in 2013 accounted for 9% of the overall Belizean tourism economy, up from 6% in 2007.

The challenge for Belize is to maintain these highly regarded fisheries if the industry is to continue to grow and flourish. Netting, mineral mining, development, water pollution, and fisheries habitat destruction all have the potential to degrade the quality of fishing over time. Care should be taken in water and land use planning to ensure that decisions consider the sustainability of the country's fisheries resources and habitats. Doing so will ensure that the economic benefits generated by the fisheries will be sustainable and continue to grow.

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2013 ECONOMIC IMPACT OF FLATS FISHING IN BELIZE

Introduction

The perception of Belize as a world-class flats fishing destination has grown appreciably over the past decade. The protection of bonefish, permit and tarpon from commercial harvest was a cornerstone in this advancement and has been a key message in marketing the country's fishing experiences throughout North America and Europe. Many fishing lodge websites and promotional literature point to this protection as an important reason why the fisheries resources of Belize will continue to be world-class into the future.

Belize is, in fact, one of the few fishing destinations in the world offering anglers the chance at the "Grand Slam" of flats fishing – a bonefish, permit and tarpon all caught in a single day. Belize's sport fishing opportunities have been featured on numerous television shows as well as in many magazine articles throughout the United States and Europe. One popular magazine noted that three of the world's top ten permit fishing destinations are located in Belize. Such top-quality fishing opportunities draw fishermen from around the world during all months of the year.

However, fishing lodge owners, fishing guides and conservationists are concerned about persistent and spreading threats to the quality of flats fishing in Belize. These concerns are focused on inadequate fisheries management and enforcement, deterioration of water quality, and habitat destruction. These issues have been largely ignored by the government which has resulted in private sector and non-governmental organizations joining forces to protect the country's fragile coral reef and aquatic resources in a piece-meal fashion.

Sport fishing in Belize is an important component of the country's overall tourism industry. A 2007 study of flats fishing in Belize showed that the economic impact totaled $56 million (BZD) and comprised about 6.3% of all tourist expenditures (Fedler 2008). The sport fishery supports an extensive array of independent fishing guides, fishing lodges and hotels in Belize. Some fishermen fly into Belize City and then transfer to a resort, hotel or guest house where they utilize the services of tour operators in booking independent fishing guides. Other fishermen utilize one of several dedicated fishing lodges scattered from Ambergris Caye to Punta Gorda. These lodges act as conduits linking fishing clients with employed or contracted fishing guides. Once at a fishing lodge, all accommodations, food, and fishing services are generally provided as a packaged price.

Several lodges cater exclusively to fishing clients while others focus primarily on fishing but also offer resort services such as snorkeling, scuba diving and eco-tours. Additionally, a number of hotels in Belize promote a variety of tours, one of which may be sport fishing. Over the past decade, many Belizean hotels have become much more aggressive in marketing to sport fishermen by featuring fishing opportunities in their electronic and print advertising. This expanded focus on sport fishing has resulted from the recognition of the top quality sport fishing in Belize as well as a general increase in international fishing-related tourism, particularly saltwater fly fishing.

These international fishermen not only spend more per day in Belize than non-fishing tourists, they carry with them a very high conservation ethic. With rare exception, "catch and release" fishing is practiced by both independent fishing guides and fishing lodges and is supported by their guests. This results in a negligible impact on fish stocks and ensures that bonefish, permit and tarpon fishing can be sustained over time as long as other factors do not reduce the quality of fisheries resources and the recreational fishing experience.

According to Belize Tourism Board (2014) statistics for 2013, tourists accounted for $432 million (BZD) in expenditures in the Belizean economy and supported over 16,000 jobs. The tourism sector accounted for about 16.8% of the Gross Domestic Product (GDP) of Belize in 2006 and sport fishing contributes significantly to this. Estimating the economic value of fishing-related tourism for flats species is essential in understanding the importance these species and their habitats to the economy of Belize, and to formulating a comprehensive conservation plan.

Economic Impact

Tourists traveling to Belize to fish for bonefish, permit and tarpon make expenditures in the Belizean economy in two ways. Some fishermen hire independent guides and purchase lodging, meals, equipment, supplies, transportation, and other items separately. Others pay a "package price" to a fishing lodge or hotel which includes guided fishing, lodging, meals, and transportation within Belize. These packages generally do not include gratuities, bar or gift shop expenditures, nor do they include expenditures within the country outside of the package dates. Both independent guide fishing and lodge fishing generates income and jobs for Belizeans.

Estimating the total economic impact of flats fishing entails quantifying the relevant direct expenditures by fishermen and the "multiplier" or secondary effects related to these direct expenditures. Total economic impact is comprised of three components: direct effects, indirect effects and induced effects. Direct Effects are the on-site or immediate expenditures such as lodging, fishing tackle, meals, guide fees, fishing licenses and taxes. Indirect Effects refer to the increase in economic activity that occurs when a contractor, vendor or manufacturer receives payment for goods or services and in turn is able to pay others who support their business. This includes payments to bankers, accountants, grocery store owners, marina operators, fuel suppliers and others. Induced Effects are changes in spending that are caused by the increased wealth and income of those persons directly and indirectly employed by fishing lodges, hotels, or as independent fishing guides. Similarly, spending on food, clothing, housing and transportation by those directly or indirectly employed by fishing-related businesses, including retail sales, medical services, insurance services, income and sales taxes, and much more are also a part of the economic effects. These Indirect and Induced Effects are often referred to as Value Added impacts. The sum of Direct Expenditures and Value Added Impacts yields a Total Economic Effect.

Methods

For purposes of this study, expenditures and impacts of flats fishing will be estimated for the Independent Fishing Guide Sector and Fishing Lodge Sector separately because of the differences in the way expenditures are made. With the Independent Fishing Guide Sector, economic effects are driven by customer expenditures. This not only includes guide fees and tips, lodging and food, but also encompasses other expenditures made in the country during a fishing vacation.

Fishing lodges generally receive revenue based on all-inclusive packages ranging from three to six or more days. Fishing lodges, in turn, spend this revenue on a variety of goods and services to operate their businesses. These expenditures by fishing lodges constitute the direct economic effects of their fishing-related activity. Throughout this report all monetary figures are expressed in Belizean dollars (BZD) unless otherwise noted. The exchange rate is permanently set at $1 USD = $2 BSD.

Independent Fishing Guide Sector

The economic impact of the Independent Fishing Guide Sector was developed based on fishing-related expenditures of independent fishing guides and their customers while fishing in Belize. Independent fishing guide data was collected through in-person interviews in the local communities throughout Belize. Guides were initially identified by examining individual guide, tour operator and lodging websites. Names and telephone numbers were collected for each guide, when available, or for the tour operator or lodging establishment that booked guides.

These guides formed the basis of a working list of independent fishing guides for the country. The researcher used this working list for further identifying and interviewing guides throughout the country. Guides, tour operators and lodging managers that were initially contacted from the working list were asked to identify other fishing guides they knew working in their region or elsewhere in Belize, and to provide a telephone number for the guide if known.

Each guide contacted was asked to provide six types of information about their business and anglers for 2013:

- Number of days guiding anglers
- Number of anglers
- Average number of days guiding each angler
- Guide fee
- Average tip
- Estimate of the number of days anglers were in-country

Each guide identified by the guide or manager being interviewed was also asked to rate the activity level of guides they knew as either low, medium or high. The result of this process was a rating of each guide's activity. At the conclusion of the interview process when all guides that were willing to provide information for the project had been contacted, the few remaining guides were then classified into low, medium or high activity groups based on their ratings by other guides. In order for a non-contacted guide to be classified as active, two or more interviewed guides must have rated the non-contacted guide as active and in one of the three categories to be included in the analysis. This process resulted in virtually all active flats fishing guides in Belize being identified and their guiding activity quantified in some manner.

To estimate the guided fishing days of non-contacted guides, guides providing fishing information were divided into thirds based on the number of days they fished during 2013. The mean number of days fished was then calculated for each third and assigned to non-responding guides to represent their low, moderate or high level of guiding activity.

Since guide fees are only part of overall trip expenditures made by sport fishermen, it was necessary to estimate expenditures for lodging, meals, transportation and other pertinent items while in Belize. We were unable to interview guided fishermen to ascertain this information due to the limited resources available for the project and the difficulty of intercepting them in the field. To capture these expenditures, the average dollars spent per day by Belizean tourists was used as a proxy. The Belize Tourism Board (BTB) report *Belize Travel and Tourism Digest 2012* (BTB 2013) showed that the daily per person tourist expenditure was $145USD ($290BZD). However, American tourists comprise nearly threequarters of visitor arrivals in Belize and guides estimated that 90% or more of their anglers were from the U.S. Therefore, the daily expenditure for U.S. visitors of $168USD ($336BZD), which was higher than for tourists from other countries, was used to estimate angler's daily expenditures in addition to their guided fishing costs as it more closely represents angler expenditures.

BTB data also estimates that the average tourist stay was 6.8 days. Interviews with hotel and resort operators that offered fishing through independent fishing guides indicated their fishing guests generally stayed six to seven nights (one week was the typical response), which aligns well with the BTB findings.

Fishing Lodge Sector

The Fishing Lodge Sector is comprised of 16 lodges, hotels and resorts that offer all-inclusive fishing packages. These range from very small businesses booking less than 100 fishermen per year to larger businesses with over 700 fishing guests per year. These all-inclusive packages generally include transportation from the airport to the lodge, lodging, meals, and guided fishing for one set price. Fishing guides are paid by the lodges as part of their staff and were excluded from estimates in the Independent Fishing Guides Sector analysis.

Fishing Lodges were asked to complete a survey asking them to provide the number of fishing guests they booked in 2013, the number of days fished by each angler, and the percentage of their guests that targeted flats species. Additionally, lodge managers were asked to estimate the average stay of their angling guests, and the average number of days anglers were in-country. This latter task was not difficult for many lodges as they also book mainland tours for their guests either prior to or following their fishing stay. Further, lodge managers were very aware of the proportion of their guests that stayed in-country beyond their fishing stay as managers usually had the flight schedules of their guests to coordinate transportation plans.

To capture the additional expenditures which are not part of the lodge fishing package, the average daily tourist expenditure from Belize Tourism Board surveys (BTB 2013) was again used as a proxy measure. This data was used in combination with lodge owner estimates of the percentage of fishermen staying extra days and the estimated number of days they stayed in Belize to calculate these expenditures.

Economic Multipliers

Estimating the indirect and induced effect of tourist expenditures is often undertaken by a country, subdivisions such as states or regions, or for specific activities such as recreational fishing, diving, and ecotourism as a whole. In many cases economic models are constructed using IMPLAN, RIMS II or other locally constructed simulations. The government of Belize does not publish the types of data that can be used to estimate indirect or induced economic effects nor provide the multipliers directly based on government-collected data. However, the World Travel and Tourism Council (WTTC) does collect and use Belize government data to estimate the impacts of tourism in Belize and many other countries (WTTC 2014) on an annual basis. The WTTC economic models for calculating tourism impacts align with the standards set by the United Nations Statistical Division, the Statistical Office of European Communities, and the World Tourism Organization.

The WTTC has collected and published tourism impact data for several years with their latest report summarizing tourism impacts for Belize from 2008 through 2013 (WTTC 2014). The data in this report allow for the estimation of indirect and induced tourism effects and calculation of appropriate employment and jobs multipliers.

In the Belize impact models, as well as those for all countries and in particularly small countries with limited diversity in their economies, direct, indirect and induced effects must reflect the “leakage” of tourism dollars that flow outside the country to purchase goods and services that support the tourism industry. For example, independent guides and lodges must purchase boats and engines from manufacturers outside the country. Likewise, some building materials, food, and other necessities are often imported. The proportion of imported goods or services used in the tourism industry must be deducted from direct impacts of tourist spending to accurately reflect the actual impact of tourist spending on the Belizean economy. The WTTC tourism economic models account for this leakage by deducting the cost of imported goods and services from direct and indirect spending. The result of this deduction is direct expenditures and multipliers that reflect a truer estimate of actual tourism impacts and their effect on the country’s Gross Domestic Product (GDP).

Based on the data from the 2014 WTTC Belize tourism report, the direct, indirect and induced effects of tourism expenditures and related coefficients were calculated for use in this study and are shown in Table 1. Direct expenditures across the five-year period reflect the impact of the economic recession on Belize tourism. The decline in expenditures from 2008 to 2011 was eight percent. However, as the recovery advanced from 2011 to 2013, tourist expenditures increased by 28 percent.

Two points can be made about the economic multipliers associated tourist spending. First, the coefficients were relatively stable over the five-year period. The Value Added multiplier ranged from a low of 1.68 in 2008 to a high of 1.80 in 2009 – a seven percent change. The coefficients from 2010 to 2013, however, were more consistent with only a four percent change between high (1.79) and low (1.71) years. Second, the Value Added coefficients reflect the impact of the recession. As the recession deepened from 2008 through 2011, the multipliers went up in value which reflects reduced expenditures on imported goods and services and greater reliance on domestic products and services. With the recovery beginning in 2012, the coefficients began to decline as businesses began to grow and business owners and individuals had more money to purchase foreign goods and services.

The Value Added multiplier for 2013 of 1.71 was used in this study to calculate indirect and induced effects comprising Value Added impacts. Income and jobs multipliers for Belize also could be calculated from the World Travel and Tourism Council (2014) report.

Table 1: Direct, indirect and induced tourism impacts and multipliers for Belize: 2008-2013

Economic Effect[1]	2008	2009	2010	2011	2012	2013
Direct Expenditures	\$370.1	\$343.9	\$352.9	\$338.2	\$400.4	\$432.5
Indirect Effect	\$459.7	\$452.4	\$454.4	\$446.7	\$514.1	\$547.4
Induced Effect	\$160.8	\$166.3	\$168.7	\$158.8	\$181.4	\$193.7
Total	\$990.6	\$962.6	\$976.0	\$943.7	\$1,095.9	\$1,173.6
Economic Multipliers						
Indirect Multiplier	1.24	1.32	1.29	1.32	1.28	1.27
Induced Multiplier	0.43	0.48	0.48	0.47	0.45	0.45
Value Added Multiplier	1.68	1.80	1.77	1.79	1.74	1.71

[1]Economic Effect numbers are millions in Belizean dollars.
Source: World Travel and Tourism Council, 2014.

Results

The results of this project are divided into three sections. The first section focuses on the expenditures made by independent fishing guides and their guests. This entails estimating the number of independent fishing guides and related expenditures made by their guests. The second section focuses on expenditures made by fishing lodge anglers. The third section provides a summary of direct expenditures, value added through multiplier effects, and income and job estimates associated with flats fishing in Belize.

Independent Fishing Guide Impacts

The first step in estimating the economic impact of the Independent Fishing Guide Sector was to identify the total number of independent fishing guides targeting flats fishing species in Belize. This was done by interviewing fishing guides, tour operators, hotel and resort owners, and other knowledgeable individuals in the sport fishing industry in Belize. Separate estimates were made for northern and southern regions of the country. The Northern Region was comprised of guides working from Belize City northward and extending eastward to Turneffe Atoll. The Southern Region included guides residing south of Belize City to Punta Gorda including the islands south of Turneffe Atoll.

Table 2 shows the number of active fishing guides for each region. A total of 93 active, independent fishing guides were revealed through the identification process. These were evenly split between regions. An additional 46 lodge guides were identified with the vast majority working for lodges in the Northern Region. Altogether, 139 active guides were found working the waters of Belize during 2013.

Fishing activity data was collected from 75 of the 93 (80.1%) independent guides. Data was collected directly from a guide or from the tour operator booking guided flats fishing trips. Tour operators provided fishing data on 17 of the 75 independent fishing guides while 58 guides self-reported their data.

Table 2: Number of fishing guides by region

Region	Independent Guides	Lodge Guides	Total Guides
Northern	46	38	84
Southern	47	8	55
Total	93	46	139

Guided fishing days and average anglers per day were obtained directly from 58 of the 75 independent guides providing data. Information about the fishing activity of the remaining 17 independent guides was provided by tour operators booking the guides. Data for the 18 non-responding guides was estimated from activity ratings made by tour operators or guides familiar with the non-responding guide. There were from three to seven raters for each guide. Activity ratings for each of the non-responding guides were very consistent across raters. This occurrence is not surprising as guides in each of the communities were familiar with other guides. All non-responding guides were either categorized as having low or moderate fishing activity. For non-responding guides in the Northern Region, guides receiving a “low” activity rating were assigned 41 days of guiding which corresponded with the mean number of days for the lowest third of guides reporting their fishing days. Non-responding Northern Region guides that received a “moderate” activity rating were assigned 82 days which was the mean number of days for the middle third of the responding guides. Similarly, “low” activity non-responding guides in the Southern Region were assigned 39 fishing days and guides receiving a “moderate” rating were assigned 72 days.

Overall, independent fishing guides in Belize were on the water over 8,100 days during 2013 (Table 3). Guides in the Northern Region accounted for 53% of these days and Southern Region guides 47%. The number of anglers guided per day was very similar with Southern Region guides averaging slightly more anglers per day than Northern Region guides. The average number of anglers per day was calculated from guides or tour operators reporting data on both the number of days and total number of anglers they served and subsequently applied to all guides. The mean of the available data was used to calculate total angler days in Table 3. Total angler days for each region were very similar as Northern Region guides accounted for 52% of all angler days compared to 48% by Southern Region guides.

Table 3: Number of independent guide fishing days and angler days by region

Region	Guide Days	Anglers per Day	Total Angler Days
Northern	4,345	1.85	8,038
Southern	3,802	1.92	7,300
Total	8,147	1.88	15,338

To calculate the total number of anglers served by Belize independent fishing guides, the average number of days each angler fished with a guide was divided into total angler days (Table 4). Here again, several guides or tour operators provided detailed information that allowed for estimating total anglers. For the Northern Region, 15 guides or tour operators provided this information, while 22 provided information in the Southern Region. The average number of days an angler fished with a guide was exactly the same in both Northern and Southern Regions. Nearly 4,400 anglers made trips to Belize during 2013 to fish for flats species.

Table 4: Total independent guide anglers by region

Region	Total Angler Days	Days Fishing per Angler	Total Anglers
Northern	8,038	3.50	2,297
Southern	7,300	3.50	2,086
Total	15,338	3.50	4,382

To estimate angler daily expenditures, data were compiled from two different sources. First, the average daily expenditure for U.S. visitors to Belize was used to establish daily non-fishing expenditures. As noted in the methods section, these expenditures amounted to $336 BZD per day. Second, the guided fishing portion of daily expenditures was computed as follows. The average daily independent guide fee, plus tip, was calculated from guide reports of their daily fee and the average tip they received for Northern and Southern Regions, $770 and $690, respectively. To ascertain the expenditure amount that should be allocated to each angler, the daily guide fee was divided by the average number of anglers fishing with the guide (Table 3). The average angler in the Northern Region spent $416 BZD per day on guide fees and tips ($770 / 1.85 anglers per day = $416) and Southern Region anglers spent $359 BZD per day ($690 / 1.92 anglers per day = $359). Daily guide fees were then added to the $336 per day for lodging, food, and other expenses to produce the daily expenditures for anglers during their guided fishing days (Table 5). Northern Region guided anglers spent $57 more per day than Southern Region anglers for their guided fishing.

Table 5: Expenditures made by independent guide anglers (BZD)

Region	Angler Days	Expenditure per Day	Total Expenditures
Northern	8,038	$752	$6,044,764
Southern	7,300	$695	$5,073,389
Total	15,338		$11,118,153

Total expenditures of Belize flats anglers were more than $11 million in 2013. Because of the larger number of angler days and greater daily expenditures, total expenditures by Northern Region anglers were nearly one million dollars more than Southern Region anglers.

During interviews, independent fishing guides were asked to estimate the number of additional days their anglers stayed in-country before departing. In general, these estimates ranged from two to 10 days but generally centered on three or four days. Guide estimates of these extra non-fishing days, coupled with the average days of fishing, coincide closely with the total for the average Belizean visitor of 6.8 days. As shown in Table 6, estimates of non-fishing days varied slightly between regions. These days totaled slightly more than 8,000 for Northern

Table 6: Total angler non-fishing days by region

Region	Total Anglers	Non-Fishing Days	Total Non-Fishing Days
Northern	2,297	3.50	8,038
Southern	2,086	3.45	7,196
Total	4,382		15,234

Region anglers and nearly 7,200 for Southern Regions anglers. Altogether, anglers hiring independent guides stayed over 15,000 days in Belize beyond their days fishing.

In the initial discussion of angler daily expenditures, it was noted that Belize visitors spent an average $336 per day while in the country. Multiplying angler non-fishing days by the daily expenditure rate results in the total expenditures made while in the country during these days. Table 7 shows the total expenditures for these non-fishing days. Northern Region anglers spent almost $300,000 more in Belize during their non-fishing days than Southern Belize anglers. Together, independently guided anglers spent over $5 million in addition to their fishing-related expenditures.

Table 7: Expenditures made by independent guide anglers during non-fishing days by region

Region	Angler Non-Fishing Days	Expenditure per Day	Total Expenditures
Northern	8,038	$336	$2,700,852
Southern	7,196	$336	$2,417,707
Total	15,234		$5,118,559

In Table 8, fishing and non-fishing day expenditures are combined to produce total expenditures by guided anglers. Expenditures for Northern Region anglers exceed those in the Southern Region by $1.2 million. However, the total direct expenditures made by all anglers using independent guides exceeded $16 million.

Table 8: Fishing and non-fishing expenditures by anglers and region

Region	Fishing Day Expenditures	Non-Fishing Day Expenditures	Total Expenditures
Northern	$6,044,764	$2,700,852	$8,745,616
Southern	$5,073,389	$2,417,707	$7,491,096
Total	$11,118,153	$5,118,559	$16,236,712

Fishing Lodge Impacts

There are many hotels, resorts and lodges throughout Belize that cater to anglers seeking flats species. Some of these businesses have their own staff of guides that work solely for the business, referred to as “fishing lodges” in this study, while others book independent guides for their guests on a daily basis. These latter guides were included in the independent guide category. All the guides working as staff guides were included in the lodge category since their compensation does not come directly from the angler but from the lodge. As a result, the economic impact of anglers staying at all-inclusive lodges and resorts was assessed by examining the activity at fishing lodges.

During the process of identifying flats fishing providers in Belize, many hotels, resorts, bed-and-breakfasts, and other lodging operations that offered fishing activities were identified. Many of these were known from the previous economic impact study in Belize (Fedler 2008). From information on each business website, print advertising or from personal contact, all lodge-type businesses were identified. There were 16 fishing lodges identified that provided guide services with staff guides; four in the Northern Region and 12 in the Southern Region. Lodge guide staff ranged from two to eleven.

There were some basic differences between Northern and Southern Region lodges. Northern Region lodges were generally much larger and offered a variety of activities such as fishing, diving and eco-touring. They also could accommodate many more individuals on a daily or weekly basis and provide full services, including air conditioning, for their guests. Southern Region lodges were smaller with some accommodating only six to eight anglers. Activities offered were generally limited and some provided lodging with no air conditioning.

The number of anglers at lodges in each region reflected the differences in industry size as noted above. The number of anglers reported for each region differed by 288, but Northern Region lodges averaged 513 anglers per year while those in the Southern Region averaged 147 anglers per year (Table 9). The total number of days fished were very similar for each region as were mean days fished per angler.

Table 9: Number of Lodge anglers and days fished by region

Region	Number of Anglers	Days Fished	Mean Days Fished
Northern	2,053	10,183	4.96
Southern	1,765	9,965	5.65
Total	3,818	20,148	5.28

Anglers staying at fishing lodges typically do so for three, four or seven days. Some anglers may stay only one day while others may stay up to two weeks. Anglers normally pay one price for their stay at a lodge which includes transfers, lodging, meals and guided fishing. This price varies at some lodges by high or low season, holiday season, or special offers for select periods of time. Pricing also differs by length of stay and type of accommodation. Normally, shorter stays cost more per day than longer stays. This variation presents a high level of complexity to calculating the economic impacts of lodge fishing. It was not feasible to ask lodge managers and owners to break down their guest stays by day and price. Some lodges charge only one price during the entire year, while others advertise up to four prices for a one-week stay throughout the year. Further, there is usually a supplement applied to anglers for single occupancy or fishing alone with a guide.

As a result, an average daily price for each lodge was calculated based on advertised prices for a 7-night, 6-fishing day package with double occupancy and shared guide. For lodges that offered multiple room quality/price options, an average of the package price across room types was used. Further, the average was calculated separately for low and high seasons and then weighted by season to produce a weighted mean price that reflected differences in accommodation type and season. Seasonal prices were weighted 40% for the low season and 60% for the high season based on feedback from lodge owners. Overall, the seasonal prices should be considered conservative since they are based on a 7-night and 6-fishing day stay. Typically, shorter stays (e.g., 3-, 4- or 5-nights) average \$100 to \$300 per night more than 7-night stays.

The mean low and high season rates for lodges in each region are shown in Table 10. Rates for all lodges (and for most tourist facilities and services for that matter) advertised in USD but are shown here in Belizean dollars. Again, for some lodges, low and high season rates were averaged across different room rates when advertised. The difference between low and high season rates in the Northern Region was \$1,000, while the difference in the Southern Region was only \$206 reflecting a greater percentage of Southern Region lodges that charged the same price throughout the entire year.

The weighted means differed by slightly more than \$3,200 for a 7-night, 6-fishing day stay, which most likely reflects size and service level offered by Southern Region lodges. In Belizean dollars, the cost to anglers for staying and fishing in Northern Region lodges was \$453 per day more than for Southern Region anglers (Table 10). The daily rate in Belizean dollars is the basis for calculating the economic impacts of lodge flats fishing activity.

Table 10: Lodge angler daily expenditure rate calculation summary

	U.S. Dollars				Belize Dollars
Region	Low Rate	High Rate	Weighted Mean	Daily Rate	Daily Rate
Northern Region	$4,261	$4,761	$4,561	$651	$1,303
Southern Region	$2,880	$2,983	$2,942	$425	$850

Total expenditures by anglers for their lodge-based fishing activity are shown in Table 11. Their expenditures totaled \$21.7 million (BZD). About 61% of these expenditures were made by Northern Region lodge anglers and 39% by Southern Region anglers.

Table 11: Lodge angling expenditure calculations by region			
Region	Daily Rate	Total Days	Total Expenditures
Northern Region	$1,303	10,183	$13,268,449
Southern Region	$850	9,965	$8,469,910
Total			$21,738,359

Lodge anglers also spend extra days in Belize either before or after their lodge stays. The value of these days should also be counted towards the overall impact of flats angling on the Belizean economy because these anglers likely would not have traveled to Belize if flats fishing was not part of their travel. The procedure for calculating this impact was essentially the same as for independently guided anglers. Through discussions with lodge managers and owners and anglers, as well, estimates were gathered based on the perceptions of lodge representatives and actual reports from lodge anglers that were encountered by researchers. The number of extra days estimated by lodge representatives and reports from anglers were very close when averaged. As shown in Table 12, lodge anglers from the Northern Region stayed an additional 2.7 days on average while Southern Region anglers averaged 2.5 days. Multiplying the number of anglers by average extra days in Belize results in an estimate of over 10,000 days for the year. Northern region anglers spent about 1,100 more non-fishing days in Belize than Southern Region lodge anglers.

Table 12: Lodge angler extra stay days by region			
Region	Anglers	Average Days	Total Extra Days
Northern	2,053	2.72	5,586
Southern	1,765	2.55	4,495
Total	3,818	2.64	10,081

Using the daily expenditure of $336 by visitors to Belize provides the basis for calculating the impact of the 10,081 extra days lodge anglers spend in the country (Table 13). Because of their larger number of extra days, Northern Region lodge anglers accounted for $1.8 million in expenditures in addition to their angling expenditures. Southern Region lodge anglers spent an additional $1.5 million in Belize. Overall, lodge anglers spent nearly $3.4 million in addition to their fishing-related expenditures while in Belize.

Table 13: Lodge angler extra stay days by region			
Region	Extra Stay Days	Expenditure per Day	Total Extra Expenditures
Northern	5,586	$336	$1,876,896
Southern	4,495	$336	$1,510,320
Total	10,081		$3,387,216

Total Economic Impacts

Table 14 presents the total economic impact of flats fishing in Belize. Expenditures from previous tables for independent guide and lodge anglers are shown in the second column. These direct expenditures made by anglers in the Belizean economy totaled $41.3 million. About 58% of these expenditures were made by Northern Region anglers with the remaining 42% made by Southern Region anglers. Direct expenditures made by anglers have a ripple-effect in the tourism economy because of the re-spending of payments by lodges, guides and others in the Belizean economy. These Value Added effects were calculated by using a multiplier that reflects the level of re-spending within Belize. As discussed above, the World Travel and Tourism Council (WTTC 2014) monitors the tourism account in Belize and other countries to annually report industry data. Included in the report is data to estimate the Indirect and Induced impact multiplier (Value Added). For 2013, a Value Added multiplier of 1.71 was reported by the WTTC (2014) for Belize. As shown in column 3 of Table 14, Value Added impacts added substantially to the total economic impact of flats fishing in Belize. Combining Direct Expenditures with Value Added impacts produces the Total Economic Impact of flats fishing in column 4. The total economic effect of flats fishing in the Northern Region of Belize was $64.7 million and $47.3 million in the Southern Region. The total effect for Belize was slightly more than $112 million.

Table 14: Total lodge and independent guide flats fishing economic impacts by region

Region	Direct Expenditures	Value Added Impacts	Total Economic Impact	Wages & Salaries	Jobs
Northern Region					
Guide Angler Impacts	$6,044,764	$10,336,546	$16,381,310	$5,042,986	310
Guide Non-Angling Impacts	$2,700,852	$4,618,457	$7,319,309	$2,253,249	139
Lodge Angler Impacts	$13,268,449	$22,689,048	$35,957,497	$11,069,515	681
Lodge Non-Angling Impacts	$1,876,896	$3,209,492	$5,086,388	$1,565,844	96
Sub-Total	$23,890,961	$40,853,543	$64,744,504	$19,931,596	1,226
Southern Region					
Guide Angler Impacts	$5,073,389	$8,675,495	$13,748,884	$4,232,593	260
Guide Non-Angling Impacts	$2,417,707	$4,134,279	$6,551,986	$2,017,028	124
Lodge Angler Impacts	$8,469,910	$14,483,546	$22,953,456	$7,066,221	435
Lodge Non-Angling Impacts	$1,510,320	$2,582,647	$4,092,967	$1,260,019	78
Sub-Total	$17,471,326	$29,875,967	$47,347,293	$14,575,864	897
Total	$41,362,287	$70,729,510	$112,091,797	$34,507,460	2,123

Also shown in Table 14 are the salary and employment impacts associated with flats angler spending in Belize. In the Northern Region, wages and salaries approached $20 million while wages and salaries in the Southern Region exceeded $14 million. Together, wages and salaries totaled $34.5 million.

Finally, the jobs effects of flats fishing were estimated using an employment multiplier derived from the WTTC report. For the Northern Region, about 1,200 full-time equivalent (FTE) jobs were supported in the tourism industry by anglers. Approximately 900 were sustained in the Southern Region. Overall, over 2,100 jobs were attributable to flats fishing in Belize. These jobs represent more than 2,100 individuals as many tourism-related jobs employ workers less than full time (WTTC 2014).

Discussion and Conclusions

Flats fishing accounts for the vast majority of sport fishing in Belize. Few of the independent guides and lodge managers interviewed in this study reported not fishing for flats species. There are a number of tour operators that advertise offshore and reef fishing trips, but these are a small portion of all fishing trips taken in Belize annually (Fedler 2008).

The number of independent guides appears to have declined since 2007. The earlier study estimated 111 independent guides compared to 93 in this study. The small difference may be attributable to the estimation procedure used in 2007 which was based on reports of 33 guides providing estimates of all independent guides in their regions. However, discussions with the 75 independent guides and contact with several others that declined to provide information for this study indicated that the requirement for independent guides to book their trips through a tour operator could have had an impact on marginal guides that only fished with clients a few days per year. Further, some of the active guides in 2007 were no longer in the business in 2013.

One of the noticeable changes in the economics of fishing in Belize between 2007 and 2013 was a marked increase in fees for guided fishing. Daily guided fishing in 2007 averaged about $275 (USD). This amount increased to nearly $350 (USD) in 2013. Part of this increase was attributable to tour operator fees being included in the price. Even so, many independent guides remarked that they were charging $50 to $100 (USD) more per trip in 2013 than in 2007. Belizean guides also reported that their rates were influenced by fishing guide rates in the U.S.

Lodge anglers accounted for nearly twice as much in direct spending as anglers fishing with independent guides. This was due in large part to the greater number of days fishing during their visit and the average cost per day of fishing. Anglers using independent guides spent about $11.1 million (BZD) for their fishing while lodge anglers spent $21.7 million. Combined angler's direct expenditures on fishing totaled $33.8 million. Adding expenditures for non-angling days spent in Belize increased flats angler's direct expenditures for their visit to Belize to $41.3 million.

One strength of this study was the opportunity to use a credible value added multiplier in the calculation of the economic benefits. The consistent economic analysis of tourism economies conducted by the World Travel and Tourism Center is fundamentally sound. Their multiplier was somewhat higher (1.77) than the "average" multiplier of 1.22 used in 2007 when relevant studies with the necessary information were virtually non-existent. Value Added spending contributed another $70.7 million to the Belizean tourist economy and brought the total economic impact of flats fishing to $112.1 million.

Using the WTTC (2014) data for Belize as a benchmark, flats angler's direct expenditures of $41.3 million accounted for approximately 9% of Belize's total tourism expenditures of $432.5 million in 2013. One reason for this large share of the tourism economy in Belize is from the disproportional expenditure per day made by flats anglers. Anglers spend nearly three times more per day than the average visitor due to the added cost of hiring a fishing guide.

The sport fishing industry in Belize has become much more organized since 2007. All independently guided fishing trips must be booked through a tour operator. Tour operators can only book trips with licensed tour guides. In Belize, fishing guides are considered tour guides. All fishing (tour) guides must successfully complete an initial and annual training in order to receive and maintain a tour guide license. According to both tour operators and fishing guides participating in this study, the training has helped to improve the quality of guide service and has made providing service to anglers much more accessible and reliable.

The cost of a day of guided fishing, whether at a lodge or with an independent guide, is is very competitive with a day of guided fishing in the U.S. Guide fees in the U.S. range from $300 to $500 USD per day for flats species to $1,000 USD per day during the Florida Keys tarpon season. There is a competitive cost advantage for fishing in Belize, even when airfare is added to the overall trip cost. However, Belize offers particularly high quality flats fishing experiences with large schools of bonefish, abundant permit populations, and desirable resident and migratory tarpon populations. Having these high quality and diverse fisheries, particularly during the Northern winter months, is unique throughout the Caribbean region, and Central and South America.

The challenge for Belize is to maintain these highly regarded fisheries if the industry is to continue to grow and flourish. Netting, mineral mining, development, water pollution, and fisheries habitat destruction all have the potential to degrade the quality of fishing over time. Care should be taken in water and land use planning to ensure that decisions consider the sustainability of the country's fisheries resources and habitats. Doing so will ensure that the economic benefits generated by the fisheries will be sustainable and continue to grow.

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