2-27-2009

The Economic Impact of the Cheetah Conservation Fund on the Nation of Namibia

Richard Edwards
University of Nebraska–Lincoln, redwards1@unl.edu

Eric Thompson
University of Nebraska-Lincoln, ethompson2@unl.edu

Follow this and additional works at: http://digitalcommons.unl.edu/bbrpub

http://digitalcommons.unl.edu/bbrpub/22

This Article is brought to you for free and open access by the Bureau of Business Research at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Bureau of Business Research Publications by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
Final Report

The Economic Impact of the Cheetah Conservation Fund on the Nation of Namibia

Authors:
Richard Edwards
Eric Thompson

Prepared for the Cheetah Conservation Fund

February 27, 2009
Bureau of Business Research
Department of Economics
College of Business Administration
University of Nebraska—Lincoln
Dr. Eric Thompson, Director
The Cheetah Conservation Fund [www.cheetah.org] is a non-governmental, non-profit organization whose mission is to be an internationally recognized center of excellence in research and education on cheetahs and their eco-systems. The Cheetah Conservation Fund (CCF) has established its headquarters near Otjiwarongo, Namibia, Africa. In the process of raising funds, constructing facilities, operating its programs, employing staff, hosting visitors and volunteers, and conducting its various other activities, CCF has an economic impact on its surrounding area and on the national economy of Namibia.

CCF asked economists at the Bureau of Business Research [www.bbr.unl.edu] at the University of Nebraska-Lincoln to prepare an assessment of the economic impact of CCF’s operations. This study reports our results. The University of Nebraska-Lincoln is a public, land-grant research university in the United States; it has a faculty of some 1200 researchers. The University of Nebraska-Lincoln (UNL) study team collected data on CCF’s direct expenditures; it assisted CCF in conducting a survey between June and December, 2008, of visitors and volunteers to CCF; and it collected various other information needed for the study.

The study measured the economic impact of CCF due both to on-site spending that supports research, conservation, and education and to off-site spending throughout Namibia by visitors and volunteers coming to CCF. This spending created an economic impact because much of the spending is supported by international funds attracted to Namibia by CCF. CCF receives a substantial share of its funding from the Europe and the United States, and it mainly attracts its visitors and volunteers from Europe and North America as well, as can be seen in Figure ES.1.

**Figure ES.1 Origin of Visitors and Volunteers**

<table>
<thead>
<tr>
<th>Region</th>
<th>Visitors</th>
<th>Volunteers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>82.6%</td>
<td>24.4%</td>
</tr>
<tr>
<td>North America</td>
<td>60.5%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Africa</td>
<td>5.2%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Other</td>
<td>3.5%</td>
<td>8.1%</td>
</tr>
</tbody>
</table>

Source: UNL Bureau of Business Research/CCF Survey of Volunteers
The principal findings of this study are:

- **The overall economic impact of CCF on Namibia in 2007 was N$29.1 million overall.** This figure includes the impact from CCF and visitors spending and does not capture impacts from improved conservation and land management. There are 166 jobs associated with this impact.

- **The largest portion of this impact from spending is due to the operations of CCF itself in terms of research, conservation, education and agriculture.** This result reflects the key role that research and conservation and education can play in generating an economic impact for Namibia.

**Figure ES.2** The Total Impact of the Cheetah Conservation Fund on the Namibian Economy in 2007

![Pie chart showing the total economic impact of CCF on Namibia in 2007. The chart is divided into the following segments: CCF Direct Expenditures, 8.75; Multiplier Effect of Direct Expenditures, 12.01; Expenditures by Visitors and Volunteers, 2.96; Multiplier Effect of Visitors and Volunteers, 5.27. Total Impact: N$ 29.06 million. Source: Tables 3.2 and 4.6]

The report that follows describes the methods and detailed calculations that support these conclusions.
# Table of Contents

Executive Summary.............................................................................................................. i

Chapter 1: Introduction........................................................................................................ 1

Chapter 2: Conservancies and Their Economic Impact ..................................................... 6
   A. Size of Economic Impact of Reserves and Conservancies....................................... 7
   B. Sources of Impact ..................................................................................................... 9
   C. Scope of Impact ...................................................................................................... 9
   D. Seasonality of Impact ............................................................................................ 10
   E. Factors Affecting Viability of Conservancies ......................................................... 10

Chapter 3: The Economic Impact of On-Site Activity at CCF........................................... 12
   A. Economic Impact Methodology.............................................................................. 12
   B. Economic Impact Estimates.................................................................................. 15

Chapter 4: The Economic Impact of Off-Site Spending by Visitors and Volunteers........ 19
   A. Economic Impact Methodology.............................................................................. 20
   B. Survey Results....................................................................................................... 23
   C. Economic Impact Estimates.................................................................................. 27

Chapter 5: Conclusion......................................................................................................... 31

References............................................................................................................................ 33

Appendix A: Economic Multiplier Analysis...................................................................... 35

Appendix B: Survey of Visitors to Cheetah Conservation Fund........................................ 38

Appendix C: Survey of Tour Group Visitors to the Cheetah Conservation Fund .......... 39

Appendix D: Survey of Volunteers and Students of the Cheetah Conservation Fund...... 40
List of Figures and Tables

Figure ES.1: Origin of Visitors and Volunteers................................................................. i
Figure ES.2: The Total Impact of the Cheetah Conservation Fund on the Namibian Economy in 2007................................................................. ii

Figure 3.1: Approach for Calculating Economic Impact on Namibia from CCF Volunteers........ 14

Table 3.1: Direct Effect of CCF Research, Conservation, and Education Activities and CCF Affiliated Businesses 2007........................................................................................................ 17

Table 3.2: Total Economic Impact of CCF On-Site Research, Conservation, and Education Activities and CCF Affiliated Businesses 2007............................................................... 18

Figure 4.1: Approach for Calculating Economic Impact on Namibia from Visitors, Students and Other Volunteers................................................................. 22

Table 4.1: Origin of Visitors to CCF.................................................................................. 24

Table 4.2: Role of CCF in International Visits................................................................. 25

Table 4.3: Extending Trip to Namibia Due to CCF......................................................... 26

Table 4.4: Characteristics of CCF Volunteers................................................................. 27

Table 4.5: Direct Effect of CCF Visitors, Students and Other Volunteers 2007.............. 28

Table 4.6: Total Economic Impact of CCF Visitors, Volunteers, and Students 2007......... 29

Table 5.1: The 2007 Economic Impact of the Cheetah Conservation Fund...................... 31
Chapter 1: Introduction\(^1\)

The Cheetah Conservation Fund (CCF), a research and educational organization located near Otjiwarongo, Namibia, increases the economic output of the surrounding area and of Namibia as a result of its activities in raising funds, constructing facilities, operating its programs, employing staff, hosting visitors, and conducting its various other activities. The purpose of the present study is to measure CCF’s economic impact.

This study results from discussions that began in June, 2007, when the Cheetah Conservation Fund asked economists at the University of Nebraska-Lincoln to assist CCF in assessing its economic impact. It was carried out by UNL economists using data provided by CCF.

The Cheetah Conservation Fund [www.cheetah.org] is a non-governmental, non-profit organization whose mission is to be an internationally recognized center of excellence in research and education on cheetahs and their eco-systems. CCF works to create and manage long-term conservation strategies for cheetahs throughout their range; develop and implement better livestock management practices (eliminating the need for farmers to kill so many cheetahs); conduct conservation education programs for local villagers, farmers, and school children; and continue intensive scientific research in cheetah genetics, biology, and species survival.

CCF has established its headquarters, which includes research facilities, an educational center, conservancy, and other associated structures and land, near Otjiwarongo, Namibia, Africa. CCF undertakes genetic and other biological research on cheetahs and cheetah habitat, studies of human-cheetah interactions, efforts to develop more effective census and monitoring techniques, and various other studies relating to cheetahs.

CCF’s educational activities include both local and global efforts: Locally, CCF runs weeklong training classes and engages in other outreach activities to educate Namibian farmers, extension officers, and others on how to farm in ways that are cheetah-friendly and preserving of cheetah habitat. In its Livestock Guarding Dog program it pioneered a breeding

\(^1\) The authors would like to thank the Cheetah Conservation Fund for their participation in this study. We also would like to thank Ben Schmitz for his research assistance on the project.
and dog-placement program that assists local farmers by providing them with specially-trained dogs that help them protect their livestock from predators. Globally, CCF works to raise awareness of the precarious state of wild cheetah populations and of the conservation efforts that are needed to ensure the cheetah’s future.

CCF also operates several affiliated enterprises. One is the Bush Project, a program designed to create a viable market for biomass products ("Bushblok") that are made from invasive bushes which are harmful to cheetah habitat (and which reduce the productivity of farm land). Other enterprises include Cheetah Country Beef, Janhelpman Farm, and various activities that support ecotourism. (Note: CCF also has affiliates, trusts, and branches in a number of other countries including the U.S., U.K., and Canada, and it supports programs or operates partnerships in Kenya, South Africa, Botswana, Iran, and elsewhere. The activities of these non-Namibian-based entities are not included within the scope of this study.)

The University of Nebraska-Lincoln is a public, land-grant, AAU research university with a faculty of some 1200 researchers. The University’s Bureau of Business Research (BBR) [bbr.unl.edu] conducts applied economic and business research and is housed in the Department of Economics. BBR has two primary purposes: first, it provides relevant information and insightful data on economic conditions in Nebraska, the Great Plains, and the nation as a general service to individuals and businesses in the state; and second, it provides economists with practical opportunities to conduct applied economic research and economics and business graduate students with opportunities for training in applied research on timely economic and business topics. BBR regularly publishes reports, including in particular assessments of economic impacts, based on its sponsored research studies. Two recent examples are: “The 2007 Economic and Fiscal Impact of Omaha’s Henry Doorly Zoo on Omaha and Nebraska” (May 15, 2008) and “The Economic Impact of Nebraska’s Early Care and Education Industry” (2008).

The following report uses a Social Accounting Matrix (SAM) analysis to estimate CCF’s economic impact on the Namibian economy. The SAM model allows researchers to estimate the direct and indirect effects of, in this instance, the spending and employment of CCF. The questions asked are these:
(1) How much larger was Namibia’s economic output in 2007 as a result of CCF’s operations, as compared to what it would have been if CCF did not exist?

(2) How many additional jobs existed in 2007 because of CCF’s operations as compared to the number that would exist if CCF did not exist?

The answers to these questions may be said to be CCF’s economic impact. It would be reasonable to assume that CCF’s impacts are most significant in the Otjiwarongo-Waterberg area, although we do not attempt to measure separately this local-area impact.

It should be noted that the Cheetah Conservation Fund generates other positive economic benefits for the Namibian economy or conferred on the world which are not measured in this study because they lie beyond the scope of the study. The fact that we do not measure them herein does not mean that they are not significant; indeed, over the longer term, arguably some of these unmeasured economic benefits could prove to be among the most important economic benefits generated by CCF. The unmeasured benefits include (among others):

- CCF programs raise the agricultural productivity and incomes of Namibian farmers who learn improved farming techniques in CCF’s courses, who adopt CCF’s livestock guarding dogs, or who in other interactions with CCF programs upgrade their farming practices. Over 450 farmers and others have been trained in these courses. Moreover, a further impact is created when other Namibian farmers observe CCF-trained farmers profiting from improved practices and are themselves induced to adopt them; this demonstration effect multiplies CCF’s impact. We do not attempt to estimate the size of these economic benefits.

- CCF’s research and educational programs create benefits to other conservation programs, to local industries such as eco-tourism and farming, and to the Namibian government. These programs, industries, and agencies benefit in diverse ways: One benefit is that Namibian nature reserve and ecotourism operators may be able to offer their clients the chance to view cheetahs in the wild where, in the absence of knowledge gained in CCF’s research into
improved management of human-cheetah interactions, the wild cheetah populations have been or would have been eliminated; examples of such benefits include the CCF-assisted reintroduction of cheetahs in NamibRand Nature Reserve and a CCF-assisted survey of the local cheetah population at the Sandveld Conservancy. These programs, industries, and agencies also benefit from access to a larger pool of better-trained personnel who have participated in CCF's courses or other educational programs.

CCF's outreach and collaborative activities contribute to the further development of communal conservancies in Namibia. CCF provides leadership, develops and demonstrates improved farming techniques, collaborates on matters of common economic interest (such as wild game counts and bush-invasion remediation), and in other ways assists the growth and maturing of the communal conservancy movement. For example, CCF recently initiated a collaboration with four recently registered communal conservancies, the African Wild Dog, Okamatipati, Otjituuo and Ozonahi Conservancies to launch the development of the Greater Waterberg Complex, a partnership that will include both freehold farms and the communal conservancies. We have not attempted to measure the benefits to communal conservancies of CCF's leadership.

CCF's international educational initiatives contribute to the growing awareness within the world conservation and governmental communities of Namibia as a major innovator and contributor to conservation; in doing so, CCF thereby reinforces the Government of Namibia's efforts to create a conservation "brand" for Namibia. To some extent we have been able to include this benefit in our economic impact study by means of the visitor survey (see Chapter 4 below). However, CCF's growing international reputation most likely redounds to the benefit of Namibia as a conservation exemplar in ways in addition to encouraging foreigners to visit CCF itself; for example, it may cause international aid and donor agencies to view Namibia more favorably and increase their
giving; if so, that would constitute an additional CCF economic impact that we have not attempted to measure in this study.

- CCF's research and educational programs create additional psychic and financial benefits simply by raising the probability that cheetahs will survive as a species. We have made no attempt to place an economic value on this increased probability. (Such a benefit is sometimes called an "existence" value; one attempt to measure existence value is given in Turpie (2003).)

- CCF creates psychic benefits to people in Namibia and around the world who are afforded an additional opportunity to express and participate in the global conservation of nature. It might be argued that this benefit is precisely measured by the actual level of financial contributions that the people of the world in fact make to CCF, and that since we incorporate such contributions in our study, the value of such psychic benefits are already included. However, there are many other contributions (for example, the value of the time of CCF volunteers while at CCF; contributions inspired by CCF but made to other conservation organizations) which suggest that there are likely to be significant psychic benefits generated by the existence of CCF that are uncounted in our study.

- CCF's research and propagation of cheetah-friendly farming practices helps preserve for future generations the possibility of enjoying and benefitting from cheetahs in the future. This benefit has been termed an "option" non-use value (Turpie et al. 2004). We have not attempted to measure the value of this future benefit.

Although we do not include these important but more elusive economic benefits in our study, we are able to estimate the direct and indirect economic impact of CCF's operations on the Namibian economy. As we will see, these impacts are substantial. We turn now to their measurement.
Chapter 2: Conservancies and Their Economic Impact

The last twenty-five years have witnessed the establishment in many African countries of game farms, private game preserves, private and communal conservancies, nature reserves, and other similar sites – what (loosely) have come to be termed private protected areas. These projects serve as an important complement and supplement to the extensive national parks and other state-owned or public protected areas in Africa, adding as much as 14 percent of the total Namibian land surface to protected areas (Turpie et al. 2004). The private protected areas have a diversity of goals: some are primarily for-profit entities, others are intended to facilitate or stimulate tourism, still others are predominantly focused on the conservation and regeneration of species and ecosystems; at least one study (Langholz, 1996) found that for all types of private nature reserves, operators were "motivated more by conservation goals than by personal or economic objectives."

This diverse group of non-state organizations advance local environmental goals and respond to international interest in preserving grasslands species and ecosystems. Krug (2001) found for example that the global willingness to pay to have preserves set up is greater than the local willingness to pay. Further, in developing game farms and nature reserves, Namibia and other African countries have increasingly been able to convert opportunities for trophy hunting, photographic safaris, and international interest in preserving African grasslands into economic growth opportunities, that is, into ways to increase Namibia's gross domestic product, employment, and earnings in the domestic economy. Real economic activity is generated by attracting tourism, donations, and other revenues to Namibia from individuals, organizations, and governments in Europe, the United States, and elsewhere in Africa and the world.

Game farms and wildlife-viewing reserves have increasingly been recognized for their positive impact on the economy as well as protecting and renewing wildlife (Jones et al. 2005). Fortunately there is now emerging a research literature on the economic value of game farms and other reserves, examining the conservancies' impact throughout Africa (and indeed, throughout the world); nonetheless, quantitative studies remain sparse. What has perhaps been less-well appreciated is that those organizations (like the Cheetah Conservation Fund) that
are more exclusively oriented to advancing research and education can also have a substantial economic impact, and that impact has been little studied.

We will not attempt a comprehensive review of this literature, but in this Chapter we summarize a few of its principal findings. We review findings related to the size and scope of the direct economic impact from conservancies, the sources of their impact, and the seasonality of the impact. In these studies, the terms "conservancies" and "reserves" are used in differing and sometimes inconsistent ways.

A. Size of Economic Impact From Reserves and Conservancies

Research in Namibia and throughout Africa has identified substantial economic impacts from reserves and conservancies. Weaver (2003) for example estimated that individuals who participated in the fledgling Community-Based Natural Resource Management conservancies (established under 1996 legislation laying the basis for the CBNRM program) already by 2002 realized annual benefits exceeding US$ 1.1 million; in addition, this program also resulted in substantial increases in the population of many species. Other studies during the last two decades have estimated the impact of privately-owned conservancies in many African countries including Namibia. The overall benefit to Namibia from private conservancies and game ranches in 1996 was estimated by Krug (2001) to be US$78 million. The average visitor in 1993 spent approximately US$91 at the conservancy or reserve, not including travel costs to the establishment (Langholz 1996).

Langholz and Kerley (2006) studied ten private game reserves in the eastern Cape region of South Africa; they found that each reserve on average supported 107 full-time employees, with an additional 375 family members who were dependent on the full-time employees. Moreover, jobs at the reserves tended to pay much higher wages, with reserve wages being on average 4.8 times the wages of agricultural workers before conversion from agriculture to game farming.

L. Chris Weaver and Patricia Skyer examined the Nyae Nyae Conservancy and Khaudum Game Reserve for their economic contribution to a single area. Their study can best be described as a potential impact study. Using natural life cycle estimates, they showed that at
only 25% capacity, this area in Namibia could produce an estimated benefit of N$11.8 million per year by 2015 (Weaver & Skyer 2003).

Allard Blorn (2000), in one of the rare studies examining the economic impact of a primarily research-and-education conservancy, examined the remote Dzanga-Sangha protected area complex in the Central African Republic. The Dzanga-Sangha protected area impacts the surrounding area through its direct expenditures (in 1998 the project employed 113 permanent staff and 15 temporary workers and had total direct expenditures of US$520,270) and through tourism (estimated to contribute $36,228 in 1998). The author attempted no multiplier analysis to assess the conservancy’s overall impact on the Central African Republic’s economy.

Conservancies’ economic impacts may vary depending on, among other variables, the degree of connection to local and regional economic activity. All five communal conservancies examined in one study (Barnes et al. 2001) were found to be net contributors to the national economy, with net value-added contributions (in 2000) ranging from N$278,621 to N$820,816. Obviously some conservancies were more successful than the others. The authors found that a big factor in the success of a conservancy was the pre-existing presence of a natural wildlife population, which eliminated the need (and cost) of investing in stocking the reserve.

Another common theme among highly successful conservancies is privatization. Private conservancies tend to have much larger budgets than the publicly-run parks; Krug (2001) found the average conservancy spending to be $38 per square kilometer for public parks and $556 for the “semi-private” parks. Finally, Mbaiwa (2003) in a study of tourism in the Okavango Delta argued that “enclave tourism” – that is, tourism in a context where foreigners own the safari companies and tourism facilities – can result in little local-economy economic benefit.

In a major study of the economic impact of state-owned (or national) protected areas, Turpie et al. (2004) estimated that in 2003 Namibia earned large benefits – on the order of N$1.013 to N$2.022 billion added to its GDP – from nature-based tourism. With lower- and upper-bound estimates of the total number of protected-area visitors of 214,028 and 382,439, the estimates of GDP contribution imply a per-visitor GDP contribution of between N$2,618 and N$9,449.
There appears to be an overall consensus that conservancies, including private conservancies, make a substantial positive economic impact. The size of this impact, especially for the private conservancies and even more particularly for those that are primarily research- and education-oriented, is not well measured.

B. Sources of Impact

Conservancies’ expenditures and resulting economic impact are mainly from three sources: tourism, trophy hunting and game-meat sales. Among the 24 Latin American and 8 African conservancies that Langholz (1996) studied, in 1993 overall revenue from tourism was 67%, and roughly one-third of his conservancies said 100% of their income was based on tourism. In Krug’s (2001) study, nature tourism ranked among the top three contributors to GDP in most eastern and southern African nations. Overall, existing studies find that conservancies primarily generate their economic impact through tourism, trophy hunting, and meat sales.

The portfolio of CCF’s activities differs from that of the type of conservancies most often studied – it does not include trophy-hunting and game-meat-sales entries, but adds research, conservation, and education activities. It also hosts a significant number of international volunteers. CCF’s economic impact may be presumed to be derived from these activities as well as tourism. Thus, our study extends current research by evaluating the economic impact of a unique facility which, despite its uniqueness, may suggest ways that a larger group of research- and education-oriented non-profits (which have not yet not been well studied) have economic impact.

C. Scope of Impact

Existing studies also suggest that the conservancies’ impacts can be felt at several different scales, including local (for example, at CCF, the impact experienced by the members of the conservancy and immediately surrounding areas), regional (the Otjiwarongo-Waterberg region) and the national economy as a whole. A principal way conservancies help local communities is through job creation; for instance, the Nyae Nyae Conservancy creates approximately 27 jobs.
per year (Honeb 2003). For the 770 members of this conservancy, the additional conservancy-fostered per capita income was an estimated N$1,039 (Weaver 2003).

**D. Seasonality of Impact**

Like most tourism activities, visits to African conservancies follow seasonal variations. Conservancies typically provide both permanent and temporary jobs. To account for this variability, some researchers studying conservancies have estimated impacts as full-time jobs or their equivalent whereas others have attempted to estimate full- and part-time jobs separately.

For example, in his impact study, Langholz (1996) used “employee months” to estimate the yearly job creation, employing the formula used by Claudia Alderman (1991):

\[
\text{Employee Months} = (12 \times \text{PE} + (\text{AEH} \times \text{NMH}) + \text{AEL} \times (12-\text{NMH}))
\]

where PE is the number of permanent employees; AEH is the number of additional employees during the high season; NMH is the number of months in the high season; and AEL is the number of additional employees during the low season. He found that among the African conservancies he studied the average number of employee-months created was 457, or the equivalent of 38 full-time year-round jobs.

Overall, this research reminds us that it is important to adjust for part-time or seasonal employment associated with the tourism spending.

**E. Factors Affecting Viability of Conservancies**

The proceeding analysis indicates that organizations that conserve wildlife and ecosystems in Namibia and other African countries create substantial economic impact, but that the impacts can vary considerably among the conservancies. There are several factors that could restrict such impact in the future. We discuss several of these threats below.

One problem that concerns conservancy owners is overcoming a mindset among some government officials who may view skeptically the benefits of conservancies. Governments in southern Africa are frequently reported to view land used for tourism as under-utilized (Krug 2001), even though roughly 72% of conservancy owners believe that they are better off using
the land for nature tourism rather than other activities such as cattle farming or other agricultural uses (Langholz 1996). A second potential problem is European Union and North American restrictions on imports of meats and skins that could affect revenues from trophy hunting and game-meat sales Krug 2001).

And finally, to the degree that a conservancy's impact is dependent upon the volume of international donations and tourism, the severe economic slump which the world economy entered in 2008 may affect its future economic impact.
Chapter 3: The Economic Impact of On-Site Activity at CCF

This Chapter examines the economic impact from the operations and business activity of the Cheetah Conservation Fund. A positive impact occurs when CCF brings new money to the Namibian economy by: 1) attracting donations and grants to support research and conservation activity at CCF, and 2) operating businesses that export products to consumers throughout the world. These donations, grants, and international exports support output, employment, and wages in the country. This Chapter utilizes financial reports and other data maintained by CCF to estimate the amount of money attracted to the Namibian economy through donations, grants, and exports. We then employ this data in economic models to estimate CCF's total impact throughout the Namibian economy due to the money it attracted to the country.

In a sense, this Chapter focuses on the economic impact of the unique features of CCF: its world-class research and education activities. We reserve for Chapter 4 examining the additional economic impact from visitor and volunteer activity as international visitors are attracted to CCF and its grounds.

A. Economic Impact Methodology

The first step in estimating the economic impact of the Cheetah Conservation is to estimate the direct increase in activity in the Namibian economy resulting from business activity on-site at the Conservancy. This refers to foreign (or “final”) demand for research and conservation activities occurring on-site. Such foreign demand for these services is represented in large part by the donations and grants that foreign individuals and organizations make to support the research and education activities of the Cheetah Conservation Fund. There is also foreign demand for agricultural products of CCF-affiliated companies. This demand can be estimated by the value of the exports of manufactured goods such as Bushblok. These two types of foreign demand for the services and products of CCF represent the “direct effect” on the Namibian economy from the activities of the Cheetah Conservation Fund.

In addition to this direct effect, there is also a “multiplier” effect on businesses throughout Namibia. The multiplier effect occurs as the initial spending on CCF research,
conservation, or education activities and CCF-affiliated businesses circulates further within the national economy, creating additional business and employment opportunities in other businesses. For example, there is a multiplier effect when CCF purchases such services from Namibian companies such as accounting services, legal services, or supplies. There is also a multiplier effect when CCF employees spend their paychecks throughout the local economy on typical household expenditures such as food, health care, housing, insurance, apparel, and entertainment. Thus the multiplier effect captures how businesses throughout the economy gain from the money attracted to Namibia by CCF. While the multiplier effect is nationwide, much of the multiplier impact would presumably occur in the region immediately surrounding the Conservancy, where supplies are purchased and the staff paychecks are spent. We utilize multipliers based on a Social Accounting Matrix developed for the Namibian economy by Lange (2008a).

Figure 3.1 illustrates how the economic impact of the Cheetah Conservation Fund is calculated. There are two components of the economic impact, one flowing from the research, conservation, and education activities at CCF, and the second flowing from the business activities of CCF-affiliated businesses that produce products for sale throughout the world. Each has a direct effect from foreign donations or sales. Each also has a multiplier effect on the national economy. For each component, the total economic impact is the sum of its direct effect and its multiplier effect.

The overall economic impact from on-site activity is then simply the sum of the total economic impact from these two components. In particular, as seen in the lowest part of Figure 3.1, the total economic impact from research, conservation, and education is combined with the total economic impact from CCF-affiliated businesses to yield the overall economic impact of the Cheetah Conservation Fund on the Namibian economy. This overall economic impact from on-site activity is estimated in the balance of this Chapter. Recall that the total economic impact from off-site visitor and volunteer spending will be estimated in Chapter 4.

As implied by Figure 3.1, a key issue in calculating the overall economic impact of CCF is to estimate accurately the direct effects, that is, the international donations and grants to support research, conservation, and education activities of CCF or foreign purchases of CCF
products such as Bushblok. Both estimates are possible from the well-kept financial records of CCF.

**Figure 3.1**

Approach for Calculating Economic Impact on Namibia from CCF Operations

**Economic Impact from Research, Conservation, and Education**

- **Direct Effect** - Annual spending on CCF operations supported by international donations

- **Multiplier Effect**

- **Total economic impact from CCF Research, Conservation and Education**

**Economic Impact from CCF-Affiliated Businesses**

- **Direct Effect** - Annual international sales by CCF businesses

- **Multiplier Effect**

- **Total economic impact from CCF-Affiliated Businesses**

**Overall Economic Impact on Namibia From On-Site Activity at the Cheetah Conservation Fund**
CCF financial records were very helpful in determining the direct effect from foreign donations because donor activities are generally organized by country. For example, entries for CCF US provide an estimate of donations from the United States. Further, most donations, memberships, grants, and other sources of funding for conservation and research activities come from international sources. The magnitude of this foreign demand for CCF research, conservation, and education activities is significant, given that the total income of CCF Namibia was N$10.3 million in 2007\(^2\), and much of this income was due to foreign donations, grants, or visitor spending. The direct effect will therefore be correspondingly large. Further, the total economic impact, which is the sum of the direct effect and the multiplier effect, will be significantly larger.

International business sales are the other key component of the direct effect from on-site activities at CCF, at least to the extent that these businesses export processed agricultural and forestry products. The affiliated company CCF Bush Pty Ltd, which produces Bushblok, raw woodchip, and hammer-milled woodchip, exports Bushblok to multiple countries, and sells all products in the domestic market. Sales of blok and chip reached $N0.28 million in 2007. We assume about one-quarter of those sales were for foreign export. But, whether the share of exports is 25%, 10%, or 50%, there is still a meaningful direct effect on the Namibian economy due to sales of Bushblok and related products to foreign customers. The impact of such export activity can be expected to grow in future years.

B. Economic Impact Estimates

Table 3.1 lists the revenue of CCF Namibia and affiliated private businesses such as CCF Bush Pty Ltd. The Table also lists the percentage of this revenue that is supported by foreign sources; whether donations and grants in the case of CCF, or foreign exports of Bushblok as in the case of CCF Bush Pty Ltd. These figures are utilized to calculate the direct effect on the Namibian economy from the research, conservation, and education efforts at CCF and at CCF-affiliated businesses. Another issue related to CCF is that the organization appeared to take in

revenue in excess of expenses during 2007, as might be expected since there is no reason that
income would exactly match expenditure in any given year. However, the direct effect during
the year 2007 would need to be adjusted to reflect revenue that supported CCF research,
conservation, and education services in 2007. To make this adjustment, note that the
expenditures for operating the CCF International Education and Research Center were N$8.0
million in 2007, including expenditures on research farms. Further, in 2007, expenditures\(^3\) also
exceeded revenue at CCF’s Janhelpman farm (by approximately N$0.74), and at CCF Bush (by
approx. N$1.04), suggesting that there were further CCF expenditures in 2007 not covered by
domestic revenue sources during that year. Therefore, total 2007 expenditures were N$9.8,
which is 95% of the N$10.3 million income in 2007. Or, to put it another way, we estimate that
95.1% of 2007 revenue of CCF-Namibia was used to cover expenditures in 2007. This
adjustment is shown in Table 3.1.

The next question is what percent of this 2007 revenue came from foreign demand
rather than domestic demand? The CCF Annual Financial Statement for 2007 indicates that
nearly 90% of income from CCF-Namibia came from foreign grants and donations, or from
tourist spending. For example, roughly one-quarter of income was provided by grants or
volunteer fees from CCF – USA, according to the annual financial report. Some income came
from domestic sources, however, such as educational programs delivered to Namibian farmers,
grazing services, payments from insurers, or sales of used equipment. A portion of gift shop
sales and other on-site income, such as gift shop sales or donations and gifts by visiting tourists,
also are from domestic rather than foreign visitors. For sales, donations, and gifts by visiting
tourists, we assume 80% are from foreign visitors, following a figure cited by CCF.\(^4\) Overall, we
conservatively estimate that N$9.2 million of the N$10.3 million in 2007 CCF-Namibia revenue
came from foreign sources, or 89.7%. Applying this percentage in Table 3.1 yields an estimate
direct effect of N$8.75 million in 2007.

Table 3.1 also shows the N$0.28 million in revenue of the affiliated business CCF Bush
Pky Ltd in 2007. The business exports an estimated 25% of its sales. Based on this percentage,

---

\(^3\) Estimate excludes depreciation given our focus on current expenditures rather than consumption of capital.
\(^4\) Marker, Laurie, 2008. Conservation Strategy for the Long-Term Survival of the Cheetah. Publication of the
Cheetah Conservation Fund.
there was a foreign final demand of N$0.07 million for the goods produced by CCF Bush in 2007. This direct effect also is listed in Table 3.1.

**Table 3.1**

**Direct Effect of CCF Research, Conservation, and Education Activities and CCF Affiliated Businesses 2007**

<table>
<thead>
<tr>
<th>CCF Research, Conservation, and Education Activities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (millions of N$)</td>
<td>10.26</td>
</tr>
<tr>
<td>% supporting expenditures in 2007</td>
<td>95.1%</td>
</tr>
<tr>
<td>% supported by foreign donations and grants</td>
<td>89.7%</td>
</tr>
<tr>
<td>Direct Effect (millions of N$)</td>
<td>8.75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CCF Affiliated Companies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CCF Bush Pky Ltd</td>
<td></td>
</tr>
<tr>
<td>Revenue (millions of N$)</td>
<td>0.28</td>
</tr>
<tr>
<td>% supported by foreign purchases</td>
<td>25%</td>
</tr>
<tr>
<td>Direct Effect (millions of N$)</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Source: BBR Calculations

Direct effects are a key component of the total economic impact on the Namibian economy. The other component is the multiplier effect. The multiplier effect is the additional activity that is generated throughout the national economy as 1) CCF and its affiliated businesses purchase goods and services, and 2) as their employees spend their paychecks on local goods and services. Such economic impacts will occur throughout the country but will tend to be concentrated in surrounding communities. Economic multipliers are used to calculate the multiplier effect associated with each component of on-site CCF activity. Economic multipliers show the number of dollars of total economic impact associated with each dollar of direct effect. See Appendix A for further discussion of economic multipliers.

A 2004 Social Accounting Matrix (SAM) for Namibia was developed by Lange (2008a), and Lange (2008b) posts the Social Accounting Matrix on-line. This is the most recent Social Accounting Matrix available for Namibia and it should be representative of the Namibian economy in 2007. The coefficients of the matrix can be used to calculate economic multipliers for CCF research, conservation, and education activities and for CCF affiliated companies, as
seen in Table 3.2. For example, the multiplier for CCF research, conservation, and education activities is 2.37. Such a multiplier implies a total economic impact of N$2.37 million for each N$1 million in direct effect. Based on the economic multipliers, the overall economic impact of research, conservation, and education activities and CCF affiliated businesses would have been N$20.83 million in 2007.

Table 3.2
Total Impact of CCF Research, Conservation, and Education Activities and CCF Affiliated Businesses 2007

<table>
<thead>
<tr>
<th>CCF Research, Conservation, and Education Activities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Effect (millions of N$)</td>
<td>8.75</td>
</tr>
<tr>
<td>Economic Multiplier</td>
<td>2.37</td>
</tr>
<tr>
<td>Total Economic Impact (millions of N$)</td>
<td>20.70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CCF Affiliated Businesses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CCF Bush Pky Ltd</td>
<td></td>
</tr>
<tr>
<td>Direct Effect (millions of N$)</td>
<td>0.07</td>
</tr>
<tr>
<td>Economic Multiplier</td>
<td>1.88</td>
</tr>
<tr>
<td>Total Economic Impact (millions of N$)</td>
<td>0.13</td>
</tr>
</tbody>
</table>

| Overall Economic Impact from On-Site Activity        | 20.83 |

Source: BBR Calculations

An important component of the overall economic impact is the impact on the labor force, that is, the jobs created in the economy. The 2004 Social Accounting Matrix (Lange, 2008b) contains information on total employment and total output in the Namibian economy in 2004. These data suggest there would be 119 jobs associated with an economic impact of N$20.83 million. These would represent year-round jobs. This estimate includes employment at CCF (or CCF affiliated businesses) which is supported by foreign donations, grants, or purchases, as well as the multiplier impact throughout Namibia’s economy.

The multiplier used for the CCF research, conservation, and education industry was the multiplier for the Other Private Services Industry. This industry best reflects research and education activities. The multiplier for CCF affiliated companies was the from commercial animal agricultural industry, since there was no specific forestry sector in the SAM model.
Chapter 4: The Economic Impact of Off-Site Spending by Visitors and Volunteers

This Chapter examines the additional economic impact from off-site spending by international visitors and volunteers who are attracted to CCF and its grounds. International visitors are typically “tourists” who travel to visit CCF for one day or more. Students and other volunteers are those who come to work at CCF and spend weeks and months in the area. There were approximately 4,000 international tourists who visited CCF in 2007\(^6\) and an estimated 113 volunteers who came to CCF in that year.\(^7\) The on-site spending of both groups, for example tuition (in the case of volunteer fees) or spending at the CCF gift shop, was already captured in the analysis of Chapter 3. This Chapter addresses the off-site spending of both groups, that is, spending in restaurants, gift-shops, lodging, or other businesses in Namibia away from CCF itself. This off-site spending represents an additional income contribution for Namibia.

In some cases, tourists and especially volunteers come to Namibia primarily to spend time at the CCF facility. Their spending during their entire visit to Namibia can fairly be considered as an economic impact of CCF. In other cases, visiting the CCF facility is one of many activities that international tourists to Namibia undertake during their stay in the country. But even among this group there are visitors who stay longer in the country because of an opportunity to visit CCF facilities. The additional amounts that tourists spend due to longer trips are another aspect of the economic impact of CCF on Namibia.

In this study, we assisted CCF in conducting a survey to estimate the impact from new trips and longer trips to Namibia due to CCF. A survey was distributed to visitors to the CCF facility both during the winter (July-August) and summer (November-December) of 2008. Further, we sent a survey form to all 2008 CCF volunteers. Both sets of surveys asked

---

\(^6\) There were 5010 visitors to CCF in 2007, and Marker (2008) indicates that at least 80% of visitors to CCF are international visitors. We conservatively assume 80% of 5,010, or approximately 4,000.

\(^7\) There were a total of 121 volunteers to CCF in 2007, including both domestic and international volunteers. We do not know the number of Namibian volunteers in 2007; however, data from 2008 indicates that just 7% of volunteers were from Namibia. Applying that percentage to 121 total volunteers in 2007 implies that 8 were domestic volunteers and 113 were international volunteers in 2007.
respondents about their country of origin, their reasons for visiting CCF and Namibia, the length of their trip and their spending patterns.

We used the survey results to provide an estimate of the direct economic impact of CCF on tourism activity in Namibia in 2007 as follows. The CCF direct expenditure data used in Chapter 3 is for 2007; our surveying was done in 2008. However, we apply the results of the 2008 surveys, in terms of reasons for visiting Namibia, reasons for extension of stay in Namibia, and spending levels and patterns, to the actual number of 2007 visitors. Assuming that visitors and volunteers in 2007 were identical or very similar to visitors in 2008 in terms of reasons for visiting Namibia, reasons for extending their stay in Namibia, and spending levels and patterns, this procedure should give us reliable comparable figures for 2007 visitor and volunteer spending to put alongside the 2007 data on CCF direct expenditures.

As in Chapter 3, we utilized economic multipliers to estimate the total economic impact from this tourist and volunteer activity during the year 2007. As will be seen, the economic impact from tourism is a significant component of the overall economic impact of CCF on the nation of Namibia.

A. Economic Impact Methodology

The first step in estimating the economic impact of visitors and volunteers (including students) to the Cheetah Conservation Fund is to estimate the direct increase in economic activity in Namibia resulting from their presence. As noted above, this additional activity occurs in the form of spending by visitors, students, or other volunteers who came to Namibia primarily to visit the Cheetah Conservation Fund (or perhaps CCF and a few other key sites), or visitors who came to Namibia for many of reasons but chose to extend their stay longer because of time spent visiting CCF. This spending represents a new foreign demand for the services of CCF – in this case, CCF as a tourism or education destination. In other words, it represents the “direct effect” on the Namibian economy from visitors, students, and other volunteers of the Cheetah Conservation Fund.
We used separate surveys to collect from visitors and volunteers the information required to determine the reasons for their trip, the length of their stays, and their level of spending.

For visitors, CCF distributed either of two surveys, depending on whether the visitors were part of tour groups (see Appendix B) or had traveled to CCF independently (see Appendix C). Surveying was conducted during both winter months (July-August) and summer months (November-December). Visitors were asked to complete the survey upon their arrival to the CCF Visitors Center. Visitors then placed their completed surveys into a box in order to ensure that responses were anonymous. There were 117 completed, usable survey responses from visitors, including both independent visitors and members of tour groups. The survey included a number of questions about the spending of visitors on the day of their visit, and whether visitors extended their stay in Namibia because of their trip to CCF, or came to Namibia primarily to visit CCF. The additional spending of visitors who extended their stay in Namibia because of their trip to CCF, or came to Namibia because of CCF, is a direct increase in spending for the Namibia economy due to CCF. This direct effect is seen on the left hand side of Figure 4.1, which demonstrates our approach for calculating the economic impact of visitors, students, and other volunteers.

For volunteers, a survey was sent to all students and other volunteers who came to participate at CCF in 2008. Spending by international volunteers and students during their trip also would represent a direct effect of additional demand on the Namibian economy. CCF provided the research team with a list and email contacts of 86 volunteers and students who came to CCF during 2008. The research team emailed each of the international volunteers or students and asked them to complete a survey about their spending during their trip to Namibia. This survey is included as Appendix D. We used survey results from respondents to estimate total spending by all students and other volunteers as a measure of the direct effect on Namibia from international students and volunteers. This direct effect is seen on the right hand side of Figure 4.1.
Figure 4.1
Approach for Calculating CCF's Economic Impact on Namibia from Visitors, Students and Other Volunteers

Economic Impact from Visitors

- Direct Effect –
  Annual off-site spending by CCF visitors

+ Multiplier Effect

= Total economic impact from Visitors

Economic Impact from Students and Other Volunteers

- Direct Effect -
  Annual off-site spending by CCF students and other volunteers

+ Multiplier Effect

= Total economic impact from Students and Other Volunteers

↓

Overall Economic Impact on Namibia From Visitors, Students and Other Volunteers
In addition to this direct effect from visitors and from students and other volunteers, there is also an additional “multiplier” effect at businesses throughout Namibia, as is seen in Figure 4.1. This multiplier effect occurs as the initial spending by visitors, students and other volunteers circulates further within the national economy, creating further business and employment opportunities in other businesses. For example, there is a multiplier effect when a restaurant that serves meals to CCF visitors purchases services from other Namibian companies such as food or restaurant supplies or accounting and legal services. There is also a multiplier effect when the employees of this restaurant that serves tourists spend their paychecks in the local economy on typical household expenditures such as food, health care, housing, insurance, apparel, and entertainment. Similar multiplier effects occur for other types of businesses that serve tourists, such as gift shops or hotels. Thus the multiplier effect captures how businesses throughout the economy gain from the tourist spending attracted to Namibia by CCF. While the multiplier effect is nationwide, much of the multiplier impact would occur in the region surrounding CCF, where supplies are purchased and the staff paychecks are spent. We utilize multipliers for the Namibian economy based on a Social Accounting Matrix developed by Lange (2008a).

Figure 4.1 illustrates how the economic impact from visitors, students and other volunteers coming to Cheetah Conservation Fund is calculated. Direct effects are estimated through survey results. For each direct effect, there is also a multiplier effect on the national economy. For each component, the total economic impact is the sum of its direct effect and its multiplier effect. The overall economic impact is the sum of the total impact from visitors and the total impact from students and other volunteers.

This overall economic impact from off-site spending is estimated in the balance of this Chapter. As noted earlier, the key to calculating these economic impacts is to utilize our surveys of visitors and of students and other volunteers to calculate direct effects.

B. Survey Results

In this section, we summarize the key results from our survey of visitors to CCF during 2008, and the surveys emailed to 2008 students and other volunteers. This information
provides background information about both groups and also provides information that will be critical in calculating direct effects in later sections of this Chapter. We begin by discussing the survey of visitors and then discuss the survey of students and other volunteers.

**Survey of Visitors**

Survey results indicated a broad appeal of CCF to visitors from a variety of nations. As seen in Table 4.1, visitors came from almost two dozen countries. The largest number of visitors came from central and western Europe, but there were also visitors from the United States, Australia, New Zealand, and Vietnam. More than one-third of visitors came from Germany and one-tenth from the United Kingdom and Switzerland. Just 3% of visitors came from Namibia and another 3% from other African countries (Kenya, Tanzania, and South Africa).

**Table 4.1**

<table>
<thead>
<tr>
<th>County</th>
<th>% of Respondents from Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>0.9%</td>
</tr>
<tr>
<td>Belgium</td>
<td>1.7%</td>
</tr>
<tr>
<td>Canada</td>
<td>2.6%</td>
</tr>
<tr>
<td>France</td>
<td>7.8%</td>
</tr>
<tr>
<td>Germany</td>
<td>33.9%</td>
</tr>
<tr>
<td>Holland</td>
<td>2.6%</td>
</tr>
<tr>
<td>Italy</td>
<td>5.2%</td>
</tr>
<tr>
<td>Ireland</td>
<td>3.5%</td>
</tr>
<tr>
<td>Kenya</td>
<td>0.9%</td>
</tr>
<tr>
<td>Namibia</td>
<td>2.6%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1.7%</td>
</tr>
<tr>
<td>Poland</td>
<td>1.7%</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.9%</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.9%</td>
</tr>
<tr>
<td>Spain</td>
<td>0.9%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>11.3%</td>
</tr>
<tr>
<td>Tanzania</td>
<td>0.9%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>13.0%</td>
</tr>
<tr>
<td>United States</td>
<td>6.1%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

Source: UNL Bureau of Business Research/CCF Survey of Visitors

As seen in Table 4.1, the vast majority of visitors to CCF were international visitors. Survey results indicate that these visitors had a variety of reasons for coming to Namibia. As seen in Table 4.2, most visitors who responded to the survey indicated that CCF was not a
central reason for coming to Namibia, though CCF was a point of interest for the majority of respondents. But, there was a significant group where CCF was a key factor. In particular, while no respondents indicated that CCF was their principal reason for coming to Namibia, 15.3% of respondents did indicate that visiting CCF was one of three or four reasons that they choose to visit Namibia. A conservative reading of these results is that for 15.3% of CCF’s visitors, coming to CCF was at least a significant part of the reason for their trip to Namibia. For these visitors, CCF evidently helped to generate additional international trips to the country.

Table 4.2
Role of CCF in International Visits

<table>
<thead>
<tr>
<th>Importance of CCF in Decision to come to Namibia</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>It was the principal reason I came to Namibia</td>
<td>0.0%</td>
</tr>
<tr>
<td>It was one of three or four reasons that I came to Namibia</td>
<td>15.3%</td>
</tr>
<tr>
<td>It was mentioned in the tour information and looked interesting</td>
<td>44.1%</td>
</tr>
<tr>
<td>It was not very important, because I would have come to Namibia anyway</td>
<td>37.8%</td>
</tr>
<tr>
<td>Other Response</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

Source: UNL Bureau of Business Research/CCF Survey of Visitors

CCF also influenced decisions about the length of visits to Namibia, as can be seen in Table 4.3. Just under one-quarter of respondents indicated that they spent an extra day in Namibia in order to visit CCF. Another 2% of visitors indicated spending two additional days in Namibia, with the remaining respondents indicating that a visit to CCF had no effect on the length of their trip. Given that 23.6% of visitors extended their trip by 1 day, and 1.8% by two days, it can be inferred that the average visitor extended his or her trip by 0.27 days in order to visit CCF. This extension of the average visitor stay represents a significant increase in the number of days spent by tourists in Namibia, given the 4,000 annual international visitors to CCF.
Table 4.3
Extending Trip to Namibia due to CCF

<table>
<thead>
<tr>
<th>Extra Days spent in Namibia because of visit to CCF</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 days (visiting the Cheetah Conservation Fund has no effect on the length of my trip)</td>
<td>73.6%</td>
</tr>
<tr>
<td>1 day</td>
<td>23.6%</td>
</tr>
<tr>
<td>2 days</td>
<td>1.8%</td>
</tr>
<tr>
<td>More than 2 days</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other Response</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

Source: UNL Bureau of Business Research/CCF Survey of Visitors

Survey of Volunteers

CCF provided the research team with the names and contact information for students and other volunteers who worked at CCF in 2008. We contacted the international students and other volunteers via email to gauge their impact on the Namibian economy. We surveyed 2008 volunteers as they were much more likely to still remember their spending while in Namibia than volunteers from 2007. We expect that the characteristics and spending patterns of 2008 volunteers would be similar to 2007 volunteers. As is seen in Table 4.4, most volunteers were international. Approximately half were students and volunteers directly of the Cheetah Conservation Fund, while the remaining ones were Earthwatch volunteers who chose CCF as their volunteer site. We received completed surveys from 15 of the 80 international students or volunteers in 2008. All 15 indicated that the principal reason they came to Namibia was to volunteer at CCF. Volunteers stayed an average of 28 days in Namibia, which is long enough to make a substantial economic impact.
Table 4.4
Characteristics of CCF Volunteers

<table>
<thead>
<tr>
<th>Type of Volunteer</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheetah Conservation Fund</td>
<td>45.3%</td>
</tr>
<tr>
<td>Eathwatch Volunteers at Cheetah Conservation Fund</td>
<td>54.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country of Volunteer</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Namibia</td>
<td>7.0%</td>
</tr>
<tr>
<td>International</td>
<td>93.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Importance of CCF in Decision to come to Namibia</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>It was the principal reason I came to Namibia</td>
<td>100.0%</td>
</tr>
<tr>
<td>It was one of three or four reasons that I came to Namibia</td>
<td>0.0%</td>
</tr>
<tr>
<td>It was not very important, because I would have come to Namibia anyway</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Average Days Spent in Namibia 28

Source: UNL Bureau of Business Research/CCF Survey of Volunteers

C. Economic Impact Estimates

Looking back to Table 4.2, survey results suggest that most visitors to CCF came to Namibia for a variety of reasons and not just to visit CCF. However, CCF was sometimes a reason that visitors extended their stay for 1 or 2 extra days. By contrast, for students or other volunteers, CCF was the principal reason for coming to Namibia. These contrasting factors are reflected in Table 4.5, which illustrates how we estimated the direct effect from visitors and students and other volunteers to CCF. For visitors, we multiplied the total number of international visitors to CCF first by the increase in days spent in Namibia per visitor due to their trip to CCF and second by the average daily spending of CCF visitors, which was N$686 per visitor per day according to survey responses. The result was an estimate of the increase in final demand on the Namibian economy from additional visitor spending as international visitors extended their stay in Namibia. We estimate a direct effect of N$0.74 million from additional spending by visitors in 2007.

The second step was to estimate the increase in number of days spent in Namibia because CCF encouraged visitors to take a trip to Namibia. As noted earlier, CCF was one of the top 3 or 4 reasons why 15.3% of visitors came to Namibia. These visitors on average spent 15 days in Namibia. If we assign one-quarter of those days in Namibia to CCF (and the other three-
quarters to the other top 2 or 3 reasons), then there is an increase of 3.75 days in Namibia due
to CCF, among these 15.3% of visitors. Averaging across all visitors, there is an increase of 0.57
days in Namibia per visitor. Given average daily spending, we estimate a direct effect of N$.1.57
million from additional spending by visitors in 2007.

For students and other volunteers, we multiplied the estimated number of 2007
international students and volunteers to CCF (113) by the average spending per visit to
Namibia, which was N$5,684, according to survey responses. This resulted in an estimate of an
N$0.64 million increase in final demand on the Namibian economy from students and
volunteers spending.

The total increase in off-site spending in Namibia due to visitors, students, and other
volunteers in 2007 was N$2.96 million Namibian dollars. Again, this includes spending due to
volunteer trips, trips by visitors who were drawn to Namibia in part by CCF, and visitors who
extended their stay in Namibia in order to visit CCF.

Table 4.5
Direct Effect of CCF Visitors, Volunteers, and Students 2007

<table>
<thead>
<tr>
<th></th>
<th>CCF Visitors</th>
<th></th>
<th>Additional Trips to Namibia</th>
<th></th>
<th>CCF Volunteers and Students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Increase in Length of Stay in Namibia</strong></td>
<td><strong>4,000</strong></td>
<td><strong>average increase in days spent in Namibia</strong></td>
<td><strong>0.27</strong></td>
<td><strong>average increase in days spent in Namibia</strong></td>
<td><strong>0.57</strong></td>
</tr>
<tr>
<td>Number of International Visitors</td>
<td><strong>4,000</strong></td>
<td><strong>average spending per person per day (N$)</strong></td>
<td><strong>686</strong></td>
<td><strong>average spending per person per day (N$)</strong></td>
<td><strong>686</strong></td>
</tr>
<tr>
<td>Direct Effect (millions of N$)</td>
<td><strong>0.74</strong></td>
<td>Direct Effect (millions of N$)</td>
<td><strong>1.57</strong></td>
<td>Direct Effect (millions of N$)</td>
<td><strong>1.57</strong></td>
</tr>
<tr>
<td><strong>CCF Volunteers and Students</strong></td>
<td><strong>113</strong></td>
<td><strong>average spending per person per trip (N$)</strong></td>
<td><strong>5,684</strong></td>
<td><strong>average spending per person per trip (N$)</strong></td>
<td><strong>5,684</strong></td>
</tr>
<tr>
<td>Number of International Volunteers and Students</td>
<td><strong>113</strong></td>
<td>Direct Effect (millions of N$)</td>
<td><strong>0.64</strong></td>
<td>Direct Effect (millions of N$)</td>
<td><strong>0.64</strong></td>
</tr>
<tr>
<td><strong>Overall Direct Effect (millions of N$)</strong></td>
<td><strong>2.96</strong></td>
<td>Source: BBR Calculations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Direct effects are an important component of the total economic impact on the Namibian economy. The other component is the multiplier effect. The multiplier effect is the additional activity that is generated throughout the national economy as off-site businesses that serve visitors or volunteers to CCF, and the employees of these businesses, spend money in Namibia. Such economic impacts will occur throughout the country but will presumably tend to be concentrated in surrounding communities. Economic multipliers are used to calculate the multiplier effect associated with each component of off-site CCF activity. Economic multipliers show the number of dollars of total economic impact associated with each dollar of direct effect.

A 2004 Social Accounting Matrix (SAM) for Namibia was developed by Lange (2008a), and Lange (2008b) also posts the Social Accounting Matrix on-line. This is the most recent Social Accounting Matrix available for Namibia and it should be representative of the Namibian economy in 2007. The coefficients of the matrix can be used to calculate economic multipliers for CCF, such as the multiplier for visitors spending.\(^8\) As seen in Table 4.6, the multiplier for visitor and volunteer spending is 2.78. Such a multiplier implies a total economic impact of N\$2.78 million for each N\$1 million in direct effect. Based on this multiplier, the overall economic impact of visitor spending would have been N\$8.23 million in 2007.

### Table 4.6
**Total Economic Impact of CCF Visitors, Volunteers, and Students 2007**

<table>
<thead>
<tr>
<th>Direct Effect (millions of N$)</th>
<th>2.96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Multiplier</td>
<td>2.78</td>
</tr>
<tr>
<td>Total Economic Impact (millions of N$)</td>
<td>8.23</td>
</tr>
</tbody>
</table>

Source: BBR Calculations

An important component of the overall economic impact is the impact on the labor force, that is, the jobs created in the economy. The 2004 Social Accounting Matrix (Lange, 2008b) also contains information on total employment and total output in the Namibian economy.

---

\(^8\) We utilized the multiplier the for tourism industry (direct purchases in Namibia of non-residents) in the Social Accounting Matrix. This sector was specifically designed to model spending by international visitors.
economy in 2004. These data suggest there would be 47 year-round jobs associated with an economic impact of N$8.23 million
Chapter 5: Conclusion

Tourism and the natural environment on which it is largely based are critical parts of the Namibian economy. And, as noted by Turpie et al. (2004), conservancies and protected areas (both public and private) play a critical role in the tourism economy by attracting international visitors. In this study we examined the economic impact of the Cheetah Conservation Fund, which represents a different type of conservancy – a conservancy established for research and education, with the attraction of tourists (visitors) and volunteers being only a secondary goal. The economic impact of this type of conservancy has been little studied.

We found that CCF makes a significant economic contribution to the Namibian economy, as seen in Table 5.1 below. The Table summarizes CCF’s estimated 2007 economic impact as calculated in Chapters 3 and 4. The total economic impact estimate includes both the impact of on-site spending by CCF in its operations and the additional off-site spending by visitors and CCF volunteers in Namibia for which CCF can appropriately be attributed as the cause.

Our finding is that in 2007 the Cheetah Conservation Fund had a total economic impact of N$29.05 million on the Namibian economy. We estimate that CCF's total impact had the consequence of creating 166 year-round jobs. The largest share of CCF’s impact came from its spending on its research and education activities, with a smaller impact originating in the off-site spending of CCF visitors and volunteers.

Table 5.1
The 2007 Economic Impact of the Cheetah Conservation Fund

<table>
<thead>
<tr>
<th>Economic Impact of CCF Operations (Millions of N$)</th>
<th>Economic Impact of Visitors and Volunteers (Millions of N$)</th>
<th>Total Economic Impact (Millions of N$)</th>
<th>Total Jobs Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.83</td>
<td>8.23</td>
<td>29.05</td>
<td>166</td>
</tr>
</tbody>
</table>

Source: UNL Bureau of Business Research calculations.
The substantial size of this impact may come as a surprise to some economic development experts, policy advisors, government officials, and others. One implication may be that as in any sector of the economy, Namibia's ecotourism and environmental sector may need to make room for innovation and different forms of business, and that attracting and supporting research- and education-oriented conservancies may appropriately assume a larger role in development strategy. A second implication of the substantial size of the impact may be that international donor and aid agencies and individuals interested in promoting bio-diversity research and education may be encouraged by discovering that their efforts lead to a second tangible benefit, namely, local economic development and job creation.
References


Appendix A: Economic Multiplier Analysis

As shown in the analyses of Chapters 3 and 4, reserves and conservancies create employment and economic activity of considerable size, scope, and duration. Much of this employment occurs at the conservancies themselves. However, they also produce a larger, economy-wide economic impact. In particular, for each dollar earned by a Namibian, there may be multiple dollars generated for the overall Namibian economy. This “multiplier effect” could occur at businesses that provide goods and services to the conservancy or businesses patronized by conservancy employees as they spend their paychecks.

More formally, multiplier analysis is an indirect means of measuring the impact of an exogenous shock upon various industries or sectors of an economy. The multiplier is defined by Black (1997, p.311) as a “formula relating an initial change in spending to the total change in activity which will result”. An example for agriculture in developing countries illustrates the potential significance of multipliers but also suggests some potential pitfalls from their use: in studies of the consequences of the green revolution upon regional agricultural income, multipliers were estimated to range from 1.3 to 4.3. The interpretation of such estimates is that for each dollar increase in “technologically induced agricultural income”, there is an increase of $0.30 to $3.30 in other rural sectors of the region (Haggblade et al.1991, p. 361). These studies report a very wide range of estimates for the multipliers, suggesting there exists a substantial variation, imprecision in the estimates, or both.

The lessons seem clear. The multiplier effect can be substantial, perhaps even larger than the initial or direct effect. However, estimates of the size of economic multipliers can vary greatly, and it may be most appropriate to use smaller multipliers in order to ensure that results are conservatively projected rather than exaggerated. This report in Chapters 3 and 4 utilizes appropriately moderate economic multipliers.

The multipliers literature suggests several key assumptions relevant to the use of economic multipliers. In particular, the economic multiplier analysis utilized here is premised on the assumption that the supply of non-tradeable inputs into the production process is perfectly elastic (Haggblade et al. 1991), meaning that at the current price, there exists an infinite supply of the input, so increased demand for the input will not raise its price. Non-tradeables are
defined by Black (1997, p.325) as “goods and services which cannot be traded internationally”. If, however, the elasticity of supply of non-tradeable inputs is not perfectly elastic, then demand shifts would induce higher prices and less output. Applied to our case, less than perfect elasticity of inputs would mean that research, education, and conservation activities could potentially drive up the wages of labor and the price of land in Namibia, which would limit the resources that are available to other types of Namibian businesses and result in a smaller overall increase in output.

Haggblade et al. (1991) set out to remedy the variation and imprecision of agricultural growth multipliers by employing a price-endogenous model. The price-endogenous model captures the price and output effects of the elasticity of supply of non-tradeables under non-perfectly elastic conditions. Their model relaxes two important assumptions of the fixed-price models: i) it accepts that the supply of non-tradeables is not perfectly elastic, and ii) it allows input substitution. Under these assumptions of a price-endogenous model, they conclude that fixed price models are appropriate for economies with elastic labor supplies and where capacity does constrain non-farm activity. For Africa, the authors found that multipliers that considered such imperfect elasticity and allowed for input substitution were 75% as large as those calculated with projections from input-output models. These results again suggest the use of smaller, more conservative economic multipliers in economic impact analysis, as we adopt in our study.

Two aspects of CCF’s operations should reduce concerns about input substitution. First, CCF focuses on developing methods to promote conservation on land that is being used for animal husbandry or crop production, in effect raising the quality of existing land; such efforts mitigate input substitution in the case of land. Second, CCF utilizes highly skilled domestic and foreign workers; that is, new labor resources are being developed, whether these are Namibian workers who have substantially raised their skill level and earnings power by working as researchers and educators at the CCF or foreign labor attracted to Namibia.

Overall, the existing studies suggest some potential pitfalls in examining the economic impact of institutions involved in the preservation of natural environments and species. We attempt to avoid these pitfalls in the research reported herein. First, we incorporate
consideration of the seasonal nature of tourism impacts, which are a major component of economic impacts. In our research, we distinguish between more seasonal tourism employment and the year-round employment generated by research, conservation, and education activities. The two types of impacts are calculated in two separate Chapters.

Second, we avoid the temptation to overstate economic impacts which would be the case if we used the higher end of the range of multipliers developed from Social Accounting Matrix (SAM) models. Multipliers are calculated with some uncertainty, and in most cases the models fail to reflect substitution effects that can limit the total impact. In our calculations, we utilize moderate SAM-based multipliers in order to avoid overstating the economic impact.
Appendix B
Survey of Tour Group Visitors to the Cheetah Conservation Fund
(Please Complete One Survey Per Family)

Your answers to this questionnaire will be an important part of a study of the economic impact of the Cheetah Conservation Fund. Your answers will be completely CONFIDENTIAL and ANONYMOUS. We appreciate your taking the time to complete the form.

1. In which Country do you live? _____________ What is the name of your tour company? ____________________
2. What is the cost of your package tour in Namibia? _________ (please specify which currency ie. €, US$, £, etc.)
3. Does this include the cost of air travel? __Yes __No
4. How did you learn about CCF? ____Travel Agent, ___media, ____website, ___travel guide, ___referral by friend, ___road sign, ___Local information, ___other (please list)__________________________

Please estimate your family’s spending TODAY in the following categories. Please include ALL spending; for example, include dining and shopping at area restaurants and stores.

5. Food N$______________ OR Your Currency? ______________ (Which Currency?)
6. Shopping & Gifts N$______________ OR Your Currency? ______________ (Which Currency?)
7. Other Entertainment or Recreation or special Safari tours N$______________ OR Your Currency? ______________ (Which Currency?)
8. Other, please specify: ___________________________N$_______ OR Your Currency? ______________ (Which Currency?)
9. What percentage of this spending occurred in the Waterberg-Otjiwarongo area? _______%
10. How many family members, including children, are you traveling with today (in other words, how many people are included in the above spending)? __________

IF YOU DO NOT LIVE IN NAMIBIA, PLEASE ANSWER QUESTIONS 11-14 TO COMPLETE THE SURVEY
11. How many days will you be visiting Namibia? _____________ days

12. How important was the Cheetah Conservation Fund in your decision to come to Namibia? (Please check ONLY ONE response)
   ____ It was the principal reason I came to Namibia
   ____ It was one of three or four reasons that I came to Namibia
   ____ It was mentioned in the tour information and looked interesting
   ____ It was not very important, because I would have come to Namibia anyway

13. How many extra days will you stay in Namibia because you are visiting the Cheetah Conservation Fund?
   ____ 0 days (visiting the Cheetah Conservation Fund has no effect on the length of my trip)
   ____ 1 day
   ____ 2 days (please list how many additional days_________)

14. How much value did the Cheetah Conservation Fund provide to your overall experience and enjoyment of Namibia. 
   ____Greatly increased to the value of my trip, ___Moderately increased to my value of my trip, ___Did not add value

IF YOU LIVE IN NAMIBIA, PLEASE ANSWER QUESTION 15 IN ORDER TO COMPLETE THE SURVEY
15. If the Cheetah Conservation Fund did not exist, which of the following would you MOST likely do?
   (Please check ONLY ONE response)
   ____ Go to a different attraction in Namibia
   ____ Go to an attraction in a different country
   ____ Spend the money on something else

THANK YOU VERY MUCH FOR YOUR ANSWERS TO THIS IMPORTANT SURVEY!
Appendix C
Survey of Visitors to the Cheetah Conservation Fund
(Please Complete One Survey Per Family)

Your answers to this questionnaire will be an important part of a study of the economic impact of the Cheetah Conservation Fund. Your answers will be completely CONFIDENTIAL and ANONYMOUS. We appreciate your taking the time to complete the form.

1. In which Country do you live? ____________________________
2. How did you learn about CCF? ____Travel Agent, ___media, ___Website, ___travel guide, ___referred by friend, ___road sign, ___ local information, ___other (please list)___________________________________

Please estimate your family’s spending TODAY in the following categories. Please include ALL spending; for example, include dining and shopping at area restaurants and stores.

3. Travel N$__________ OR Your Currency? ______________ (Which Currency?)
4. Food N$__________ OR Your Currency? ______________ (Which Currency?)
5. Hotel or other lodging N$__________ OR Your Currency? ______________ (Which Currency?)
6. Shopping & Gifts N$__________ OR Your Currency? ______________ (Which Currency?)
7. Gasoline N$__________ OR Your Currency? ______________ (Which Currency?)
8. Other Entertainment or Recreation N$ ______ OR Your Currency? ______________ (Which Currency?)
9. Other, please specify: _______ N$ ______ OR Your Currency? ______________ (Which Currency?)
10. What percentage of this spending occurred in the Waterberg-Otjiwarongo area? _______%
11. How many family members, including children, are you traveling with today (in other words, how many people are included in the above spending)? ______________

IF YOU DO NOT LIVE IN NAMIBIA, PLEASE ANSWER QUESTIONS 12-15 TO COMPLETE THE SURVEY

12. How many days will you be visiting Namibia? ____________ days
13. How important was the Cheetah Conservation Fund in your decision to come to Namibia? (Please check ONLY ONE response)
   _____ It was the principal reason I came to Namibia
   _____ It was one of three or four reasons that I came to Namibia
   _____ It was mentioned in the tour information and looked interesting
   _____ It was not very important, because I would have come to Namibia anyway

14. How many extra days will you stay in Namibia because you are visiting the Cheetah Conservation Fund?
   _____ 0 days (visiting the Cheetah Conservation Fund has no effect on the length of my trip)
   _____ 1 day
   _____ 2 days or more (please list how many additional days_________)
15. How much value did the Cheetah Conservation Fund provide to your overall experience and enjoyment of Namibia?
   _____ Greatly increased to the value of my trip, ___ Moderately increased to my value of my trip, ___ Did not add value

IF YOU LIVE IN NAMIBIA, PLEASE ANSWER QUESTION 16 IN ORDER TO COMPLETE THE SURVEY
16. If the Cheetah Conservation Fund did not exist, which of the following would you MOST likely do?
   (Please check ONLY ONE response)
   _____ Go to a different attraction in Namibia
   _____ Go to an attraction in a different country
   _____ Spend the money on something else

THANK YOU VERY MUCH FOR YOUR ANSWERS TO THIS IMPORTANT SURVEY!
Appendix D

Survey of Volunteers and Students of the Cheetah Conservation Fund

Your answers to this questionnaire will be an important part of a study of the economic impact of the Cheetah Conservation Fund. Your answers will be completely CONFIDENTIAL and ANONYMOUS. We appreciate your taking the time to complete the form.

16. In which Country do you live? ________________________

17. How did you learn about CCF? ____ Travel Agent, ____ media, ____ website, ____ travel guide, ____ referred by friend, ____ road sign, ____ local information, ____ other (please list) ____________________________________________________________________________.

Please estimate your spending during your stay in Namibia in the following categories. Please include ALL spending; for example, include dining and shopping at area restaurants and stores – but not including any money paid directly at CCF.

18. In country Travel N$_________ OR Your Currency? _________(Which Currency?)

19. Food N$_________ OR Your Currency? _________(Which Currency?)

20. Hotel or other lodging N$_________ OR Your Currency? _________(Which Currency?)

21. Shopping & Gifts N$_________ OR Your Currency? _________(Which Currency?)

22. Gasoline N$_________ OR Your Currency? _________(Which Currency?)

23. Other Entertainment or Recreation N$_________ OR Your Currency? _________(Which Currency?)

24. Other, please specify: N$_________ OR Your Currency? _________(Which Currency?)

25. What percentage of this spending occurred in the Waterberg-Otjiwarongo area? ________%

26. How many people are included in the above spending? __________

IF YOU DO NOT LIVE IN NAMIBIA, PLEASE ANSWER QUESTIONS 12-14 TO COMPLETE THE SURVEY

27. How many days did you visit Namibia? ____________ days

28. How important was the Cheetah Conservation Fund in your decision to come to Namibia? (Please check ONLY ONE response)
   ____ It was the principal reason I came to the area
   ____ It was one of three or four reasons that I came to the area
   ____ It was not very important, because I would have come to area anyway

29. How many extra days did you stay in Namibia area because you were visiting the Cheetah Conservation Fund?
   ____ 0 days (visiting the Cheetah Conservation Fund had no effect on the length of my trip)
   ____ 1 day
   ____ 2 days or more (please list how many additional days_________)

30. After your visit to Cheetah Conservation Fund, what do you think your future relationship with the Cheetah Conservation Fund will be?
   ____ Become a Donor, ____ Become an Advocate, ___ Follow CCF with Interest, ____ No relationship

THANK YOU VERY MUCH FOR YOUR ANSWERS TO THIS IMPORTANT SURVEY!