

THE LION'S SHARE?

ON THE ECONOMIC BENEFITS OF TROPHY HUNTING

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ADDING VALUE TO SOCIETY

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SUMMARY

Pro-hunting group Safari Club International (SCI) recently published material entitled 'The Conservation Equation'. The claimed 'equation' is a simple one – that trophy hunting equals conservation of African wildlife and habitat.

SCI's claims are based on a commissioned study by consultants Southwick Associates. This study estimated the economic benefits of trophy hunting in eight African countries – Botswana, Ethiopia, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe (Southwick, 2015). They claim that the overall economic benefit from their estimated 18,815 trophy hunter visits is \$USD 426 million to the studied eight countries, and that trophy hunting directly and indirectly supports 53,000 jobs.

In fact, trophy hunting contributes significantly less to the eight study economies, job markets, and African conservation. Reviewing the study behind The Conservation Equation, this analysis finds that:

- Economic benefits have been heavily overstated, with Southwick (2015) claiming that trophy hunting contributes \$426 million; a more realistic estimate is less than \$132 million per year.
- Marginal contribution from trophy hunting to employment is not 53,000 jobs, as claimed by Southwick (2015), but more likely in the range of 7,500 - 15,500 jobs.
- While overall tourism is between 2.8% and 5.1% of GDP in the eight study countries, the total economic contribution of trophy hunters is at most about 0.03% of GDP.
- Foreign trophy hunters make up less than 0.1% of tourists on average.
- The adjusted value of Southwick's economic contribution of trophy hunting (\$132 million or less) amounts to only 0.78% or less of the \$17 billion in overall tourism spending in the studied countries.
- Trophy hunting tourism employment is only 0.76% or less of average direct tourism employment in study countries.

ARE SCI'S COMMISSIONED ESTIMATES OF TROPHY HUNTING'S ECONOMIC IMPACT RELIABLE?

Southwick (2015) employ methods that substantially overstate the size of the hunting economy. The main methodological problems are:

1. Ignoring the opportunity cost of resources used for hunting activities by assuming that land and wildlife resources have no substitute uses at all. Clearly there are alternative uses, such as non-hunting tourism. Analysis that ignores the existence of alternative uses and industries cannot contribute to the key question of whether hunting is the most economically valuable use of resources in the regions where it occurs.
2. Non-hunting tourism by trophy hunters is attributed purely to trophy hunting. While this and other pro-trophy hunting economic studies proclaim that trophy hunters are motivated by more than just the hunt, and that trophy hunters value outdoor wildlife experiences in exotic locations, these same studies assume that no trophy hunters would visit these countries if not for trophy hunting, and that no non-trophy hunting activities would occur if hunting ceased.

- Using multipliers to determine total economic contribution. This method of analysis assumes that not only would all businesses that earn revenue from trophy hunters find no alternative income sources, but neither would their suppliers, and their suppliers' suppliers, and so forth up the value chain. This method is unrealistic, and no longer an accepted method of economic analysis.

Adjusting the Southwick (2015) estimates to account for these problems helps provide an indication of the *marginal* economic benefit of trophy hunting. In other words, what is the benefit that hunting provides over and above what an alternative use of the land, wildlife, labour and other inputs would generate. This is the economically correct approach to assessing the value of an industry.

Making these adjustments, this marginal benefit would be less than \$USD 132 million, depending on alternative wildlife uses. In terms of employment, the likely marginal effect of trophy hunting is in the range of 7,500 - 15,500 jobs, rather than the 53,000 claimed by Southwick (2015). A summary of the effect of adjusting for these methodological issues is in Figure 1. The graphic illustrates how Southwick (2015) was able to reach the inflated and inaccurate figure of a \$426 million economic benefit and 53,000 employment benefit to the eight countries studied.

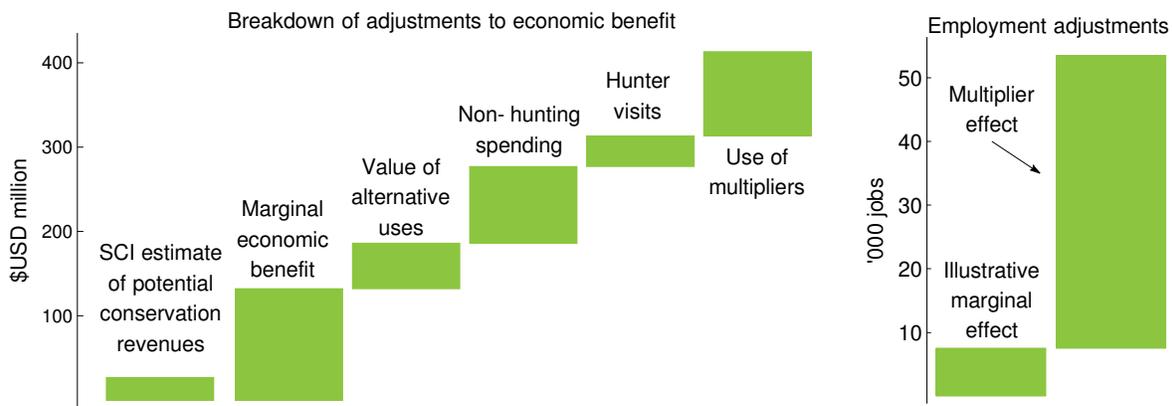


FIGURE 1: SUMMARY OF ADJUSTMENTS TO SOUTHWICK TROPHY HUNTING BENEFIT

WHAT DOES THE SIZE OF HUNTING INDUSTRY LOOK LIKE IN PERSPECTIVE?

Although often reported to be economically significant, or even critical, the gross tourism expenditure from trophy hunters claimed by Southwick (2015) is around 1.9% of overall (non-hunting and hunting) tourism expenditure in the study countries (while the marginal contribution from trophy hunting is far less). The tourism sector overall is between 2.8% and 5.1% of GDP in the study countries, meaning that the current total economic contribution of trophy hunters from their hunting-related, and non-hunting related, tourism is at most about 0.03% of GDP. Foreign trophy hunters make up less than 0.1% of tourists on average.

The comparison of tourist arrivals, spending, and direct employment of tourism overall, and the claimed contribution of trophy hunters in Southwick (2015) is in Figure 2, which shows clearly that the economic significance of trophy hunting is exaggerated.

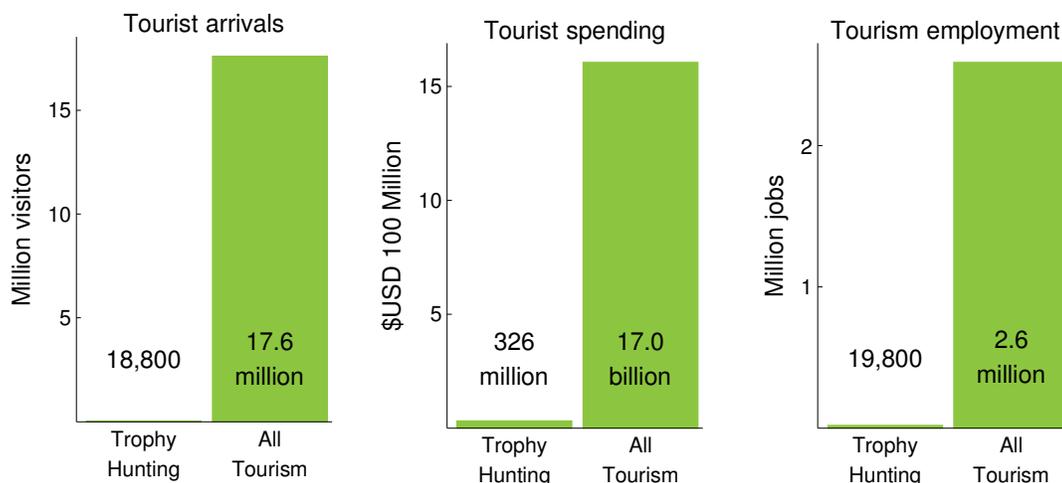


FIGURE 2: TROPHY HUNTING ESTIMATES IN PERSPECTIVE (WTTC, 2016)

In terms of the wider tourism economy, which relies heavily on wildlife resources, trophy hunting is relatively insignificant. Overall tourism spending grew by as much as the claimed direct value of the trophy hunting industry (\$326 million) every four months on average in the eight study countries between 2000 and 2014. The average increase in tourist arrivals over 9 days in Botswana exceeded the total annual foreign trophy hunter arrivals as estimated by Southwick (2015). For the more established hunting markets of Namibia and South Africa, this was 54 and 60 days, meaning that just the growth over a year in tourist numbers is about six times larger than a year’s worth of hunting tourists.

Thus, at the country level the overall financial contribution of trophy hunting is minor, though perhaps significant in a few small select regions. Some African countries have already instituted trophy hunting restrictions. Kenya, for example, banned almost all hunting in 1977 and has seen high growth in tourism industries, and a pushback by large eco-tourism operators against the reintroduction of hunting. In 2014, Botswana followed Kenya’s example. Trophy hunting may actually deter growth in other forms of tourism, and these costs may overwhelm any economic benefits (already recognized to be minor) of the trophy hunting industry.

THE IMPLICIT CONSERVATION STORY

SCI claims that the economic benefits estimated by Southwick (2015) implicitly support their “conservation equation” view that hunting equals conservation because it generates economic activity which can help pay the cost of conservation. Yet the report only offers claims of total economic contribution, with no details provided on how much of the inflated total of \$426 million actually goes to conservation. Instead, published studies have consistently shown that trophy hunting can have a detrimental effect on wildlife populations.

It is not impossible for conservation areas in some cases to have some amount of sustainable trophy hunting. But trophy hunting does not itself automatically lead to effective conservation. With minor exceptions, the causal link SCI claims simply does not exist. A well-regulated system is required for trophy hunting to be sustainable. For example, it must be void of corruption, offer accurate and regular

monitoring of populations, ensure that hunting quotas are based on science, be properly regulated and enforced, etc. Given the complex political climates of many of the eight study countries – some of which are in fact extremely corrupt, lack accurate population monitoring, base quotas on factors other than science, ignore age restrictions for hunted animals, and allow hunting to disrupt social stability in animal groups - this perfect operating system is unattainable and therefore sustainability cannot be ensured. This presents clear evidence against SCI's conservation equation view. Southwick's (2015) findings that just an estimated 6 to 9% of economic benefits are potentially available to be directed towards conservation similarly undermines that view.

There are indeed examples where community-based hunting programs, in remote areas that are not suitable for tourism, do provide meaningful funding for communities and, ironically, do lead to the recovery of the targeted species (Namibia has a few such examples), but this is by no means the norm. And many trophy hunters get upset when it is suggested that these examples are few and far between and that the overall picture is not pretty. (Epsley, 2015)

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INTRODUCTION

A recent study (Southwick, 2015) commissioned by international trophy hunting organization Safari Club International estimates that the economic benefit from trophy hunting in eight African countries - Botswana, Ethiopia, Mozambique, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe - was \$USD 426 million in 2012, and that 53,000 jobs are supported by this industry.

The study, written by consultants Southwick Associates, is interpreted by hunting advocates as demonstrating the large and positive economic impact of trophy hunting which, they allege, is a significant funding source for conservation. The following statements have been made about the report:

Our results show that a substantial number of jobs and income are created by each hunter who visits Africa, and when you add them all together, hunting becomes a critical sector of the region's economy. (Phillips, 2016)

The results from this report show that hunting tourism is a driving force in conservation and positively contributes to a sustainable future for Africa's wildlife and local economies. (Ammoland, 2016)

However, without context, these job and income numbers have little meaning. For example, what share of total tourism expenditure do trophy hunters comprise? What activities does trophy hunting displace? And what proportion of this economic contribution from trophy hunting actually provides incentives for greater conservation?

The aim of this report is to determine the merits of the Southwick (2015) results, and bring some rigour to the question of trophy hunting's marginal economic benefit by answering the following questions:

1. Are Southwick (2015) estimates of trophy hunting's economic impact reliable?
2. What does the economic size of trophy hunting industry look like in comparison to all tourism?

To accomplish this, this analysis reviews Southwick (2015) and its estimated economic value of trophy hunting, focussing on methodological shortcomings which overstate the relative economic significance of trophy hunting. Southwick's estimates of direct economic activity associated with trophy hunting are compared to national tourism statistics, showing that many of their estimates are implausibly large, and that even if they are believed, just the growth in the non-hunting tourism industry is often larger than the whole trophy hunting industry. Some overall perspective is then provided by looking at patterns of tourism as a whole in the study countries, and in Kenya, which has long had a trophy hunting ban.

LIMITATIONS OF PREVIOUS TROPHY HUNTING STUDIES

Very little data is available to determine the contribution of trophy hunting to tourism and economic activity in Eastern and Southern Africa. Despite this lack of data, some studies do attempt to estimate

such impacts using surveys of trophy hunters and outfitters, particularly in a case study setting (Lindsey et al., 2007a; Samuelsson and Stage, 2007; Jorge et al., 2013; Southwick, 2015).

The latest is *The Economic Contributions of Hunting-Related Tourism in Eastern and Southern Africa*, by Southwick Associates, commissioned by Safari Club International (Southwick, 2015). Using a survey of 432 international trophy hunters, the study made the following claims:

1. Total spending by surveyed trophy hunters on all items in destination countries was \$USD 20,602 on average.
2. Multiplying by the number of licenced international trophy hunters in each study country, the total spending by trophy hunters was estimated to be \$USD 326 million.
3. Applying a “GDP per spending” multiplier to this figure provides a GDP (value added) estimate of \$USD 426 million.¹
4. Applying a total direct and indirect “jobs per GDP” multiplier to this GDP estimate provides an estimate of total jobs related to hunting tourism of 53,000.

This approach is similar to an earlier study by Samuelsson and Stage (2007), who surveyed 164 international hunting tourists in 2003 who visited Namibia between 1998 and 2002. Trophy hunting tourists in their survey spent \$USD 3,900 on hunting-related activities in public conservancies (80% of trophy hunters) and \$USD 2,700 in private farms (20% of trophy hunters). Conservancy hunters also spent \$USD 2,100 on non-hunting related activities. In common \$USD 2002 terms, their estimate of the average total hunter direct spending was \$USD 5,500, or only 68% to Southwick’s (2015) estimate of Namibian total trophy hunter spending, which deflated to 2002, is \$USD 8,100 on average per person. A 2004 estimate by Damm (2005), put total expenditure by international trophy hunters in Namibia at \$USD 5,700 (adjusted to 2014 dollar terms), again far below comparable estimates by Southwick (2015).

Southwick (2015) employed a survey sampling method that is likely to have inflated their estimates of trophy hunter spending. They sought participants over three rounds by having professional hunting organisations contact their clients. In their third round, which made up 60% of total survey participants, the average reported total expenditure on a hunting trip was \$USD 25,600, compared to \$USD 16,000 for survey participants from the first two rounds (a 60% difference). This possible sampling bias matches closely the difference in spending between Southwick (2015) and earlier estimates, especially for Namibia. Overall, the variation and scope for error in understanding the basic expenditure profile of international trophy hunters in this type of survey method appears large, and the Southwick (2015) estimates seem to be some of the highest estimates available.

¹ The application of this multiplier is designed to capture potential indirect, or induced, economic activity that may occur in upstream supply industries and complementary industries. This assumes that not only would all businesses that earn revenue from trophy hunters find no alternative income sources, but neither would their suppliers, and their suppliers’ suppliers, and so forth up the value chain. This method is no longer accepted by many governments and institutions as a valid form of economic analysis.

For example, Lindsay et al. (2007a) summarised the trophy hunter expenditure estimates from earlier studies, which lead to a widely reported figure that trophy hunting in Africa was a \$200 million industry. This number was criticised for relying on similar survey estimates by pro-trophy hunting lobby groups of overall expenditure, rather than the economic benefit to local communities or wildlife management agencies who are actually engaged in conservation and wildlife management (Campbell, 2012). Furthermore, both the \$200 million and \$426 million figures fail to demonstrate how much the economic activity generated actually contributes to conservation efforts, as opposed to paying for overhead costs, salaries, or going into projects that have no direct benefit to wildlife, or indeed, if the economic gains simply further incentivize wildlife depletion. In other words, there is no debate that some money is generated by trophy hunting. But that is not the key question; the key question is whether or not that money is making a meaningful positive contribution to wildlife conservation.

More than this, however, is that both the Lindsay et al. (2007a) and Southwick (2015) studies do not estimate the *marginal* economic impact of trophy hunting. They estimate the *gross* economic activity associated with trophy hunting. When trying to establish the net economic difference between a scenario with no trophy hunting, compared to the scenario with current trophy hunting arrangements, it is only the marginal economic contribution of trophy hunting which is meaningful. This fundamental economic concept is illustrated in Figure 3 below, where the gross economic benefit from the next best alternative use of wildlife and conserved land resources must be known to understand what the marginal economic benefit from trophy hunting is.

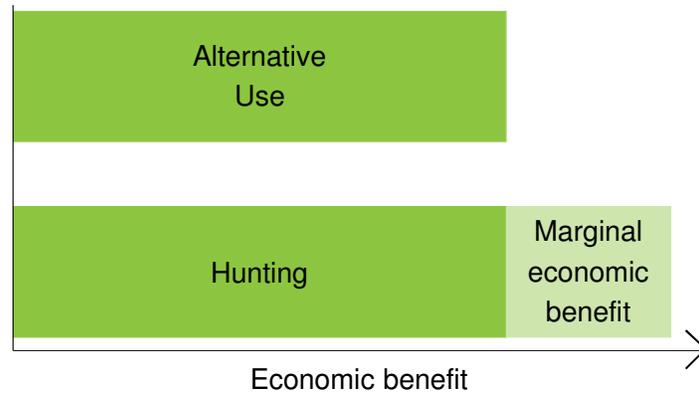


FIGURE 3: CONCEPT OF MARGINAL ECONOMIC BENEFIT

This fundamental confusion about what the relevant economic benefit measure should be when establishing the economic contribution of trophy hunting is responsible for three specific problems with the methods used by Southwick (2015), which also apply more generally to studies of this type: 1) ignoring the opportunity cost of land and wildlife resources by assuming no ability to substitute land and wildlife resources towards other uses (such as non-consumptive tourism), 2) attributing all non-trophy hunting tourism expenditure by trophy hunters to hunting, and 3) using economic multipliers to determine total economic contribution. These problems are discussed in turn.

IGNORING THE OPPORTUNITY COST OF RESOURCES

Quantifying the scope of gross economic activity currently related to the trophy hunting industry does not answer the important question of how much greater that economic contribution is than the next best alternative use of the wildlife and land resources (the opportunity cost). Even if trophy hunting is associated with a great deal of economic activity, the total value of that activity could still be lower than alternative non-trophy hunting uses of the natural and human resources. For example, a non-consumptive ecotourism private farm may bring in more money and greater conservation benefits than if the same land were used for trophy hunting. From the methods used by Southwick (2015), this can't be known, as they make the incorrect assumption that the next-best use of land and wildlife generates a total economic benefit of exactly zero. The economic benefits of alternative land and wildlife uses can be significant.

For example, Lindsey et al. (2013) show that ecotourism uses of private ranches is a growing alternative in Namibia, and is also associated with higher ranch employment than trophy hunting or agriculture, suggesting the rise of ecotourism as a viable alternative land use in many situations. Taylor et al. (2016) explain how the Zululand Rhino Reserve in South Africa over time moved from mixed uses of trophy hunting and ecotourism, to exclusively ecotourism, because trophy hunting uses where limiting expansion of higher-value ecotourism. Such conflicts between trophy hunting and alternative uses are captured in the below quote from a Tanzanian villager in a study on conservancy management.

We're more closely allied with the photographic operators than the hunters. They are finishing off the wildlife before we've had a chance to realize a profit from it. (Sachedina, 2008)

While local conditions will determine the highest value alternative use of wildlife and conservation areas, the economic benefit from these uses is likely to be far from zero. For example, in the main trophy hunting areas that often adjoin national parks, there is clear opportunity for this land to be utilized for similar ecotourism purposes as the parks themselves.

Moreover, it is not always clear that the locations where trophy hunting takes place are even financially viable themselves. For example, Lindsay et al. (2012) studied the effect of restrictions on lion hunting on the amount of land where trophy hunting would remain commercially viable across Mozambique, Namibia, Tanzania, Zambia and Zimbabwe. While the study showed that a total ban on lion hunting across all the studied countries would reduce the viability of trophy hunting industries in 14% of the current hunting areas, and a reduction in offtake to previously estimated sustainable levels would reduce viable areas of hunting by 2%, the more interesting finding was that even under existing regulations, trophy hunting was financially viable in only 56% of the total area in which lion hunting was undertaken (Campbell, 2012). This suggests that across 44% of the land used for lion hunting, alternative wildlife uses (like non-consumptive tourism) would be more economically sustainable than trophy hunting. Why

trophy hunting persists at all in these areas is more likely to be a product of political and social pressures, rather than economic ones.

ATTRIBUTING ALL IN-COUNTRY EXPENDITURE TO TROPHY HUNTING

Attributing all 'in-country' expenses of trophy hunters on their travels to the act of trophy hunting assumes that in the absence of trophy hunting, no trophy hunters would travel to these countries to enjoy other tourism experiences. Yet the Southwick (2015) study itself notes that 11% of the hunters answered that they would still travel to that destination country (8% were undecided), and that of the hunters surveyed, over half also participated in photo safari activities in addition to the trophy hunt. Some proportion of the money saved by not hunting on the trip could also be spent in the destination country. An adjustment for this is warranted if a credible estimate of the marginal economic contribution of trophy hunting is sought.

Southwick (2015) also attribute the \$1,000 non-trophy hunting proportion of in-country spending by trophy hunters to hunting itself, reasoning that this spending - on photo-tourism, relaxing, hiking and visiting friends and family - would not occur in the absence of trophy hunting. This equates to 5% of spending attributable to non-trophy hunting activities, which is very low compared to previous hunter surveys.

Samuelsson and Stage (2007), for example, found that non-trophy hunting expenditure by trophy hunters in Namibia ranged from 25-49% of their trophy hunting expenditure, depending on their trophy hunting destination. Jorge et al. (2013) used a wide variety of primary data sources and surveys of hunters and outfitters to examine where hunter's spending during trips to Niassa National Reserve end up, finding that 58% of in-country expenditure is directly hunting related.² Based on these other studies, the share of non-hunting expenditure for international trophy hunters is more likely to be around 40% of total spending, in contrast to the 5% found in the survey by Southwick (2015). The stark contrast between these is suggestive of an over-attribution of spending to the activity of trophy hunting itself in Southwick (2015), and a 35% downward adjustment of their results would provide a trophy hunting-attribution of spending in keeping with previous research.

USE OF ECONOMIC MULTIPLIERS

The use of economic multipliers to total in-country spending to determine total economic benefits (in upstream supply industries for example) is misleading. Southwick (2015) apply economic multipliers for tourism from the World Trade and Tourism Council (WTTC) to their total \$USD 326 million in-country spending estimate to suggest that \$USD 426 million of GDP is attributable to trophy hunting. They also then apply a "GDP to jobs" ratio from WTTC analysis of the tourism sector to generate a figure of 53,000 "direct and indirect" jobs supported by trophy hunting.

² Based on calculations from using Figures 1 and 2, which excluded travel, trophy shipping, and taxidermy. These costs are excluded for the purposes of this calculation because they are largely, ancillary, not fully incurred in the destination country, and in part account for missing information on alternative economic activities available.

For each of the eight study countries, Southwick (2015) first multiply their estimates of average per hunter spending from their survey by the number of licenced international hunters. With this estimate of total spending, they apply the economic multiplier used by the WTTC to inflate direct estimated tourism spending to total direct and indirect economic effects. These multipliers are between 1.1 and 1.8 across the countries studied. They then apply the per dollar ratio in the WTTC reports between total “direct and indirect” economic effects, and the WTTC estimates of total employment effects from tourism spending, to their own estimate to determine the employment effects of trophy hunter’s spending.

This method hides an assumption that in the absence of trophy hunting, all upstream suppliers of economic inputs would leave their resources idle should trophy hunting cease, and conversely, that there are idle resources, such as land, labour, buildings and machines, available at all upstream suppliers that would be brought into production if trophy hunting increased. This method is no longer widely considered to be a valid way to assess economic benefits, particularly in tourism industries (Dwyer et al. 2004; Crompton, 2006).

However, it is possible to give an idea of how employment effects can be inflated by multiplier-type analysis when compared to alternative methods that account for resource constraints and behavioural adjustments. An economic analysis comparing evaluation methods in the case of a South African arts festival found that multiplier methods can overstate employment effect, with a resource-constrained model³ providing an estimate of 29% of the jobs from the multiplier method (van Wyk et al. 2015).

Also, in Queensland, Australia, employment estimates for a new coal mine in the Galilee Basin were estimated to be 10,000 jobs using multiplier methods (GHD, 2013). However, independent estimates using alternative methods with more realistic considerations of economic constraints found that total national job creation was around 1,400, or just 14% of the estimate using multiplier methods (Fahrer, 2015). The enormous difference between these methods arises because the multiplier method assumes that every job created employed someone who was previously unemployed and waiting for work, as did all their upstream suppliers who expanded to accommodate the new mine. In reality however, many of those employed by the growth of any industry will be drawn from the pool of already employed people. If a similar difference in employment effects due to modelling choice applied to the WTTC multiplier estimates, and hence Southwick’s (2015) estimates, the total trophy hunting jobs would be around 7,500 - 15,500 instead of 53,000 (i.e., between 14% and 29% of their estimate using multiplier methods).

A comparison of these two fundamentally different economic approaches should not be confused with simply removing the multiplier used in the Southwick (2015) analysis. There is no prior reason to estimate employment effects using a resource-constrained model to be at least as large as the direct employment

³ There are many classes of such models, often referred to as general equilibrium models. The main difference is that they account for the fact that if resources (like labour, land, buildings and machinery) are not used for one purpose, that there will be a second-best use of them that they will instead be utilized for when that first-best purposed is no longer available. Thinking about this in reverse, it means that if a new more profitable industry emerges, that it will have to compete to attract workers, machines, buildings and so forth away from their existing uses in other industries, meaning net effect of this new industry on overall economic activity must account for these forgone uses of resources.

in that industry, as both those employed directly as well as indirectly will have other options available to them.

ADJUSTING THE SOUTHWICK (2015) ESTIMATE

Taking into consideration these methodological shortcomings, it is possible to use Southwick's (2015) own data, along with the main findings in the literature, to generate a reasonable estimate of the *marginal* economic benefits of trophy hunting. Table 1 presents these adjustments.

The first row of Table 1 is the total direct trophy hunter expenditure in each country from Southwick (2015, p. iv). The next row adjusts for the fact that 89% of surveyed trophy hunters that said they would not travel to the destination country if they were unable to trophy hunt, meaning that according to Southwick (2015) 11% are likely to travel to the study countries for tourism and non-consumptive safaris. Row two assumes a trip is made with the same total spending. The third row adjusts for the share of non-trophy hunting related expenditure in each trip that appears underestimated. Because there is little information to go on about the average economic value of alternative uses of land and wildlife, the next four shaded rows show a range of scenarios about what the marginal economic benefit from trophy hunting would be when the next best alternative use of resources has economic benefits of 30%, 50%, 70%, or 100% as large as trophy hunting benefits. Obviously when the next best use of wildlife and conservation land resources is the same as trophy hunting there is zero marginal benefit.

TABLE 1: ADJUSTMENTS FOR METHODOLOGICAL PROBLEMS IN SOUTHWICK (2015).

		BOTSWANA	ETHIOPIA	MOZAMBIQUE	NAMIBIA	SOUTH AFRICA	TANZANIA	ZAMBIA	ZIMBABWE	TOTAL
HUNTER RECEIPTS	(\$USDm)	7.2	0.4	8.8	105.0	141.2	16.4	8.2	39.4	326
NON-HUNTING VISITS	(x0.89)	6.4	0.4	7.8	93.5	125.7	14.6	7.3	35.1	291
NON-HUNTING SPEND	(x0.65)	4.2	0.2	5.1	60.7	81.7	9.5	4.7	22.8	189
ECONOMIC BENEFIT OF ALTERNATIVE USE	30%	2.9	0.2	3.6	43	57	6.6	3.3	16.0	132
	50%	2.1	0.1	2.5	30	41	4.7	2.4	11.4	95
	70%	1.2	0.1	1.5	18	25	2.8	1.4	6.8	57
	100%	0	0	0	0	0	0	0	0	0
TOTAL EMPLOYMENT	No.	316	503	10,690	8,367	12,742	14,161	783	5,861	53,423
ADJUSTED NET EMPLOYMENT	(x0.14)	44.2	70.4	1,496	1,171	1,783	1,982	109	820	7,479
	(x0.29)	91.6	145.9	3,100	2,426	3,695	4,106	227	1,699	15,492

All values in \$USD million.

In Table 1 the use of multipliers on economic benefit measures is ignored because of their inherent flaws. To give an indication of the potential overestimate of the employment effects from the multiplier methods used by Southwick (2015), the last two rows take their employment estimates, and adjust by the difference observed in the earlier-discussed studies which showed that alternative economic assessment methods generate only 14 to 29% of the number of jobs compared to the multiplier method. While the exact ratio will not be the same in the case of trophy hunting, this adjustment gives an approximation for the potential scale of the overestimation of employment effects.

These adjusted figures bring us closer to a useful figure for understanding the marginal economic value of trophy hunting, and therefore closer to understanding the potential size of the economic gains from trophy hunting that may be captured for conservation. Indeed, the Southwick (2015) report estimates that only \$USD 27 to 40 million of their approximated economic benefits of trophy hunting, or only between 6 and 9%, can be regarded as potentially contributing to conservation.⁴

In sum, the above exercise illustrates the effect of the three main methodological flaws in Southwick (2015). Adjusting their own data to account for the marginal economic benefit of trophy hunting across the eight study counties provides a value between zero and \$USD 132 million. The number of jobs supported by trophy hunting is likely to be between 7,500 and 15,500. This is a different story of economic significance from the Southwick estimates of \$USD 426 million in benefits and 53,000 jobs.

TROPHY HUNTING IN CONTEXT

The core problem of Southwick's (2015) analysis is that it does not estimate the marginal economic impact of trophy hunting, and thus overstates the economic importance and any changes to trophy hunting regulations. Aside from this, the claim is that the estimate of economic activity associated with trophy hunting is economically significant. To allow the reader to judge for themselves the significance or not of trophy hunting based on Southwick's (2015) estimates, this section compares those estimates with estimates of overall tourism spending and other economic aspects of the eight study countries.

Even ignoring the fundamental methodological problems with the Southwick study previously discussed, we see that current size of economic activities related to trophy hunting are a small part of the overall tourism economy of the study countries, which is itself a relatively small part of the overall economy of those countries.

TROPHY HUNTING AND VISITOR NUMBERS

The Southwick estimate of trophy hunters traveling to the eight study countries was 18,815. These countries attract high numbers of tourists, with almost 18 million tourist arrivals per year on average between 2003 and 2013, as shown in Table 2 below. There are 1,000 tourists for every trophy hunter on average.

⁴ The Southwick report cites that this estimate does not include portions of trophy fees that are already included in the trophy hunting package cost and admits that "this area of research deserves dedicated in-depth analysis. . ." (Southwick, 2015, pg. 18).

TABLE 2: TROPHY HUNTING TOURIST ARRIVALS IN CONTEXT

	BOTSWANA	ETHIOPIA	MOZAMBIQUE	NAMIBIA	SOUTH AFRICA	TANZANIA	ZAMBIA	ZIMBABWE	TOTAL
HUNTER ARRIVALS	350	21	428	7,076	8,387	794	398	1,361	18,815
TOTAL TOURIST ARRIVALS	(million) 1.58	0.58	1.2	1.13	9.36	1.05	0.89	1.81	17.6
HUNTER TOURIST SHARE	(%) 0.02	0.00	0.02	0.63	0.09	0.08	0.04	0.07	0.11
MEAN TOURIST GROWTH	('000/yr) 13.8	50.1	144.5	48.1	51.1	303.2	50.2	-42.3	669.4
EQUIV. DAYS TOURIST GROWTH	(days) 9.3	0.2	1.1	54	60	0.9	2.9	-11	10.3

Source: Southwick (2015) and WTTC (2016). Mean tourist growth is from 2003-2013 where data for all countries is complete. Foreign trophy hunter arrivals are estimates for average annual from 2012-2014 from Southwick (2015), Table 16. Total tourist arrivals from World Tourism Organization, Yearbook of Tourism Statistics, 2003-2013 average for arrivals.

Table 2 shows that South Africa and Namibia have the highest number of foreign trophy hunters at over 15,000 between them. Outside of these countries, Southwick estimates that only Zimbabwe had over 1,000 trophy hunter arrivals. By contrast, WTTC figures show that South Africa had over nine million total tourist visitors, while all other countries had around 1 million visitors each. Only in Namibia do trophy hunters represent a larger share of arrivals, or 0.63 percent. In other words, in Namibia there are 160 tourists for every trophy hunter, while in the other study countries there are 1,430 tourists for every trophy hunter.

The final two rows in Table 2 provide some perspective on the relative size of the foreign trophy hunting cohort compared to overall tourist arrivals. Mean tourist growth shows the average annual increase in tourist arrivals from 2003 to 2013. The final row, equivalent days in tourist growth, is an estimate of how long it takes for total tourist arrivals to grow by as much as the total annual number of foreign trophy hunter arrivals. That is, the average increase in tourists each day in Mozambique exceeds the total annual foreign trophy hunter arrivals. For the more established trophy hunting markets of Namibia and South Africa, this was 54 and 60 days, meaning that just the growth over a year in tourist numbers is about six times larger than a year's worth of trophy hunting tourists.

The growing popularity of these African countries among non-trophy hunting tourists is more clearly shown in Figure 4, which shows the trend in tourist numbers in the study countries in since 1996, but also includes Kenya, which has had a trophy hunting ban in place since 1977.⁵ Including Kenya in the

⁵ In 2014 Botswana banned all commercial hunting, though it had already removed lions from its hunting quota between 2001-2004 and from 2008 (Lindsey et al. 2013). Zambia imposed a moratorium on elephants and big cat

remaining analysis provides a point of comparison about the bigger overall tourism trends that are occurring in Africa, which also rely on non-consumptive wildlife use to some degree.

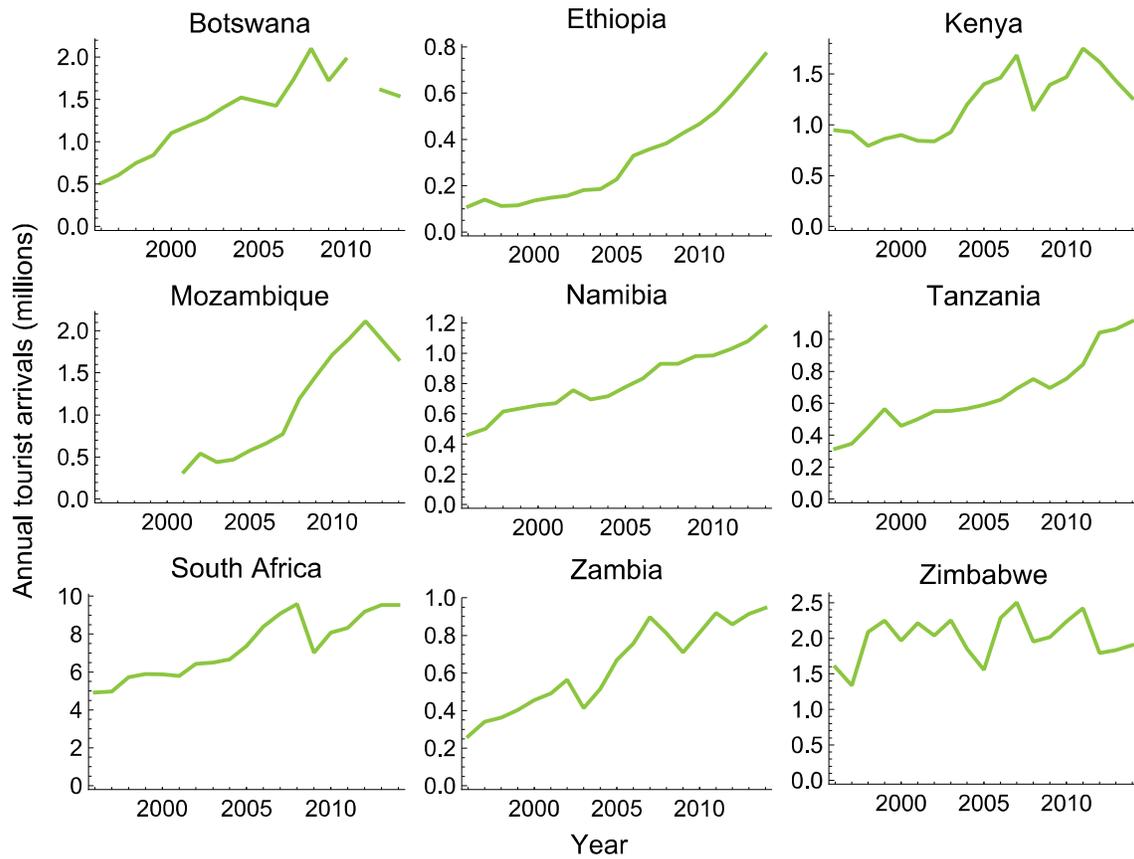


FIGURE 4: TOTAL TOURIST ARRIVALS IN STUDY COUNTRIES AND KENYA, 1996-2015 (WTO, 2016)

Overall the study countries have seen large increases in their tourist arrivals, though the tourism industry is a relatively small part of each economy because the tourism sector is between 2.8% and 5.1% of GDP in the study countries.

TROPHY HUNTING AND VISITOR SPENDING

In addition to putting into context the number of trophy hunters, we can provide some context on their estimated total spending compared to the overall tourism industries in the study countries. While Southwick (2015) suggest that their \$USD 326 million of direct spending by trophy hunters is a large and important part of the tourism sectors of the eight study countries, it is less than 2% of the overall \$USD 17 billion in direct tourist spending in these countries. Table 3 below compares the Southwick (2015) estimates in the first row, with earlier estimates compiled by Lindsey et al. (2007a) in the second row, and the overall tourism spending in the third row.

hunting in 2013, while Tanzania cut the lion quota by almost half between 2008 and 2012 (Lindsey et al. 2013, ZAWA, 2014).

Overall, the share of tourist spending from trophy hunters is low, ranging from nearly 0% in Ethiopia, to a high of 10.5% in Namibia, which is shown for each study country in the first shaded row of Table 3. Some of the Southwick (2015) estimates of spending by hunter tourists seem implausibly high in some of the countries. When a per tourist adjustment is made based on arrivals data from Table 2, it appears Southwick is claiming that the average trophy hunter is spending often more than 100x as much as the average tourist. While trophy hunters probably do spend much more than the average tourist, the upper end estimates implied here seem abnormally high compared to lower ratios seen in more developed trophy hunting industries of Namibia and South Africa.

TABLE 3: TROPHY HUNTER SPENDING IN THE CONTEXT OF OVERALL TOURISM SPENDING

		BOTSWANA	ETHIOPIA	MOZAMBIQUE	NAMIBIA	SOUTH AFRICA	TANZANIA	ZAMBIA	ZIMBABWE	TOTAL
HUNTER SPEND (SOUTHWICK)	\$USDm	7.2	0.4	8.8	105.0	141.2	16.4	8.2	39.3	326.5
HUNTER SPEND (LINDSEY)	\$USDm	20.0	1.3		28.5	100.0	27.6	5.0	16.0	198.4
TOURIST RECEIPTS	\$USDm	36	1,980	224	598	11,202	1,754	518	749	17,061
HUNTER TOURIST SHARE	(%)	20.0%	0.0%	3.9%	17.6%	1.3%	0.9%	1.6%	5.2%	1.9%
HUNTER / AVERAGE		904	6.0	110	28.0	14.1	12.3	35.4	69.7	17.9

Source: Southwick (2015) in 2012\$USD, Lindsey et al. (2007) in 2004\$USD, and WTO (2016). 'Tourist receipts' is the mean estimate by WTTC from 2005 to 2012. This adjustment is necessary because the data variability is extremely high.

Figure 5 shows the trend in total tourist spending in the study countries since 1996, along with Kenya, which has had a trophy hunting ban since 1977. The two lines for each country represent two data sources for international tourism spending, with the inconsistencies between the two lines indicating just how poorly understood the overall economies of these countries are.⁶ Overall there is fairly strong growth, though volatile and dependent on local and international economic and political factors. Like the data on trophy hunting, establishing reliable estimates of overall tourist spending is also a challenge in the study countries, as they have limited capacity for large scale statistical surveys. Despite this, these trends allow us to show the relative size of the total spending by trophy hunting tourists in the main trophy hunting countries of Namibia and South Africa. Between 2007 and 2012 tourism spending grew by more than Southwick's (2015) estimate of annual trophy hunting spending (\$326 million), and by four times as much as other estimates of trophy hunter spending (Lindsey et. al. 2007). In South Africa, just the growth in total tourism spending was \$2 billion between 2007 and 2012, which is fourteen times larger than the

⁶ The solid line is World Travel and Tourism Council (WTTC) data of international tourism spending in \$USD2015 prices, while the dashed line is World Trade Organization (WTO) data in \$USD2015 prices. WTTC data is used in the Table 3.

general estimates of the size of the trophy hunting industry in that country by Southwick (2015). Indeed, In Figure 5 we can see that Kenya has had sustained growth in tourism spending despite a long-term ban on trophy hunting.

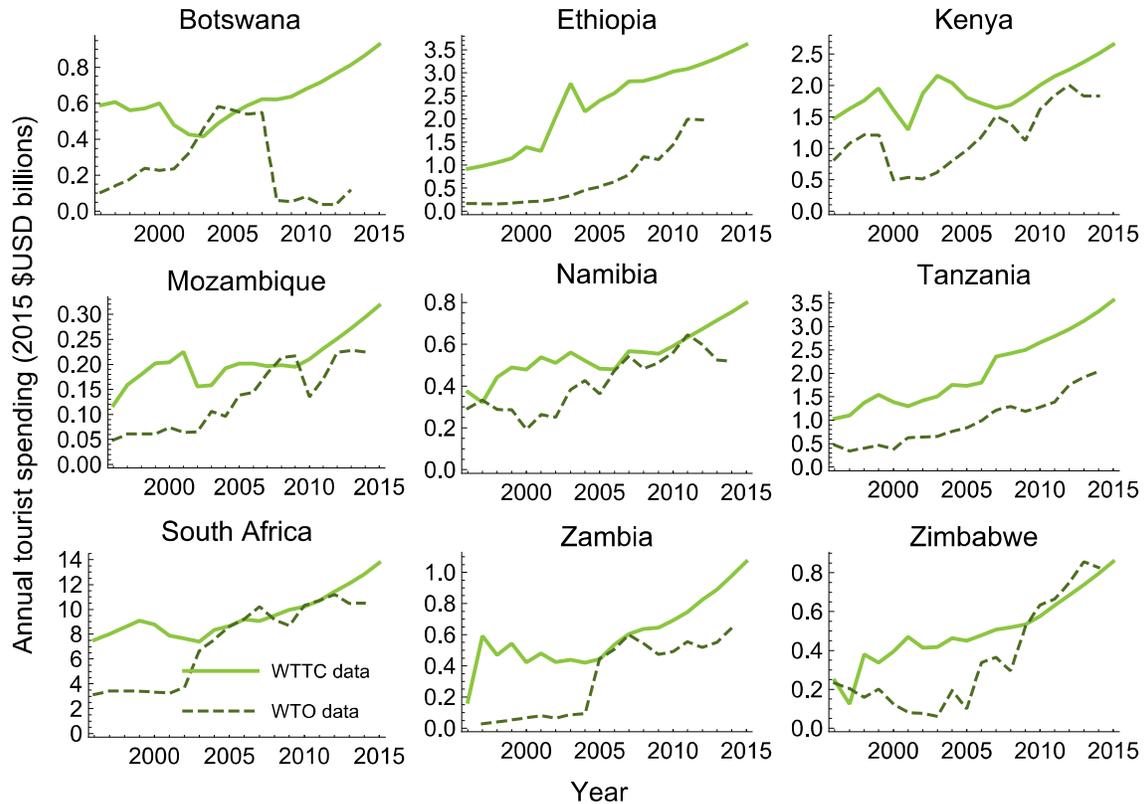


FIGURE 5: DIRECT TOURIST SPENDING, STUDY COUNTRIES AND KENYA, 1996-2015 (WTO, 2016; WTTC, 2016).

When the claimed size of trophy hunting tourist spending is put in the context of overall tourism, it is again shown to be relatively small, and certainly cannot be claimed to be a significant source of tourism growth, as the Kenyan experience shows.⁷

TROPHY HUNTING AND EMPLOYMENT

In addition to putting into context the number of trophy hunters, we can provide insights on their estimated share of overall tourism employment in the study countries. Recall that Southwick (2015)

⁷ Some trophy hunting advocacy groups cite current wildlife population declines in Kenya as an example of why trophy hunting should not be prohibited, but instead reinstated in Kenya. However, the very reason for the 1977 ban was the massive decline in wildlife populations when there was a poorly regulated trophy hunting industry and corruption, along with widespread poaching. In the three years prior to the ban, elephant numbers declined by half. Many studies show that reduced wildlife numbers since the trophy hunting ban have arisen due to human encroachment of land, the small size of conservation areas, and continued poaching (Ogutu et al. 2011, Ottichilo et al. 2000). These are challenges faced by all eight studied countries. Recent partial or complete bans on trophy hunting have been enacted in Botswana and Zambia. This was in response to species population declines, demonstrating that trophy hunting has not delivered the promised conservation successes to countries that continued to allow hunting after Kenya’s ban.

included only the total direct and indirect employment using multiplier from WTTC; a method that is no longer considered credible among economists. Adjusting back these estimates by the multiplier used provides their own estimate of direct employment effects of 19,733 jobs (see row 3 of Table 4). This is still higher than the range estimated earlier in this analysis using adjustments from other studies (see section titled *Use of Economic Multipliers*) which have compared the multiplier method with resource-constrained methods.

TABLE 4: TROPHY HUNTING EMPLOYMENT CONTRIBUTION COMPARED TO OVERALL TOURISM

		BOTSWANA	ETHIOPIA	MOZAMBIQUE	NAMIBIA	SOUTH AFRICA	TANZANIA	ZAMBIA	ZIMBABWE	TOTAL
HUNTING EMP. (DIRECT & INDIRECT)		316	503	10,690	8,367	12,742	14,161	783	5,861	53,423
MULTIPLIER		2.2	2.5	2.6	4.3	2.2	3.0	2.9	2.3	2.7
HUNTING EMP. (DIRECT)		144	201	4,112	1,946	5,792	4,720	270	2,548	19,733
14% ADJUSTMENT		44	70	1,497	1,171	1,784	1,983	110	821	7,479
29% ADJUSTMENT		92	146	3,100	2,426	3,695	4,107	227	1,700	15,493
TOURISM EMP. (DIRECT)	('000)	28	1,001	247	25	661	340	85	202	2,589
HUNTING SHARE EMP.	(%)	0.51	0.02	1.66	7.78	0.88	1.39	0.32	1.26	0.76
HUNTING / AVERAGE EQIV. MONTHS TOURIST GROWTH		23.2	5.6	46.7	12.4	9.8	18.4	7.1	16.8	7.1
		2.0	0.05	4.6	15.9	3.8	3.9	0.7	3.0	1.7

Source: Southwick (2015) and WTTC (2016).

Despite their methodological limitations, the direct employment estimates derived from Southwick (2015) in row 3 of Table 4 can be compared with WTTC data on overall direct employment in tourism in the study countries to provide context on the relative size of the trophy hunting industry. Total direct tourism employment is estimated to be around 2.6 million. Put another way, 132x as many people are employed in non-trophy hunting tourism than in the trophy hunting industry. The first shaded row of Table 4 shows that trophy hunting tourism represented 0.76% of direct tourism employment on average (19,733 is 0.76% of 2,589,000), and is most significant in Mozambique (1.7%), Namibia (7.8%), and Tanzania (1.4%).

The second to last row of Table 4 provides a check on the plausibility of the Southwick estimates by showing the ratio of the number of direct jobs supported by a single trophy hunter tourist, compared to the average tourist. The ratio of 47x in Mozambique seems exceptionally high, and Botswana's estimate of 23x is also on the high side, compared to the other estimates of 6 to 18 times in other countries.

Again, perspective on the significance of claimed employment supported by trophy hunting tourism can be assessed by comparing it with how long total tourism employment grows by that amount. The final row of Table 4 does this, and we can see that typically employment in the tourism sector grows by as much as total trophy hunting tourism in just a few months, the exception being Namibia, where it takes almost a year and a half.

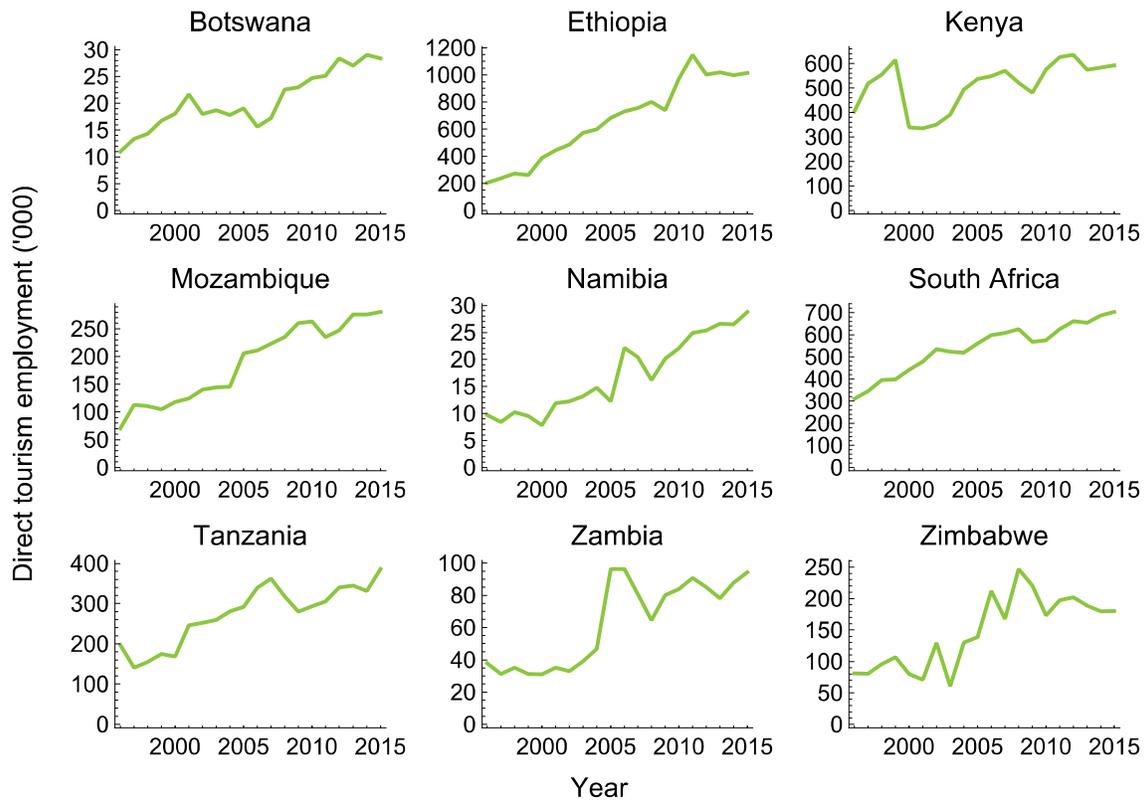


FIGURE 6: DIRECT TOURISM EMPLOYMENT IN STUDY COUNTRIES AND KENYA (WTTC 2016)

TOURISM IN CONTEXT

It is important to put into context the potential economic size of trophy hunting within the wider context of tourism growth in the study countries. In many cases the tourism drawcard for African nations is the abundance of wildlife in conservation areas. Ecotourism operators in Kenya, for example, are strongly opposed to the reintroduction of trophy hunting, which they believe will depress demand for their own tourism ventures (Elliot and Mwangi, 1998; Ngonyo, 2013). Because trophy hunting is such a tiny part of the overall tourism sector, with little scope for sustained future growth, even a small effect of trophy hunting deterring growth in other tourism uses may overwhelm its own economic benefits.

As a proportion of the national economies of the eight study countries, tourism-generated employment is most significant in South Africa and Ethiopia, with Kenya, having the third largest tourism sector. Yet while many factors are involved in determining tourism demand, including the political climate and

international economic conditions, it is worth comparing the recent trends, and in particular, comparing the tourism industries of the eight study countries with Kenya, where trophy hunting has been banned for four decades. Table 5 makes this comparison.

TABLE 5: SUMMARY OF TOURISM IN RELATION TO TOTAL OUTPUT

	BOTSWANA	ETHIOPIA	MOZAMBIQUE	NAMIBIA	SOUTH AFRICA	TANZANIA	ZAMBIA	ZIMBABWE	KENYA
GDP (2014 \$USD BN)	15.9	55.6	16.9	12.8	349.9	48.0	27.0	14.2	61.4
TOTAL TOURISM SPEND (2014 \$USD BN)	0.7	1.2	0.7	1.0	12.4	0.8	0.7	0.7	2.4
TOURISM SHARE GDP (%)	4.1	4.1	3.1	2.8	3.0	3.6	3.0	5.1	3.9
TOURISM DIRECT SHARE EMPLOY. (%)	3.2	3.7	2.4	3.5	4.5	3.0	1.6	3.2	3.6
TOURISM GROWTH 2000-2014 (%)	9.1	11.5	14.6	22.4	4.6	7.2	7.7	16.4	9.5
GDP GROWTH RATE 2000-2014 (%)	4.4	9.2	7.8	5.0	3.0	6.7	6.8	-0.8	4.7

Sources: WTTC (2016) and World Bank (2016). Growth rates are mean annual.

Ethiopia has the smallest trophy hunting industry of the study countries, while Kenya has no trophy hunting industry, and South Africa has the largest trophy hunting industry. Overall there is no significant correlation between size of each country's trophy hunting industry and either tourism growth rates, GDP growth rates, or tourism share of GDP (statistical tests were run on all of these possible relationships). If trophy hunting truly was even a small but significant economic part of the tourism picture of these countries, some correlation would be expected.

Earlier it was shown that even the most generous estimates of trophy hunting tourism, which made no attempt to control for the marginal contribution of trophy hunting only, were around 1.9% of overall tourism spending, and 0.1% of overall tourist arrivals. Given that tourism accounts for between 2.8% and 5.1% of GDP, the broader economic significance of trophy hunting is low, accounting for about 0.03% of GDP.

CONCLUSIONS

The marginal economic benefit of trophy hunting is not well known, and rarely studied. Pro-trophy hunting organisations often present estimates of gross economic activity associated with hunting to promote their view that trophy hunting equals conservation because of its economic value. However, given past experiences of unsustainable trophy hunting leading to serious population declines and ultimately bans on trophy hunting, one cannot automatically conclude that simply because there are economic activities associated with trophy hunting, that this is inherently benefiting conservation.

The most recent attempt to understand the economic significance of trophy hunting by Southwick (2015) claimed that overall economic benefits of trophy hunting in eight countries was \$USD 426 million. This estimate suffered from several methodological flaws that meant it grossly overstated the economic contribution of trophy hunting. The overarching reason the study was unable to show the economic contribution of trophy hunting was that the analysis provided an estimate of the gross economic activity associated with trophy hunting, rather than the marginal economic benefit of trophy hunting.

Estimates of marginal economic benefits must necessarily consider the next best alternative use of resources, and thus are useful for evaluating management options for wildlife and conservation areas. Estimates of gross economic activity associated with an activity are not themselves informative in this regard. Furthermore, Southwick (2015) does not account for the fact that 11% of the trophy hunters were likely to visit the African study countries and engage in other tourism activities even without the option to trophy hunt. Southwick (2015) also used multipliers to assume that businesses offering trophy hunting would find no alternative income source should trophy hunting be more tightly regulated; an economic analysis tool no longer widely accepted by economists.

Adjusting for the methodological shortcomings in Southwick (2015) shows that trophy hunting does not contribute \$426 million to the study economies as claimed, and that the marginal economic contribution of trophy hunting is likely in the range between zero and \$USD 132 million, depending on the alternative uses of land and wildlife resources. Meanwhile, trophy hunting activities do not generate 53,000 jobs as claimed but rather between 7,500 and 15,500 jobs. Lastly, regardless of what the marginal economic benefit of trophy hunting truly are, even if they are highly positive, this does not automatically provide incentives for wildlife conservation. Indeed, the Southwick (2015) study is cautious not to claim a direct link between trophy hunting and wildlife conservation, offering a rough estimate that only between \$USD 27 and 40 million potentially contribute to funding conservation in the eight study countries.

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