

## A preliminary economic valuation of the sport fishing industry of New Caledonia



*This article reviews data from a sport fishing business in New Caledonia. It shows that the estimated direct economic value of this business alone is AUD 125,000 per year and the estimated indirect economic value generated is between AUD 113,000 and AUD 359,000 per year.<sup>1</sup> It is thought that New Caledonia could support up to 10 sport fishing businesses, which suggests an estimated potential direct economic value of sport fishing in New Caledonia of AUD 1.25 million and an indirect economic value of AUD 1.13 million to AUD 3.59 million per year. The analysis further suggests that for every AUD 51,000 of total economic value generated, one job is created or supported. The article demonstrates that sport fishing has the potential to add significant value to an economy as well as support local jobs not only within the sport fishing industry, but also in the wider economy.*

### Introduction

Sport fishing has huge global potential; the World Bank (2012) estimates that sport fishers spend over USD 190 billion per year globally, yet only 10% of sport fishers are outside OECD countries. In Costa Rica, for example, in 2008, foreign anglers contributed USD 279 million to the economy compared with USD 17 million from the commercial capture fishery. The report further suggests that sport fishing can achieve an impressive return on investment of more than 300%. Catch and release sport fishing<sup>2</sup> has the potential to provide some strong localised benefits and alternative livelihood options for communities across the Pacific and is already an active industry in a number of countries. The Pacific Community (SPC) assists member countries to develop tourist-focused sport fishing as an alternative livelihood and to help protect fish resources and ecosystems. SPC has been involved in feasibility studies in countries such as Cook Islands (Aitutaki), Papua New Guinea (PNG)

(Kavieng) and Palau. The organisation promotes best fish-handling practices for sport fishing and has trained guides in Cook Islands, PNG, Niue and New Caledonia.

This article presents a summary of the analysis of data collected by a single operator in New Caledonia – Blue Calédonie Fishing Trips (BCFT). It provides an overview of the data collected through simple tourist questionnaires that are administered at the end of their visit to New Caledonia. It goes on to provide an estimate of the total economic value of BCFT and the target species.

### Context: Tourism in New Caledonia

Data collected and published by the *Institut de la Statistique et des Études Économiques* (ISEE) in New Caledonia recently showed growth in visitor numbers: 107,000 visitors were recorded in 2014, increasing to 114,000 visitors in 2015.<sup>3</sup> Fifty-three per cent of the visitors came with the express reason of vacationing in New Caledonia, 23% came

<sup>1</sup> All figures expressed in AUD were converted from XPF at an exchange rate of 80 XPF = 1 AUD

<sup>2</sup> 'Catch and release fishing': fish are released almost immediately after capture, alive and unharmed.

<sup>3</sup> Data collected at Tontouta Airport and therefore excludes sail and cruise passengers.

Detailed tables found at <http://www.isee.nc/economie-entreprises/entreprises-secteurs-d-activites/tourisme>

to visit friends and family, 13% to conduct business and 11% for unknown reasons.

While the visitor make-up varied from month to month in 2015, visitors arriving by plane to New Caledonia mostly came from France (33%), Australia (18%), Japan (18%) and New Zealand (7%).

In 2014, total tourist spending was estimated at AUD 275 million – 34% of which was the cost of international travel – meaning total domestic spending was approximately AUD 180 million. Six per cent of domestic spending, or AUD 11 million, was spent on ‘hobbies’ (including fishing), and the greatest spending categories were accommodation (42%) and food and drink (19%).

Detailed reasons for visiting and spending patterns are not published and therefore we cannot use this data to determine the size of the recreational fishing industry in New Caledonia. However, unpublished data from ISEE indicates that as of December 2015, there were about 200 employees working in the fishing industry, although most of these were likely to be in the commercial fishing industry and not the recreational or tourist-focused fishing industry. There are also unregistered fishing guides operating in New Caledonia that some tourists may use but we do not have data to provide an estimate of the size of this informal market.

### Case study: Data description

Data were collected from 25 group sport fishing trips operated by Blue Calédonie Fishing Trips (BCFT) during the 2014–2015 period.<sup>4</sup> These trips involved a total of 59 fishers – 12% of which were New Caledonian locals and the rest from across the world. The clients spent a total of 348 nights in New Caledonia, with an average trip duration of just under six nights.

While this is a small sample of a single business and the data cannot be taken as representative or conclusive, it provides an indication of the potential income from sport fishing for small businesses.

A total of 11 different nationalities were represented in the data. Twenty four percent of visitors were from Australia, 15% from France, 13% New Zealand, 13% Russia and 12% were local to New Caledonia ( see Figure 1). Notably, the business did not get any clients from the 20,000 Japanese visitors who come to New Caledonia annually; this could be for a range of reasons including language and cultural factors. However, more research should be done to identify if this could be a potential market.

Information was not collected on the primary purpose for visiting New Caledonia, but total nights in New Caledonia and number of days fishing were collected. We have therefore assumed that fishing was the primary purpose of a visit to New Caledonia if more than 50% of visitors’ time in New

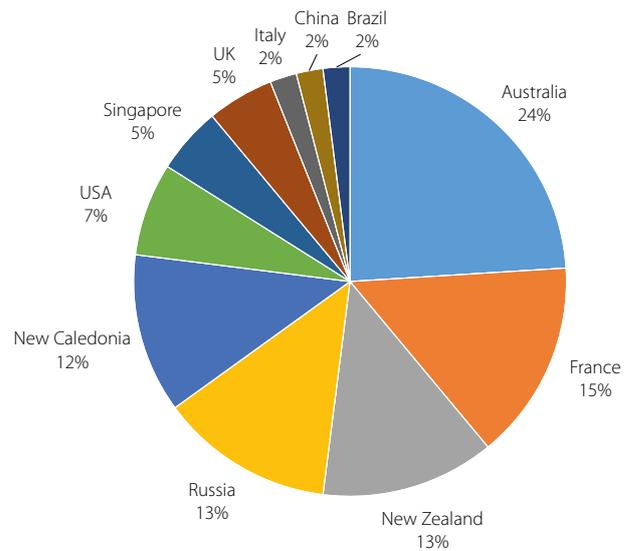


Figure 1. Nationality of Blue Calédonie Fishing Trips clients (n = 59).

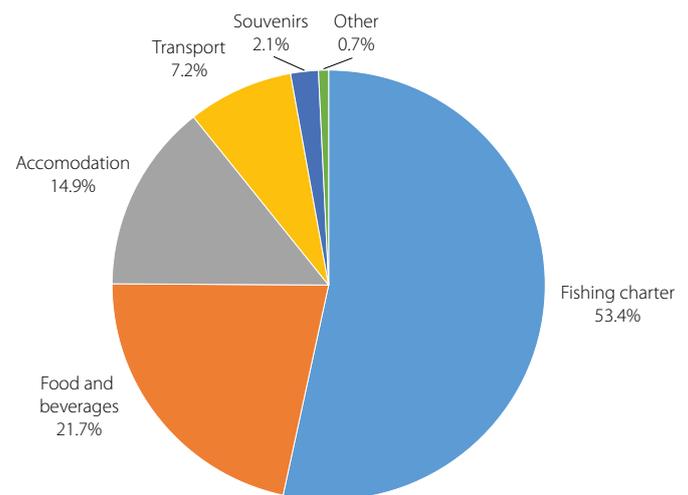


Figure 2. Breakdown of expenses by Blue Calédonie Fishing Trips clients (n = 59).

Caledonia was spent fishing. The data thus shows that 87% of foreigners who went fishing with BCFT visited New Caledonia for the express purpose of fishing.

Total spending in New Caledonia by the 25 groups was AUD 250,000, equating to an average outlay per person, per night of AUD 850. The break down on client spending was 53% on charter costs, 15% on accommodation and 22% on food and drink. Local transport and souvenir spending made up a small amount of spending (Figure 2).

The spending data from the 87% of the visitors primarily coming to New Caledonia because of the availability

<sup>4</sup> Ten trips occurred in 2015, 15 in 2014

of fishing-related activities indicate that for every AUD 1 spent directly on sport fishing, AUD 0.76 is spent on related expenses such as accommodation and food.

The clients targeted two species of fish for which New Caledonia is known – the bonefish (*Albula glossodonta*) and the giant trevally or GT (*Caranx ignobilis*). The 25 groups caught a total of 391 GT and 61 bonefish. GT was the most popular species, with 22 groups targeting it including four groups that targeted both GT and bonefish. Bonefish-only fishers accounted for just 3 groups or 6 people. Local clients targeted only GT and not bonefish, likely because bonefish can be shore caught, which is an activity they can eventually do by themselves. Seventy-four per cent of international clients targeted GT only. As a result, GT fishing led directly to 276 visitor nights and bonefish fishing to 80 visitor nights. The average nightly spend was AUD 810 for a GT fisher and AUD 720 for a bonefish fisher. Charter costs were substantially lower for bonefish fishers; however, on average they spent 50% more compared with GT fishers on food and beverage.

## Economic impact

The economic impact of any activity can be divided into two categories: Direct effects and indirect effects. Together these effects make up the total economic effect of any activity. This is not strictly equivalent to national accounting for tourism and should not be taken as a measure of such.

**Direct effects or direct economic value (DEV):** Clients directly contribute to the economy through their spending on activities related to the activity of interest. In this case, it would cover charter costs, accommodation, food and beverage, souvenirs, and taxes among others.

**Indirect effects or indirect economic value (IEV):** Tourist spending allows businesses and employees to make expenses in other branches of the economy. For example, businesses will pay for other goods or services in support of their businesses such as suppliers, mechanics, accountants, outfitters, mariners, advertising and others. Individuals who are employed in the businesses will also spend their income on items such as food, housing, transport, clothing, entertainment and others.

In this study we assume that the total expenditure figures provided in the case study data represent the tourist consumption and as such approximate the DEV of BCFT as AUD 125,000 per year, or an average of AUD 850 per person night. The business also provides employment for one person plus ad hoc employment for others, depending on the number of people fishing. Data on the cost of international flights were not collected; however, tourist data from New Caledonia shows that international flights made up 34% of total spending. This suggests that BCFT clients

paid AUD 66,000 for flights. This spending, however, is excluded from the headline calculations because much of this spending may be outside New Caledonia – although AirCalin, the New Caledonia international airline company, can be expected to capture some, but not all, of this spending.

Estimating IEV using usual economic techniques is not an option because of the absence of detailed input–output tables, or econometric models for the New Caledonian tourist industry. In this situation, the best alternative is to use IEV figures from studies made in comparable countries. Given that most Pacific islands lack these detailed models, tables and studies, we had to rely on studies made in other parts of the world and transfer these values to the Pacific. These studies define the values that can be used to calculate the IEV and the employment impacts from an observed DEV. These values are termed ‘multipliers’, and a brief summary of some of the research literature is as follows:

- Ditton and Stoll (2003) use the assumption that indirect effects for the US billfish sport fishing industry are between 1.5 and 2.5 times that of the direct effects.
- A study in Belize on the economic impact of bonefish fishing (Fedler and Hayes 2008) showed that US studies returned higher multipliers than those from developing countries. The research that is quoted suggests that in the US, on average, indirect effects are 2.9 times those of the direct effects. However, it is suggested that this figure is likely to be lower in Belize, and Fedler and Hayes (2008) use a conservative figure of indirect effects being 1.22 times that of observed direct effects.
- The World Bank (2013) estimates that multipliers are far lower in developing countries compared with developed countries and estimate that for developing countries indirect effects are between 0.9 and 1.9 times that of direct effects.
- Seidel and Lal’s (2010) study of the economic value of the Pacific Ocean to Pacific Island countries and territories (PICTs) estimates much higher IEVs for tourism in PICTs than suggested by the literature above. Seidel and Lal (2010) estimate that the indirect economic value created from tourism in the Pacific to be 2.62 times the direct effects for Vanuatu, 2.87 times for Fiji and 3.5 times for Kiribati.

The second indirect impact that we are interested in is the employment created elsewhere in the economy. The literature also provides some data to allow us to estimate the number of jobs created or supported by a tourist-focused business.

Fedler and Hayes (2008) estimate that in Belize for every USD 1 of IEV,  $2.2 \times 10^{-5}$  jobs are supported or created. This means that for every USD 40,000 (AUD 51,000) of IEV one job is created or supported in the wider economy.



The giant trevally is, as bonefish, an iconic species that draws anglers to New Caledonia (image: ©Carl McNeil, 2014).

Seidel and Lal (2010) take a slightly different approach to calculating the numbers of jobs created or supported. They estimate the number of people directly employed by the tourist business, and from this calculate the number of jobs that exist elsewhere in the economy. They conclude that for one person employed in the tourist industry approximately three jobs exist elsewhere in the economy, with an estimated economic multiplier that ranges between 2.59 and 3.80.

This is complicated further by the mix of accommodation and eating options associated with tourism in New Caledonia; for example, locally owned and run guest houses, camp sites, bars and restaurants are likely to have a far higher economic multiplier than those owned by foreigners, foreign companies or large corporations. Therefore, multipliers from sport fishing will certainly be much higher when guests stay in local accommodation and frequent locally owned and run establishments. These local factors are important considerations when designing sport fishing projects that have the objective of maximising the local economic benefits. Small economies, such as New Caledonia, may have smaller multipliers because they source many goods and raw materials from outside the country; therefore, more money ultimately flows out of the country.

The direct economic value of BCFT per year was calculated at AUD 125,000 per year or AUD 850 per night. Given the discussion above regarding the complications associated with calculating indirect effect multipliers, to be conservative and with the acknowledgement that the multipliers presented are not perfectly applicable to New Caledonia, we have used the lower multiplier from the literature that has an IEV multiplier of 0.9. As a result, the IEV of BCFT is estimated at AUD 113,000 or AUD 765 per night. If we use the less conservative multiplier of 2.87 calculated by Seidel and Lal (2010) for the tourism industry in Fiji, the annual IEV of BCFT would be estimated at AUD 359,000.

To be conservative we estimate the number of jobs created or supported by BCFT in the wider economy by using the lower job multiplier suggested by Fedler and Hayes (2008) of AUD 51,000 per job created or supported. This suggests that because of BCFT, 2.2 jobs exist elsewhere in the economy. Full-time equivalent employment at BCFT is 1.02 people<sup>5</sup> and therefore using the average multipliers suggested by Seidel and Lal (2010), the business could support as many as 3.06 jobs in the wider economy. The total number of jobs created or supported by BCFT is thus between 3.22 and 4.08 full-time equivalent jobs.

<sup>5</sup> The business employs two people but on an ad-hoc basis. As such, the full time equivalent rate is calculated on the number of fishing days per year, which was an average of 118, scaled to a full year of 231 working days.

## Potential of the sport fishing industry in New Caledonia

It is estimated that New Caledonia could support approximately ten charter fishing operators similar to the one used for this case study, while maintaining good environmental and resource standards (E. Picquel, personal communication, August 2016). Assuming that the figures above are transferable to these potential sport fishing businesses, sport fishing has a potential direct economic value to New Caledonia of AUD 1.25 million and an indirect economic value of between AUD 1.13 million and AUD 3.59 million. Furthermore, ten active sport fishing businesses can be expected to support between 32 and 41 jobs in New Caledonia.

As discussed above, for the vast majority (87%) of BCFT foreign clients, fishing was the primary reason to come to New Caledonia. It can therefore be expected that with no sport fishing activities on offer, these clients would not be coming to New Caledonia and most of the benefits from a developed sport fishing industry would not be captured by other sectors of the tourism industry.

These figures are given for illustrative purposes only as the business considered in this article may not be representative of the industry as a whole. Further investigation will be required to gather a comprehensive estimate of the economic contribution of sport fishing to the New Caledonian economy. The data does, however, demonstrate the potential for sport fishing as an alternative livelihood strategy and also suggest that the potential multiplier effects could be very high and provide wider economic benefits.

## Value of a single fish

The average direct expenditure by GT and bonefish fishers is described above in the data section. We used this data to establish a direct economic value of each fish landed, we have no information regarding the number of fish that were lost before landing. However, from this data we can establish a value of each fish caught and released. We have established a direct economic value of AUD 790 per bonefish and of AUD 520 per GT. If applying the conservative 0.9 multiplier, the indirect economic values are AUD 710 per bonefish and AUD 460 per GT, which is well above the market value for these species if they were to be sold on the local market. This assumes each fish is caught and released just once; the value of each fish will obviously increase if the fish is caught and released several times. The data here corroborates the US National Oceanic and Atmospheric Administration's 2011 assessment of the US fisheries sector,<sup>6</sup> which estimated the economic value of a fish at USD 1370 per kg for recreational fisheries and USD 46 per kg for capture fisheries.

<sup>6</sup> Quoted in World Bank/IGFA 2013

## Conclusion

This article uses data from just one operator and a limited number of trips in New Caledonia; therefore, it is by no means conclusive. However, figures could be considered indications of the potential economic contribution of sport fishing to local economies. Further extensive economic-based studies on sport fishing initiatives for economic development need to be done in the Pacific Islands to understand the cost-benefit of investment in the industry, by recognising that it is a niche industry.

Despite underestimating the economic impact of sport fishing by excluding international travel costs from the analysis, this article demonstrates that the direct economic contribution of sport fishing to an economy is only part of the story and the indirect benefits could be equal to or greater than the direct economic benefits.

## References

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