Review of "Hector's Dolphin Eco-Tourism: *Economic Impact Assessment*"
Report prepared for the Marine Species and Threats Team
Department of Conservation, Wellington

Kian Lee[1], 29 July 2019

1. Summary of main findings of report

1.1 Key Economic Impacts

1. The report "Hector's Dolphin Eco-Tourism: Economic Impact Assessment"[2] quantified and monetized the direct use value of Hector's dolphin to the eco-tourism industry in Bank's Peninsula, and the economy of Christchurch and New Zealand.
2. The report presented the economic impacts of Hector's dolphin eco-tourism generated by **seven tourism operators** in Akaroa Harbour of which Hector's dolphin is featured as an attraction. Hence their business will be affected by any decline of Hector's dolphin, and of the probability of seeing them[3].
3. Results are presented in terms of value-added and employment from direct, indirect and induced economic impacts on the Canterbury Region, and wider economic impacts to New Zealand.
4. The estimated value-added and employment from eco-tourism dependent on Hector's dolphin in Akaroa Harbour was presented as the table below.

Hector's Eco-Tourism	Canterbury	Rest of NZ	Total
Value Added ($m)	$19.5	$5.0	$24.5
Employment (EC)	416	60	476

5. The value-added estimates were primarily based on:
   - Annual turnover of 7 tourism operators (of between $6 to $8 million);
   - Total tourist spend of $12.2 million on the day of tour. (Note: This was derived from the report's survey finding of average passenger's tourist spend of $215 excluding tickets[4] from 209 survey responses from 437 passengers participating in tours related to Hector's dolphin)[5].

---

[1] About the author – Kian provides advice to the Department of Conservation on environmental economics and was involved in preparing a report entitled "*Articulating Potential Benefits of the Kotahitanga mō te Taiao Alliance Strategy*". He was a consultant for several projects in Malaysia to develop state-level policy options and mechanisms for conservation finance and payment for ecosystem services for the state of Sabah; initial assessment and scoping report for a study on the economics of ecosystems and biodiversity; and integrating cost benefit analysis into environmental impact assessments.

[2] M.E Consulting, 2018. Hector's Dolphin Eco-Tourism: Economic Impact Assessment. Report prepared for Black Cat Cruises, 13 December 2018.

[3] Most passengers (93%) see Hector's dolphin. 90% of passengers taking the swim with dolphins tour rated sightings as "very important", and 46% for harbour cruise passengers.

[4] If they didn't, they will be double counting the turnover of the 7 tour operators.

[5] Working "backwards" the report multiplied $215 by 56,744 passengers, which is close to the estimated number of passenger quoted in the report of between 60,000 to 75,000 per year.

6. Estimated employment is 476 throughout New Zealand with 416 in Canterbury. This consists of:
    - Some 40 to 60 staff, of which around 80% are permanent positions employed by the 7 tour companies;
    - Other employment in Canterbury and New Zealand generated by the tourist spend of $12.2 million on the day of the tour. The report did not provide a breakdown of which sectors the indirect, and induced employments belong to.
7. The report had reasonably attributed 15% to 20% of the additional tourism spend in Christchurch resulting from tourism related to Hector's dolphin. (Please see paragraph 8 below for supporting information). This is the main basis for **adding** about $3 million to $6 million per annum in estimating wider economic impact presented below.

Wider Economic Impact	Canterbury	Rest of NZ	Total
Value Added ($m)	$22.2 - $24.9	$5.7 - $6.4	$27.9 - $31.3
Employment (EC)	473 - 530	69 - 77	541 - 607

8. The report presented survey findings from respondents rating their decisions to visit Christchurch, and New Zealand because of their tour:
    - 31% rated their tour as "very important" and 33% rated "important" for visiting Christchurch;
    - 25% rated the tour as "very important" and 20% rated "important" for visiting New Zealand.

1.2 Other key points about the report

9. Although the scope of the report appears to be national in nature, it is limited to **seven tourism operators** in Akaroa Harbour. Despite referring to tourists attracted to other areas with Hector's dolphins (e.g. Curio and Porpoise Bays in the Catlins), their economic impacts were not covered by the report because there are no tourism operators targeting them. Furthermore, it is difficult to estimate economic benefits derived from these other populations.
10. It does not include values of eco-tours where Hector's dolphins are seen but are not featured or explicitly marketed as a main attraction. The market value of Hector's dolphin from this tourism segment is not estimated.
11. The report is of the opinion that the value of Hector's dolphins is understated because:
    - New Zealand's tourism market is expected to grow, and Hector's dolphins are one of its tourism products/attractions;
    - Non-market values are not included in this report. The non-market values are likely to be significant (please see next paragraph). The report cautioned that market values could be relatively small compared to the non-market values.

12. The report suggested that other uses/benefits/values associated with Hector's dolphins should also be considered. These include values such as:

    - ecological function value (services produced by the species that are critical to the functioning of the earth);
    - option value (benefit of maintaining the right to use the resource, i.e. as tourism demand and markets grows);
    - bequest value (maintenance of environmental attributes for the benefit of future generations); and
    - existence value (the satisfaction that the community derives from simply knowing that the species exists).

13. The report does not mention cultural values, which is an omission considering the importance of dolphins to Maori.

14. The report quoted results of a study of the preferences of New Zealanders Hoyt *et al* (2014)[6] which estimated the value of a dolphin to be between $355,000 and $440,000 based on willingness to pay to protect / maintain / avoid killing them. The 130 dolphins killed every year in fishing nets represent an estimated $46 million annually - which is more than double the estimated value-added of $19.5 million to Canterbury in the M.E Consulting report.

2. Comments on methodology, analysis and conclusions of the report

2.1 On methodology and analysis

15. The main methodology for the economic impact assessment consisted of:

    - Incorporating current market value of operational activities and current market value generated by tourism spend associated with Hector's dolphin beyond the tour ticket;
    - Running the eco-tourism impact and wider economic activity through a Multi-Regional Input Output model.

16. The reviewer is satisfied that the report is methodologically and analytically sound, and follows best practice because:

    - Based on the values used, the calculations add-up for the market value of Hector's dolphin;
    - The survey results of tourist spend of $215 on the day of tour (excluding tour ticket) and tourist spend the day before and after of $200 is not far from forecasted spend per day of $190 (2017) and $198 (2018) by MBIE (2018)[7].

---

[6] Hoyt, E, McGrath, G., Bossley, M., Knowles, T., 2014. Assessing New Zealanders' Willingness -to-pay to Protect the Endangered New Zealand Dolphin (Cephalorhynchus hectori): A benefit-cost analysis comparing three scenarios. Economists at Large, Melbourne, Australia and Critical Habitat Marine Protected Areas Programme, Whale and Dolphin Conservation, Chippenham, UK.

[7] Ministry of Business Innovation & Employment, 2018. New Zealand Tourism Forecasts 2018-2024, May 2018.

17. The report described the key steps taken to estimate the economic impact of Hector's dolphins as: "*Firstly, the spending associated with Hector's Tourism, as a business, was mapped to specific economic sectors (106 industries) and geographies. The spending was then included into the Christchurch Multi-Regional Input-Output (MRIO) model to estimate the flow-on effects associated with the spending. The flows are traced through the local (Canterbury Region) and national (Rest of NZ) economies*". This process estimated value-add to Canterbury and Rest of NZ, and estimated employment to Canterbury and Rest of NZ. Details of how these are mapped, and the Multi-Regional Input-Output model was not included in the report, hence are not commented on here.

18. There do not appear to be any significant[8] aspects of the methodology or analyses, which would undermine or weaken the findings/conclusions.

2.2 On conclusions

19. The economic findings **can be applied with reasonable confidence for advising Ministers**. However, **we must re-iterate** that:

- Non-market values, which are very likely to be significantly more than the market values, have not been included. Hence the total economic value of Hector's dolphin (beyond eco-tourism) will be much greater;
- The market values are limited to only the existing 7 tour operators at Akaroa. With the potential for future growth (if further permits are granted under the Marine Mammals Protection Regulations 1992), it could be much more;
- Although not marketed as the main attraction, Hector's dolphins are part of other whale watching / eco-tourism operations in other parts of New Zealand (e.g. the Marlborough Sounds). The value of Hector's dolphins from this eco-tourism segment is not estimated by the report;
- The value of Hector's dolphins in generating tourism in other parts of New Zealand where there are no tour-operators (e.g. the resident population of Hector's dolphin attracting tourists to Curio and Porpoise Bays in the Catlins) is not estimated by the report.

[8] Some technical comments include: 1) respondents surveyed were from the same company and may be biased towards the products offered by Black Cat Cruises (assuming tourism products are not homogenous). Ideally the survey could have included passengers from other operators; 2) the sample consists of 2 different products – harbour cruise, and swim with dolphins, hence a larger sample would be desirable. Notwithstanding these comments, the estimated average tourist spend is not far from the average from MBIE's estimates and the precision needed for the purpose of the report is deemed appropriate.