A TRAVEL COST MODEL TO ESTIMATE POSITIVE AND NEGATIVE IMPACTS OF SHARK WATCHING TOURISM ALONG THE ISRAELI COASTLINE

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Abstract
In the last few winters, sharks have been aggregating near the Israeli Mediterranean coast, at a specific point, near Hadera power station. This unusual phenomenon has fascinated residents, visitors, kayakers, divers and swimmers. We analyse the effects of this intense human interest on the sharks, using contingent behaviour, in Hadera and in Ashkelon, where sharks are present but not the infrastructure for their observation. We also report on changes in shark behaviour due to change in tourism intensity. We find a change of about ILS 4.1 million annually for both sites but a larger individual consumer surplus in Hadera, where sharks are currently observable. Touristic intensity crosses the threshold level by about 12%, and making the socio-equilibrium sustainable for both humans and sharks would have a social cost of ILS 0.157 million.

Keywords: Economic valuation, Coastal management, Mediterranean Sea

In the last few winters, sharks (Superorder Selachimorpha) have been aggregating near the Israeli Mediterranean coast. We analyse the effects of this intense human interest on the sharks, using Contingent Behaviour [1] in Hadera and in Ashkelon coasts in Israel. We observed contingency trips with and without shark's presence where the baseline is different between the two locations. We also report on monitoring sharks change in behaviour due to the change in diving intensity[2]. Our findings reveal a change of about 4.1 million ILS annually for both sites but a larger individual consumer surplus in Hadera where sharks are currently observable. This study is important because it is a first approach to carry out an economic analysis of tourism benefits from an endangered species where tourism demand is currently rising and may be also associated with some negative results with respect to the species. Travel cost models are important in assessing such touristic benefits. For example, Du Preez et al, (2012), using Travel Cost Method (TCM) in order to value the net benefit (that is, the benefit of visit the site minus the costs associated with it) from tiger shark diving in South Africa, obtained value of 2,080,925 Rand per year [3]. Anna & Saputra, (2017) used TCM the value for whale shark tourism in India of local and foreign tourism, obtained IDR 142.35 billion per year [4]. We demonstrated in the study that prior experience for sharks results in a bigger benefit of a given visit. Based on the Contingent Behavior model we found that divingc intensity crosses the threshold level by about 12% and indicate an overall economic value of 0.157 million ILS to converge back into a socio-equilibrium which is sustainable for both humans and sharks. The results of the study suggest that there can be considerable recreational benefits generated by the creation shark's observation option and may provide another perspective of using the economic benefits as a reason for conservation [6]. However, considerable additional research is necessary before these values are used to justify additional investments due to potential risk by over crowdedness and its impact on the sharks. This study demonstrates the potential combination between shark tourism and the shark aggregations phenomenon which, in turn, raises two important questions. The first is concerned with the effect of this anthropogenic interference on sharks. The second question is regarding the impact of regulated shark tourism.

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