

**Annex SI – Semi-structured interview**

**Impacts of Covid-19 on humpback whale watching tourism in Bahía de Banderas, México.**

1. In the last year (March 2020 - March 2021) due to the Covid-19 pandemic, has your organization experienced economic losses in the following aspects? Choose three.

Type	Impact	Choose three
Economic impacts experienced	Loss of income	
	loss of reservations	
	job layoffs	
	Closure of economic units (hotels, restaurants, tour companies)	
	Tourist confidence in the destination	
	Acquisition of debt to pay expenses	
Others	Specify:	

<p><b>(+) Increased</b>  <b>(-) Decreased</b>  <b>(=) no change</b></p>
---

2. Since the pandemic, have you observed changes in any of these environmental aspects in the bay?

Type	Impact	choose three
Observed environmental impacts	Long-term recession in wildlife tourism	
	PPE contamination (garbage from masks, gloves)	
	Conservation financing	
	Conservation Actions Proposed/Cancelled	
	Number of tourist boats	
	Clean beaches	
	Subsistence fishing in protected areas	
	Effects on research and monitoring work.	
Other	Specify:	

**(+) Increased**

**(-) Decreased**

**(=) no change**

*Questionnaire for whale-watching tour operators.*

3. How did the coronavirus pandemic impact the 2020-2021 humpback whale watching season?

- a. Reflect on the number of tours per week that were made in the 2019-2020 season and the 2020-2021 season, on average how many tours did you make per week?

In the 2019-2020 season \_\_\_\_\_

In the 2020-2021 season \_\_\_\_\_

- b. Regarding the average number of tourists per boat per tour, how many were in the 2019-2020 season, on average how many tourists did you make per week?

In the 2019-2020 season \_\_\_\_\_

In the 2020-2021 season \_\_\_\_\_

- c. Regarding the composition of the tourists who purchased whale-watching tours, what percentage were nationals, and what percentages were international visitors in each season?

Season 2019-2020

Percentage of international tourists \_\_\_\_\_

Percentage of national tourist \_\_\_\_\_

Season 2020-2021

Percentage of international tourists \_\_\_\_\_

Percentage of national tourist \_\_\_\_\_

4. How has your organization or business adapted to the COVID-19 pandemic to continue whale watching tours in the 2020-21 season? What did they do differently than the previous season? Choose the three most important and indicate if it has increased, decreased, or remained unchanged.

Adaptation mechanism		Adaptation mechanism	
Use of face masks on boats		Changes in the responsibilities and schedules of collaborators	
COVID-19 AMTAVE Certification		Coordination with other organizations	
Number of passengers/tourists per vessel		Recruitment	
Price/fee per person		vaccine application	
Use of electronic commerce (e-commerce) to buy or sell (specify which) _____		Other (specify: _____)	

5. What do you see as the long-term impacts of the coronavirus pandemic on whale-watching in Bahía de Banderas, Jalisco-Nayarit? (Legacies)

## Annex SII—Network terminology

Table S1. Network terminology.

Location	Number of interviewees
Node	A fixed set of entities that constitute a network (Wasserman & Faust 1994). In this work we used a variety of networks made up of different types of nodes: in collaboration networks, nodes are stakeholders.
Tie	A connection represents one type of tie between the nodes e.g., collaboration (Wasserman & Faust 1994).
Network	A network comprises a set of nodes and a connection among them in the form of dyadic relational connections. A network can be represented as an $n \times n$ adjacency matrix with a cell representing the presence or absence of a connection by 1 or 0, respectively (Wasserman & Faust 1994).
Density	For all the networks we calculated a variety of global and nodal properties. The density, ie the number of connections in a network divided by the number of all possible connections: $N * (N - 1) / 2$ where N is the number of nodes in the network (Wasserman & Faust, 1994). Thus, density ranges between 0 where there are no connections between any of the nodes and 1 where every node is connected to all other nodes in the network.
Krackhardt's connectedness	This metric is defined as $1 - [V/N*(N-1)/2]$ , which is the total number of dyads that are not mutually reachable (V) divided by the maximum number of possible dyads combinations: $N*(N - 1)/2$ (Krackhardt, 1994).
Transitivity	Transitivity depends on triads, subgraphs formed by three nodes. A triad is transitive when there is a tie from i to j, and from j to k, then there is also a tie from i to k. Transitivity is the number of triads that are transitive divided by the number of triads that have the potential to be transitive by the addition of a single connection (Borgatti et al. 2002).
Degree	For non-directed networks, the degree is the sum of the number of connections that a node has (Wasserman & Faust, 1994).
Degree centralization	This metric captures the extent to which a network consisted of a highly central node surrounded by peripheral nodes. Degree centralization is calculated as the sum of the differences in centrality of the most central node to all others, normalized by the maximum possible overall connected graphs (Everett & Borgatti 2005).
Betweenness centrality	This metric captures the extent to which a specific author k connects different authors i and j, or different groups of collaborating authors. The Betweenness centrality of author k reflects how any two pairs of authors i and j, are interconnected via k. The Betweenness centrality of

	author $k$ is proportional to the number of shortest paths among any $i$ and $j$ authors that include a connection with $k$ (Freeman, 1977).
--	--

## References

1. Borgatti, S.P.; Everett, M.G.; Johnson, J.C. *Analyzing Social Networks*; Sage: London, UK, 2018.
2. Everett, M.G.; Borgatti, S.P. Extending centrality. In *Models and Methods in Social Network Analysis*; Carrington, P.J., Scott, J., Wasserman, S., Eds.; Cambridge University Press: Cambridge, UK, 2005; pp. 57–76.
3. Freeman, L.C. A set of measures of centrality based on betweenness. *Sociometry* 1977, 40, 35–41. <https://doi.org/10.2307/3033543>.
4. Krackhardt, D. Graph Theoretical Dimensions of Informal Organizations. In *Computational Organization Theory*; Carley, K.; Prietula, M., Eds.; Lawrence Erlbaum Associates: Mahwah, NJ, USA, 1994; pp. 89–111, ISBN 080581406X.
5. Wasserman, S.; Faust, K. *Social Network Analysis: Methods and Applications*; Cambridge University Press: New York, NY, USA, 1994; ISBN 0521387078.