

Ask the audience: Characterization of diving pressure on marine caves using dive operators' knowledge

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Supplementary A: Questionnaire for Recreational diving in Marine Caves.

The present questionnaire aims at evaluating recreational diving activity in marine caves (habitat type 8330 of the Habitats Directive 92/43/EEC) and it is developed in the framework of the project LIFE INTEMARES, sub-action 1.4: "Demonstrative projects for mitigating the impacts of recreational activities – Control of diving". The main objective of this project is to effectively manage marine areas of the Nature 2000 network, using tools such as active stakeholders' participation and scientific research as driving factors in the decision-making process.

All data obtained in this questionnaire are confidential and will be solely used for the aim of this study.

- Estimated duration: 1 hour

Interviewer's Name..... date..... hour..... Questionnaire N°.....

Section 1: Diving Centre data

Name of the company

Address

Phone

Company's Owner name

Email/phone

Name of the Interviewee..... Interviewee position

A) Company profile:

1. Nationality:

2. Opening year:

3. Months of activity:

High season (HS)		Low season (LS)	
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4. Is the company closed at any time of the year? ☐ Yes (N° of Months.....) ☐ No

5. Number of employees:

High season (HS)		Low season (LS)	
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6. Total number of boats:

Boat	Type	Length	Power (Kw)	Max number of passengers (with and without crew)

7. Most frequent nationalities of the clients (from highest to lowest):

.....
.....

8. Do you own another business? ☐Yes ☐No

Name and activity

B) Activity and importance of cave diving

9. Price of diving trip, with and without equipment rental (attach pamphlet/pricing list if possible):

.....
.....

10. Number of diving trips daily/monthly (specify n° of double/single trips and hours):

High season (HS)		Low season (LS)	
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11. Number of clients per day/month:

High season (HS)		Low season (LS)	
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12. Among the total of diving trips, describe the proportion of trips with access to a cave

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13. Do you advertise cave diving in your business? Yes No DK/NC

14. Do clients specifically ask for cave diving? Yes No DK/NC

If yes, please indicate the proportion.....

15. Do you offer any type of cave diving course/specialty? ☐Yes ☐No ☐NC

If yes, please indicate which ones:

.....

.....

16. In the diving centre, is there any instructor specifically employed for teaching cave diving?

☐Yes ☐No ☐DK/NC

If yes, please indicate how many and their certifications:

.....

.....

17. During a dive, are the clients always led by a guide?

☐Always guided ☐Guided or not (required certification) ☐DK/NC

18. And in the case of cave diving?

☐Always guided ☐Guided or not (required certification) ☐DK/NC

19. In a normal dive, what is the maximum number of divers per group (with guide)?

And in caves?

20. Which are the main factors, when choosing a dive site? (Value from 1 to 5, 5 meaning very important and 1 little to not important):

	1	2	3	4	5
Closest distance from diving centre					
Diving from shore					
Diving from boat					
Environmental conditions					
Diving experience of the clients					
Presence of interesting wildlife (groupers, corals, lobsters...)					
Abundance and biodiversity of fish					
Presence of caves and tunnels					
Presence of wrecks					
Areas with less divers from other dive centres					

Areas with less overlapping with other activities (boating, jet skis, fishing...)					
A specific location requested by the clients					
Other (specify)					

21. Apart from recreational diving trips, does your centre offer any other activity?

- ☐ Diving courses
 ☐ Discovery Scuba Dives
 ☐ Equipment rental
☐ Equipment sale
 ☐ Apnoea
 ☐ Snorkelling
☐ Recreational fishing
 ☐ Kayak
 ☐ Paddle surf

Other (Specify):

C) Cave diving areas:

22. Where in the island do you practice your diving activity? (Indicate in a map the extent of your diving area)

23. In which caves do you usually dive? (Order from most to least frequent and indicate how many times a week/month):

	Name of the cave/tunnel	Site	Nº m/w (HS)	Nº m/w (LS)
1				
2				
3				

24. Why do you prefer some caves instead of others?

.....

25. Do you know of other unfrequented submerged or semi-submerged caves?

Name of the cave/tunnel	Site	Name of the cave/tunnel	Site

26. Could you position these caves on the map? (mark on zoomed-in maps or Google Earth)

D) Knowledge of the protection of habitat 8330, perceptions and possible protection measures:

27. Are you aware that any submerged and semi-submerged cave is a protected habitat of EU interest?

☐ Yes ☐ No ☐ DK/NC

28. If yes, please specify your knowledge:

29. Why do you think they are a protected habitat?

.....

30. In your opinion, how recreational diving can affect this habitat?

.....

31. Value the effect that can have the following factors of recreational divers on the conservation of marine caves.

	Very positive	Positive	Neutral	Negative	Very negative
Certification level of the diver					
Experience of the diver (n° of dives)					
Elapsed time from the last dive					
Fitness level of the diver					
Use of CCR system					
Use of photo camera					
Small group dives (max 3-4 ppl.)					
Group led by a professional guide					
Eco briefing before the dive					

32. In your opinion, which measures could be taken to decrease the impact of recreational diving in marine caves?

.....

.....

33. In your opinion, which other activities could impact the marine caves?

.....

.....

E) Environmental engagement:

34. Do you realize Eco briefings before each dive? (Eco briefing meaning as informative sessions that precede the dive, containing guidelines on the responsible behaviour while diving and the vulnerability of the biological communities that are observed during the dive).

☐Yes ☐No ☐DK/NC

35. If yes, what are the main points of the Eco briefing?

.....
.....

36. Did you or your centre participated in any environmental activity?

☐Yes ☐No ☐DK/NC

37. If yes, what type of activity?

.....
.....

38. Would you be willing to participate (you or your workers) in seminars about the effect of recreational diving in marine caves and possible measures to minimize such effect?

☐Yes ☐No ☐DK/NC

39. If not, please indicate why:

.....
.....

40. Do you have any additional comments on this questionnaire and/or any related topic?

.....
.....

Thank you for your collaboration.

Observations:

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Supplementary B: Checklist of marine caves resulted from responses to the questionnaire.

The present appendix includes a table with all the marine caves provided by the interviewees in which some degree of recreational diving is carried out. The table provides information about the local name of the cave, the estimated number of divers per year who frequent the cave and the respective frequency class, based on this number: very high (>900 divers year⁻¹), high (900-500 divers year⁻¹), average (500-300 divers year⁻¹), low (300-50 divers year⁻¹), and very low (<50 divers year⁻¹).

ID	Name	N	Frequency		ID	Name	N	Frequency
1	Illa del Toro - boya 5	1890	Very high		57	Cuevas de Cala Forcat	208	Low
2	Queso Suizo	1836	Very high		58	Cova del Dimoni	185	Low
3	Pwele cave	1715	Very high		59	Sa Cova d'es Cavall	182	Low
4	Aguilot	1715	Very high		60	Cova de sa Llum	176	Low
5	Pont d'en Gil	1601	Very high		61	Es Bufador	176	Low
6	Church	1234	Very high		62	Las Gemelas	168	Low
7	Gran Canyons	1214	Very high		63	Alcaufar	168	Low
8	Cala Morlanda	1176	Very high		64	Sa Cova d'es Pintor	162	Low
9	Ligth House	1139	Very high		65	Sa Cova Blava	162	Low
10	Sa cova d'en Jeroni	1075	Very high		66	Es Gall	162	Low
11	Túneles del Amor	1010	Very high		67	San Pau	162	Low
12	Cagaires	945	Very high		68	Aquarium	153	Low
13	Catedral	909	Very high		69	Cueva S	152	Low
14	Queso Pequeño	868	High		70	La Sauna	130	Low
15	Cueva de María	868	High		71	Plaza de Torres	124	Low
16	Arrecife pequeño	864	High		72	Fossils	119	Low
17	Cala Blanca	840	High		73	Escorpion's cave	112	Low
18	Es Clot de Barceló	832	High		74	Belladona	112	Low
19	Tunel Vision	798	High		75	Cueva de la Luz	105	Low
20	Tunel Vision	798	High		76	Cap Formentor	89	Low
21	Caló des Monjo	769	High		77	Cova de Na Gall	87	Low

22	Queso-Faralló	716	High		78	El Moll del Patronat	87	Low
23	Las Tres Cuevas	694	High		79	Porto Cristo 1	80	Low
24	Macaret	680	High		80	Porto Cristo 2	80	Low
25	S'Estancia	631	High		81	Cap des Freu	80	Low
26	Cap des Llamp	613	High		82	Punta Quintana	78	Low
27	Cala Sa Nau	566	High		83	Cova En Clis	72	Low
28	Coves d'En Llamp	562	High		84	Cueva del Dique	70	Low
29	Pozo de Luna	506	High		85	La Cova de ses Bruixes	68	Low
30	Cueva de la Lucerna	482	Average		86	Cala Rafalet	66	Low
31	Campanario	419	Average		87	Cueva Cangrejos	58	Low
32	Ariana's Rock	400	Average		88	Cap de Catalunya	53	Low
33	Punta del Bisbe	365	Average		89	Andre's Cave	50	Very low
34	Cueva del Diablo	361	Average		90	La Cueva de los Huesos	46	Very low
35	Cueva d'ets Orgues	358	Average		91	Ojos de Eduardo	41	Very low
36	Funnels	357	Average		92	Illot el Colomer	39	Very low
37	Organo	345	Average		93	Catedral Norte	36	Very low
38	Racó de Santa Clara	303	Average		94	Cueva T	36	Very low
39	Cala Morell	300	Low		95	Cueva A	34	Very low
40	Cala Gran	288	Low		96	Cueva Charlotte	33	Very low
41	Cala Ferrera	288	Low		97	Cuevas de Orión	30	Very low
42	Cueva de la Madonna	284	Low		98	Agua Dulce	30	Very low
43	Cova dels Anglesos	282	Low		99	C. Virgen San Esteban	30	Very low
44	Cueva de Luis Candela	282	Low		100	Cañamel	30	Very low
45	Cova Grossa	274	Low		101	Catedral Cala Ratjada	29	Very low
46	La Cueva Grande	272	Low		102	Cabeza de León	29	Very low

47	Coves de Addaia	272	Low		103	Cuevas de Cala Santanyí	22	Very low
48	Chimenea	272	Low		104	Caló de Ses Agulles	22	Very low
49	Cala Barca	248	Low		105	J2	22	Very low
50	Es Cargol	245	Low		106	Cueva de la Virgen	20	Very low
51	La Olla	241	Low		107	Cova de na Ruixa	18	Very low
52	La costa de los Pinos	240	Low		108	Catedral Tramuntana	14	Very low
53	Illot 1	240	Low		109	Sa Torre Nova	11	Very low
54	Illot 2	240	Low		110	J3	11	Very low
55	Medusa's Point	224	Low		111	Cueva del Martillo	9	Very low
56	Cigalas	218	Low					