



ALMA MATER STUDIORUM
University of Bologna

2002-2005 Diving for the Environment: Mediterranean Underwater Biodiversity Project

Environmental monitoring in collaboration with the industry of underwater tourism

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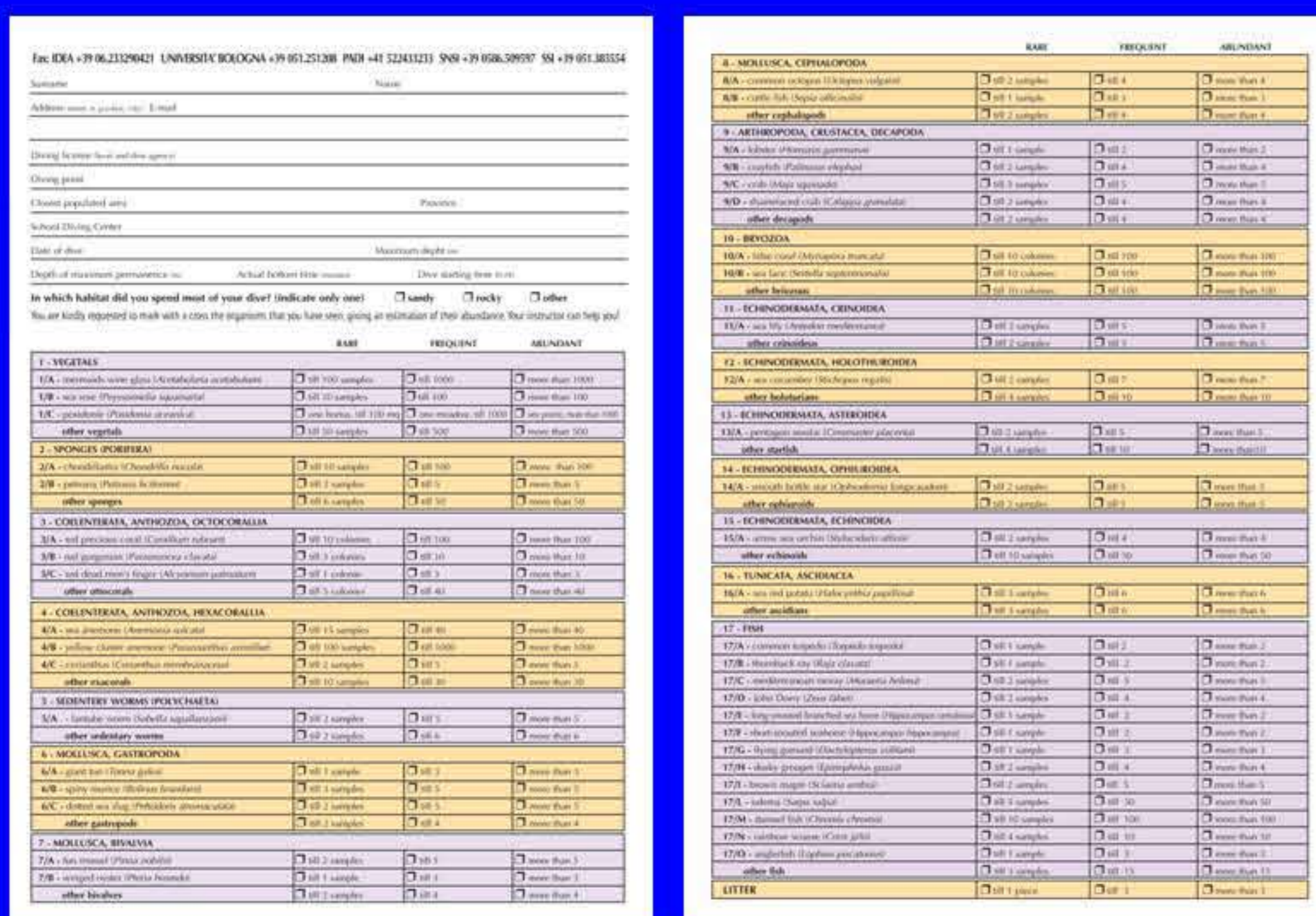


patronaged by
Italian Ministry
of the Environment
and Land and Sea
Protection



Biodiversity has a value as an indicator of environmental health. Monitoring is the first step towards natural resource management. The goal of "Diving for the Environment" was to obtain data on the state of the marine biodiversity along the Italian coasts, by the collaboration of recreational scuba divers. On a specially formulated questionnaire, volunteers reported the presence of 61 marine taxa encountered during recreational dives. This research was patronaged by the Italian Ministry of the Environment and supported by ASTOI (Association of Italian Tour Operators), A.DI.SUB (Association of Italian Scuba Diving Agency – IDEA, PADI, PSS, SNSI, SSI) and the popular scientific magazine Quark. During the 4-year study, 3825 divers have completed 18,757 questionnaires, corresponding to 13,539 diving hours. In the Ligurian and Northern Tyrrhenian seas, data showed a north-south gradient, where the best situations were in the southernmost areas. This condition could be related to the high anthropogenic stress in urban and industrial zones. Divers were willing to take part in monitoring and contributed in scientific terms by collecting considerable amounts of data over short time periods, and in economic terms by decreasing costs. The greatest limitation was the difficulty in obtaining a uniformly distributed sample across time and space.

QUESTIONNAIRE



GEOGRAPHICAL DISTRIBUTION of recorded questionnaires



Geographical distribution of recorded questionnaires during the 4-year study. On the geographic scale, the distribution results heterogeneous, with most of the recorded questionnaires coming from the Ligurian and the Northern Tyrrhenian Sea.

MASS MEDIA BROADCASTING of the research project

date	name	readers
Sep-06	Sub	2,375,000
09-Aug-06	Sub	75,000
Jun-06	Sub	75,000
Apr-06	Tutto Turismo	2,300,000
Apr-06	Quark	800,000
01-Dec-05	Mondo Sommerso	-
01-Nov-05	Prospettive W.P.A.E. News	90,000
01-Nov-05	Quark	-
01-Oct-05	Sub	-
01-Oct-05	Quark	-
01-Oct-05	Mondo Sommerso	-
01-Sep-05	Quark	-
01-Aug-05	Quark	-
01-Jul-05	Elisir di Salute	210,000
01-Jul-05	Quark	-
01-Jul-05	Roger	250,000
01-Jun-05	Planeta Natura	-
01-Jun-05	Quark	-
01-Apr-05	Arca	595,000
01-Apr-05	I Giornali del Mare	120,000
01-Mar-05	Quark	800,000
01-Dec-04	Planeta Informa	634,000
01-Dec-04	Quark	-
01-Dec-04	AGVA	120,000
01-Dec-04	Sub2	-
01-Dec-04	Sub1	-
01-Nov-04	Sub3	-
01-Nov-04	Sub2	-
01-Nov-04	Sub1	-
19-Oct-04	Secolo d'Italia	-
01-Oct-04	Mondo Sommerso	100,000
01-Oct-04	Sub	-
01-Oct-04	Quark	-
27-Sep-04	Centro Universitario Sportivo B/D	100,000
27-Sep-04	La Nazione - Livorno	160,000
17-Sep-04	Il Tirreno - Livorno	100,000
01-Sep-04	Quark	-
26-Aug-04	Il Resto del Carlino - Bologna	600,000
01-Jul-04	Parchi e Riserve Naturali	-
01-Jul-04	Quark	-
12-Jun-04	Plan Air	255,000
06-Jun-04	Il Resto del Carlino - Ferrara	80,000
06-Jun-04	Quark	-
03-May-04	Quark	-
04-Apr-04	Elisir	-
02-Apr-04	Quark	-
01-Apr-04	Sub	60,000
16-Feb-04	Elisir	-
12-Jan-04	Elisir	120,000
02-Jan-04	Quark	800,000
01-Dec-03	Sub	6,000
28-Nov-03	Elisir	190,000
05-Nov-03	MF Milano Finanza	-
01-Aug-03	Quark	-
01-Aug-03	Monarca	100,000
28-Jul-03	Unione Sarda	324,000
01-Jul-03	Quark	-
01-Jul-03	Mondo Sommerso	760,000
01-Jun-03	Quark	-
01-Jun-03	Outlier	232,000
01-Jun-03	Adriatico Sais	13,000
14-May-03	Il Tirreno	578,000
01-May-03	Quark	-
01-May-03	Hydra	12,000
01-May-03	Atmosfera	588,500
01-Apr-03	Quark	-
01-Apr-03	Mondo Sommerso	96,000
01-Apr-03	Azzurra Vision	293,790
01-Apr-03	Arca	627,000
01-Mar-03	Qui Touring	780,000
01-Mar-03	Quark	810,000
28-Feb-03	Planeta Informa	376,000
12-Oct-02	Agre	15,000
08-Aug-02	Il Tirreno	578,000
01-Jun-02	Sub	60,000
Readers		17,149,290

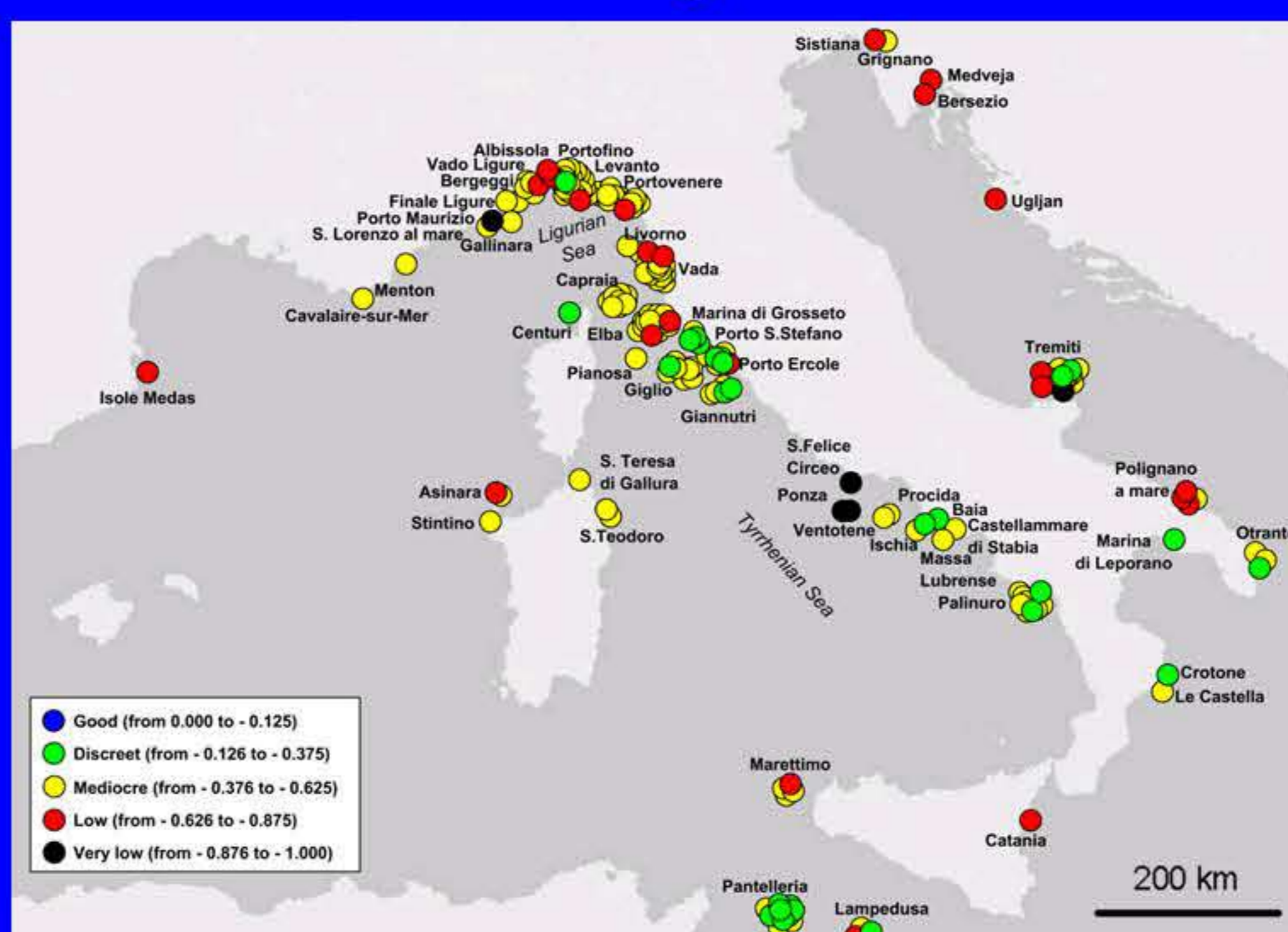
date	name	audience
09-Jul-06	Rai due - Tg2 Dossier h 22.50 (replica)	657,000
26-Dec-04	Rai due - Pianeta Mare h 11.00	1,029,000
26-Dec-04	Rai due - Tg2 Dossier h 22.50	600,000
29-Nov-04	Rete 4 - Pianeta Mare h 17.30	1,970,000
23-Oct-04	Rai uno - Simona Bili h 18.30	10,000,000
18-Oct-04	Rai tra - Tg3 h 14.00	1,525,000
18-Oct-04	Rai tra - Tg3 h 14.00	1,000,000
Jun-04	Rete 4 - Pianeta Mare h 17.30 (replica)	1,370,000
03-Nov-03	Rete 4 - Pianeta Mare h 17.30	1,370,000
05-Oct-03	Rai due - Tg2 h 11.00	1,370,000
08-Sep-03	Canale 5 - Tg5 h 13.00	3,000,000
15-Jul-03	Rai uno - Superquark h 20.45	10,000,000
18-Jun-03	Rete 4 - 2000 h 23.06	211,430
25-May-03	Rai due - Tg3 h 14.00	43,040
09-May-03	Canale 5 - Chi vuole essere milionario h 20.00	4,000,000
16-Mar-03	RTL 102.5 h 16.00	54,800
13-Feb-03	Rai tre - Tg3 h 15.00 h 20.30	3,660,000
12-Feb-03	Rai due - Tg3 cultura h 15.00	1,861,000
09-May-02	Rai tre - Tg3 h 14.00	3,259,000
Radio & TV audience		36,594,270
TOTAL		54,143,560

Number of contacts (readers, radio and TV audience) produced by Marine Science Group Public Relation Office during the period 2002-2006. Dissemination of information regarding the project through media was an important way to give feedback and satisfaction to volunteer scuba divers and contributing partners.

ENVIRONMENTAL QUALITY

COLORS INDICATE THE VALUE OF THE ENVIRONMENTAL QUALITY INDEX

- Good (from 0.000 to - 0.125)
- Discreet (from - 0.126 to - 0.375)
- Mediocre (from - 0.376 to - 0.625)
- Low (from - 0.626 to - 0.875)
- Very low (from - 0.876 to - 1.000)



Average environmental quality index (e.q.i.) for the survey stations on rocky seabed during the 4-year study. Most stations present mediocre e.q.i. In the Ligurian and Northern Tyrrhenian seas, the stations diverging in a negative way show low, or very low e.q.i. and are mainly distributed in the northernmost areas; the stations diverging in a positive way show discreet e.q.i. and are mainly distributed in the southernmost areas.



The questionnaire was the tool of reference used by recreational divers taking part in the project. It consisted of two parts:
- recording data section (A1/A2). Recorded information included diver's data (name, address), details on the dive (site, date, depth, time), sightings and abundance of organisms encountered during the dive.
- images for the identification of the organisms to be recorded (B). We designated 61 Mediterranean benthic taxa that might be easily identified by recreational scuba divers.
Dive training organizations produced the questionnaires and distributed them to diving centers. Volunteers were assisted during data collection in the field by dive guides and instructors who had previously received training on project objectives and methodology.
Completed questionnaires were sent to Department of Biology of the University of Bologna, where a database for project results had been set up. Data were processed and reports were prepared with an update on the project and its main results. The reports were mailed to divers who had contributed the most questionnaires.