United Nations
Environment
Programme

EP

UNEP(DEPI)/MED WG. 337/Inf. 18
22 June 2009

ENGLISH

MEDITERRANEAN ACTION PLAN

Meeting of MAP Focal Points

Athens (Greece), 7-10 July 2009

AMMUNITIONS DUMPING SITES IN THE MEDITERRANEAN SEA

UNEP/MAP
Athens, 2009

United Nations
Environment
Programme

EP

UNEP(DEPI)/MED WG. 334/Inf. 9
22 May 2009

ENGLISH

MEDITERRANEAN ACTION PLAN
MED POL

Meeting of MED POL Focal Points

Kalamata (Greece), 2- 4 June 2009

AMMUNITIONS DUMPING SITES IN THE MEDITERRANEAN SEA

UNEP/MAP
Athens, 2009

In 2006, MED POL generated a first draft report and map on dumping of ammunitions in the Mediterranean. MED POL Focal Points in their meeting in Hammamet 2007 requested the updating of the map and the reports on the basis of additional data and information which would be provided by the FPs.

The present report and map constiutes the updated versions as for November 2008.

Introduction

Useless and obsolete ammunitions, explosives and war material of any sort have been dumped in oceans and seas for decades. Among the military ordnance dumped at sea, chemical weapons (CWs) and riot control agents represent a significant percentage, in the Mediterranean Sea too. The yearly rate of dumping of this material is slowly diminuishing, also because the entry into force of international conventions stimulating the adoption of other disposal practices. Howhewer, the actual amount of dumped war material, subject to the corrosive action of sea water which causes the release of chemical products, has to be considered as a not negligible source of persistent pollutants.

Taking into consideration abundance and extension of the dumping sites, the wide dispersion of the dumped war material due to trawling fishery, their increasingly rusted conditions and a number of other factors, there is a need for data and information suitable to provide a sound scientific base to carefully evaluate costs and benefits deriving from possible clean up activities at sea.

In order to assess the relevance of this delayed in time source of pollutants, as well as the suitability of remediation actions, the Contracting Parties to the Barcelona Convention in their 13th meeting, held in November 2005 at Portoroz (SL), requested to the Coordination Unit of the Mediterranean Action Plan to undertake an assessment of the unexploded ammunitions and obsolete ordnance dumped in the Mediterranean Sea.

As part of a broader overview of the issue of military ordnance dumping activities carried out in the Mediterranean Sea, this assessment has been carried out initially proposing to representatives of Contracting Parties a questionnaire in order to gather information on available data and on existing mechanisms for recording encounters with dumped ammunitions. The second step has been an overview of nautical charts and pilot books where usually the main dumping sites and fire practicing areas are indicated.

As a result of the research carried out during year 2007, a report and a geo-referenced map of the dumping sites of ammunitions in the Mediterranean, both already recorded and not previously reported, were produced. The report and map were checked and commented by the participating contracting parties and the MEDU Secretariat tasked the consultant to review the produced material accordingly. A second round of interviews by means of a questionnaire was accomplished providing also new entries of the proposed database. The information gathered has been included in the present updated report containing the revised table of locations and a new revised map.

The Dumping Protocols of the Barcelona Convention

The Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft, adopted in Barcelona, Spain, on February the 16th 1976, in article 1 states its objective as "*to prevent and abate pollution of the Mediterranean Sea area caused by dumping from ships and aircraft*". To this end, a list of materials and substances was indicated the dumping of which in the Mediterranean is forbidden. For another list of materials and substances, dumping in the Mediterranean was subject to the issuing of a special permit by the National authority. Article 7 of the Protocol requires Parties[1] to send a record of permits to the Coordination Unit of the Mediterranean Action Plan on a yearly basis.

The Protocol was significantly amended in Barcelona in 1995, at the same time as the Barcelona Convention. The new Protocol is called Protocol for the Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea. The approach of the amended protocol changes the focus of the regulation from a black list of material for which dumping is forbidden to a general prohibition of dumping in the Mediterranean except for a short list of matters, thereby following the same approach as the Protocol of 1996 to the London Dumping Convention.

Substances that may be dumped at sea, set out in article 4, are as follows:

- dredged materials;
- fish waste or matter produced during processing of fish and other marine organisms;
- platforms or other artificial structures in the sea, having ensured that floating matter and other materials which could cause significant marine pollution are removed, as much as possible;
- inert geological material whose chemical constituents are not released significantly into the marine environment.

For the "permitted" waste, dumping is allowed only after having obtained a special permit. The special permit should be given after having taken into consideration the specific biological and natural condition of the dumping area. Article 7 of the original protocol has been omitted but article 14.2, stating that the meeting of the Parties shall study the records of the permits, has been maintained. The Parties shall, therefore, have to communicate to the Coordination Unit of the Mediterranean Action Plan their records if the matter is to be discussed at the meetings of the Parties[2]. The amended protocol has not yet entered into force but obsolete and useless ammunitions and war materials are not eligible for dumping, both according to the already in force Protocol and in the amended one.

[1] All Mediterranean states and the European Community are Parties to the Protocol.

[2] The reporting obligations of the European Community and its Member States under the Barcelona system, including the Dumping protocol, has been extensively described by a study requested by the EC Environmental Directorate-General to the European Environmental Agency, published in 2001 as Technical report n. 45, "Guidelines of the EC reporting obligations under the Barcelona Convention and its Protocols in force", EEA, 2001.

So far, 13 Mediterranean Countries, namely Albania, Croatia, Cyprus, Egypt, France, Italy, Malta, Monaco, Morocco, Slovenia, Spain, Tunisia, Turkey and the European Community have ratified or accepted the amendments.

European Community initiative

The European Community has set up a Community framework for cooperation in the field of accidental or deliberate marine pollution (Decision No. 2850/2000/EC)[3]. The decision states that accidental marine pollution risks include '*those linked to the presence of dumped materials, such as munitions'* (Article 1, §1.2a). Furthermore, the framework states that '*In accordance with the internal division of competences within Member States, they shall exchange information on dumped munitions with a view to facilitating risk identification and preparedness measures*' (Article 1, §1.2b).

The Decision lists the types of actions under the framework for cooperation and under the 'Support and Information Actions' is included the text: *'Measures to encourage the exchange of information between the competent authorities on the risks linked to dumped munitions, on the areas concerned (including mapping) and on measures to be taken in response to an emergency'* (Annex II, §C3).

Whilst there is no legal obligation on EC Member States nor to non-EC Mediterranean States to provide information on the areas concerned, the provision of a Mediterranean framework for reporting encounters with dumped chemical weapons and ammunitions would assist the States party cooperating to protect environment and human health from accidental and deliberate pollution from harmful substances including dumped ammunitions.

Adriatic-Ionian initiative

In April 2001, at the meeting of the Ministers of the Environment of the Adriatic and Ionian Sea held in Ancon, Italy, the Ministers acknowledged that the problems, which arise from the ordnance dumped in an ecologically sensitive heavy populated sea basin, are a major concern of all the coastal States. The Ministers welcomed the establishment of a scientific and technical sub-Regional forum to discuss the issue at international level. The Ministers further indicated their willingness to face the financial, scientific and technological challenges arising from the presence of such dumped ammunitions.

Need for Updating of information

Nautical charts and pilot books provide details about many dumping sites and fire practicing areas in the Mediterranean Sea but many sites remains uncharted and, for the most part, few data are made available on quantities and types of ordnance dumped on the Mediterranean seabed. This is partly due to the practice of "short dumping", whereby munitions were dumped outside of designated dumpsites and to a number of other reasons. Among these, changes in site conditions at ammunitions dumpsites have to be taken into account. Such changes can be brought about by natural processes or through

[3] Decision No. 2850/2000/EC of the European Parliament and of the Council of 20 December 2000 setting up a Community framework for cooperation in the field of accidental or deliberate marine pollution. Official Journal L 332, 28/12/2000 P. 0001 – 0006.

human activities in the vicinity of dumpsites. For example, the hydrodynamic regime in the area may result in exposure of previously buried devices. If disturbed, positively buoyant devices, such as phosphorus canisters, may float to the surface and represent a real risk to the seafarers and to the general public should they be washed ashore. Without adequate records being maintained on encounters with dumped munitions and chemical weapons it is not possible to monitor the risk posed by such ammunitions and weapons to either humans or the marine environment.

Furthermore, it has to be noted that the reporting of dumping of obsolete ordnance is not mandatory under the London Convention nor it is specifically considered in the Dumping Protocol of the Barcelona Convention. Consideration has to be given also to the fact that because "State owned ships and aircrafts" are exempted from the provisions of these international conventions and Protocols, the dumping of ammunitions may be unknown by the authorities in charge with the reporting since the dumping of ordnance is usually carried out by national military forces. The exchange of information between the military and civilian administrations, whether environmental or transport authorities, is not often either regular or normally envisioned, therefore no information can be easily gathered regarding the dumping of military ordnance in the Mediterranean Sea. Although it has to be acknowledged that it would be difficult to arrive at a comprehensive picture, gathering the available data and recording of accidental encounters, particularly where clusters occur, may lead to the identification of previously unknown or unrecorded areas. Encounters with ammunitions in areas not previously closed to fishing/anchorage or classified as 'high risk' may, possibly following confirmatory survey work, allow for the boundaries of such areas to be extended. Once again such actions cannot be undertaken unless adequate information is recorded and reported.

Activities carried out to gather information

With the aim to gather information on available data on localisation and extension of ordnance dumping areas in Mediterranean Sea and to provide an account on existing mechanisms for recording encounters with dumped ammunitions, a second version of a questionnaire (**Annex I**) was realised and sent to representatives of Contracting Parties and further researches have been accomplished consulting literature, nautical charts and sailor notices.

Among the national focal points, seven State Parties provided updated information answering to the questionnaire: Bosnia and Herzegovina, Croatia, Italy, Malta, Monaco, Spain and Tunisia. The Parties informed about the ammunition dumping sites located in their waters and, in some cases, about the national intervention plan to be put in place whenever unexploded ordnance are found at sea. Only in the cases of Spain and Tunisia, the National Regulatory System is reported consisting in the ban of the ammunition sea dumping through national laws.

The consultation of pertinent literature, nautical charts and sailor notices[4] allowed to point out several dumping areas marked as "explosives dumping ground" or "unexploded ordnance area". As well, the so-called "firing practice and exercise area" have been taken into account.

[4] Produced by the British Admiralty and the Italian *Istituto Idrografico della Marina Militare.*

The main ammunition dumping areas found in the Mediterranean Sea are listed in **Annex II** and mapped in **Annex III**.

Main unexploded ordnance dumping sites in the Mediterranean Sea

The consultation of literature, nautical charts and sailor notices allowed us to identify 67 ammunitions dumping areas and 71 firing practice and exercise areas. Sailor notices allowed us to add several areas not marked on nautical charts. In fact, as confirmed by the Italian *Istituto Idrografico*, the indication of dumping areas on nautical charts is usually deleted after some decades; thus, it is only possible to trace the areas using sailor notices. In this way, dumping areas were identified, for example, in the Ligurian Sea, around Sardinia and offshore Venice, where a ship loaded with war surplus materials was scuttled.

The geographical coordinates of the detected dumping areas are reported in **Annex II** whereas their distribution and extension are mapped in **Annex III**.

The methodology applied to identify the main reported ammunitions dumping sites in the Mediterranean Sea seems to have been fruitful. Nevertheless, the identified areas do not represent the real number of dumping sites of ammunitions and war surplus. In fact, the more detailed study carried out on the waters surrounding the Italian coasts, also consulting both English and Italian charts and sailor notices, shows as further details on number and distribution of sea dumping areas and concerning the typology of ordnance dumped at sea might be obtained through interviews with local fisheries stakeholders, the consultation of national military and civilian archives and the study of nautical documents produced by different national dedicated institutions.

All these sources have been utilised, for instance, during the R.E.D. C.O.D. (Research on Environmental Damage caused by Chemical Ordnance Dumped at sea) project co-financed by the European Commission, DG Environment, to ICRAM (*Istituto Centrale per la Ricerca scientifica e tecnologica Applicata al Mare*), CoNISMa (*Consorzio Nazionale Interuniversitario per le Scienze del Mare*), CETLI (*Centro Tecnico Logistico Interforze NBC*) and IBIM-CNR (*Istituto di Biomedicina e di Immunologia Molecolare "Alberto Monroy" of Consiglio Nazionale delle Ricerche*).

Interviews with fishermen have represented a very important source of information considering that for six decades fishermen have been victims of numerous incidents due to the accidental recovery of conventional and chemical weapons in their trawling nets. The several interviews carried out in the Apulia fisheries highlighted both the greater than known extension of the dumping areas in the Southern Adriatic Sea and the existence of other dumping sites not officially recorded. Both military and civilian archives have represented other important sources of information and in particular the Italian *Guardia Costiera* archives. In **Annex IV** an **Annex V** the dumping areas in the Southern Adriatic Sea noticed and partly studied during the RED COD project are reported. The comparison between the maps produced with the present research highlights the great number of not charted or already recorded areas in the Southern Adriatic Sea that has been possible to locate through interviews with fishermen and consultation of archives.

Recommendations and main advisable actions to be taken

Hereinafter the main recommendations and advisable actions to be taken in the future are reported. These considerations are grown up, above all, following the analysis of questionnaire results.

In synthesis, the Coordinating Unit for the Mediterranean Action Plan of United Nations Environment Programme (UNEP/MAP) should:

a. in the State Parties where this practise is still possible, to stimulate a reduction of ammunition sea dumping, emphasising the alternatives (recycling, reuse, etc.);

b. encourage fishermen and other concerned stakeholders to denounce the encounter with ammunition dumped at sea, usually to the national Coast Guard;

c. develop a common reporting system to UNEP/MAP of all Unexploded Ordnance found at sea;

d. support the developing of monitoring plan of the main ammunition dumping areas in the Mediterranean sea to better understand the ecological and economical consequences, as well as the opportunity to take actions leading eventually to the minimisation of risks;

e. promote in all State Parties a strict cooperation between military authorities and civilian administrations in particular in monitoring, reporting activities and minimisation of risks;

f. reduce the human risk linked to the accidental recovery by fishermen of old and rusted weapons, promoting the best practices to be taken in place.

Annex I

Revised questionnaire

SECTION I
GENERAL AND LEGAL ASPECTS

Please, check applicable boxes and comment as necessary. Attach additional sheets if needed

State Party	**1.**
Date	
Person the Coordination Unit of the MAP may contact to discuss this questionnaire	Name: _____ Position: Telephone: Fax: Email:
National Regulatory System	1. Under your State's legal system, are there in place regulations dealing with the dumping at sea of unexploded ammunitions? ☐ Yes ☐ No If yes, please specify the regulation and the authority to which to apply and to which would be responsible to report: _____ _____ _____ _____ _____ _____ In case, is the regulation applicable extraterritorially? ☐ Yes ☐ No

SECTION I

GENERAL AND LEGAL ASPECTS

Please, check applicable boxes and comment as necessary. Attach additional sheets if needed

Permit requirements	**2.** If a regulatory system exists, does it requires, prior to the issue of the permit: ☐ Identification of types and quantity of the ammunitions to be dumped ☐ Proposed location of the dumping site and its characterisation ☐ Date in which the activity is to take place and its duration ☐ Specification of methodologies and modalities for the dumping activity ☐ Evaluations of the ecological, economical and environmental impact of dumping in the proposed area ☐ Monitoring plan ☐ Other information: _____ _____ **3.** If a regulatory system exists, does it require exhaustive reports in support of the above information? ☐ Yes ☐ No _____ _____ **4.** Are there technical/scientific bodies supporting your Administration in dealing specifically with this dumping-related issues? ☐ Yes ☐ No _____ _____

SECTION II
PRACTICAL ASPECTS

Please, check applicable boxes and comment as necessary. Attach additional sheets if needed

Ammunitions Dumping Sites	**5.** Are the locations of dumped ammunitions in your territorial waters indicated in maritime charts? ☐ Yes ☐ No If yes, please provide the available data (i.e. geographical coordinates, quantity and types of ammunitions, etc.): _____ _____ _____ **6.** Are there uncharted locations of dumped ammunitions in your territorial waters? ☐ Yes ☐ No If yes, please provide the available data (i.e. geographical coordinates, quantity and types of ammunitions, etc.): _____ _____ _____ _____ **7.** Are there records of activities carried out to dump ammunitions outside your territorial waters? ☐ Yes ☐ No If yes, please provide the available data (i.e. geographical coordinates, quantity and types of ammunitions, etc.): _____ _____

SECTION II
PRACTICAL ASPECTS

Please, check applicable boxes and comment as necessary. Attach additional sheets if needed

Reporting, recording and assessment of encounters with marine dumped unexploded ammunitions	**8.** Is there currently a system in place whereby fishermen and other users of the sea and its coastline may/must report encounters with ammunitions dumped at sea? ☐ Yes ☐ No If yes, please specify the regulation and the authority to which to report: _____ **9.** In case a reporting procedure is in place, through what means is it communicated to fishermen and other members of the public (e.g. fishermen's organisations, trade papers, etc.)? **10.** Once an encounter has been reported is there a formal procedure for the recording and assessment of such incidents? ☐ Yes ☐ No **11.** If yes, what national authority is responsible for recording and assessing encounters with marine dumped ammunitions? **12.** Outline the reporting and assessment procedure/system: information recorded (e.g. location, description of item, nature of encounter -. entanglement in nets, stranding - etc.), follow-up procedures (e.g. site visit if the incident relates to a beached object), action taken (e.g. destroyed, released). If possible, please provide an example of a logged encounter: **13.** Please provide a summary, if available, of all incidents recorded over the last 10 years – include information on number, type and location of the incidents: **14.** Is there currently a monitoring/surveillance programme in place for ammunition dumpsites? ☐ Yes ☐ No

SECTION II

PRACTICAL ASPECTS

Please, check applicable boxes and comment as necessary. Attach additional sheets if needed

Reporting, recording and assessment of encounters with marine dumped unexploded ammunitions	**15.** If yes, please name the authority responsible for monitoring/surveillance: _____ _____ _____ **16.** Outline the details of the monitoring/surveillance programme, e.g. frequency of monitoring, parameters examined, etc: _____ _____
Permits issued	**17.** In the period 1995-2006, how many dumping permits has your Government issued in relation to: ☐ War surplus and ordnance: _____
Permits issued spec.	For each of the above and for each permit issued, please specify: **18.** Description of the area in which the dumping took place: • Geographical position (Latitude and longitude of relevant points, width of the area, etc.): _____ _____ • Depth of water (m): _____ • Distance from nearest land (Nautical Miles): _____ • Relevant hydrographical, biological and meteorological characteristics of the site, including the sea bottom: _____ _____ _____

Annex II

Ammunitions dumping areas in the Mediterranean Sea

Note: the choice of basin names in the Mediterranean Sea indicated in the column “Location” has been made on the basis of indications specified in the document:

International Hydrographic Organization, 1953. Limits of Oceans and Seas (Special Publication n° 28). 42 pp.

http://www.iho.shom.fr/PUBLICATIONS/download.htm

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Adriatic Sea	British Admiralty Charts	5	φ 44°30,00' N; λ 013°30,00' E	40	Circular area marked on nautical charts as "explosives dumping ground"
Adriatic Sea	British Admiralty Charts	3.8	φ 43°25,60' N; λ 014°21,80' E	50	Circular area marked on nautical charts as "explosives dumping ground"
Adriatic Sea	British Admiralty Charts	A	φ 44°20,00' N, λ 013°20,00' E	60	Polygonal area marked on nautical charts as "explosives dumping ground"
		B	φ 44°23,70' N; λ 013°28,00' E		
		C	φ 44°09,00' N; λ 013°48,00' E		
		D	φ 44°05,00' N; λ 013°40,00' E		
Adriatic Sea	British Admiralty Charts	5	φ 43°58,30' N; λ 014°15,60' E	70	Circular area marked on nautical charts as "explosives dumping ground"
Adriatic Sea	British Admiralty Charts	A	φ 43°14,20' N; λ 014°44,20' E	120	Polygonal area marked on nautical charts as "explosives dumping ground "
		B	φ 42°57,00' N; λ 014°53,00' E		
		C	φ 42°57,00' N; λ 014°26,50' E		
Adriatic Sea	British Admiralty Charts	3	φ 42°07,60' N; λ 017°00,00' E	50	Circular area marked on nautical charts as "explosives"
Adriatic Sea	British Admiralty Charts	2	φ 42°35,00' N; λ 017°36,00' E	40	Circular area marked on nautical charts as "explosives dumping ground"
Adriatic Sea	British Admiralty Charts	2	φ 41°15,00' N; λ 016°39,00' E	100	Circular area marked on nautical charts as "explosives"

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Alboran Sea	British Admiralty Charts	2	φ 37°27,10' N; λ 001°00,00' W	1250	Circular area marked on nautical charts as "explosives dumping ground"
Alboran Sea	British Admiralty Charts	1	φ 36°04,50' N; λ 005°18,50' W	800	Circular area marked on nautical charts as "explosives dumping ground"
Alboran Sea	British Advice to Mariners Area LE-D22	A	φ 37°13,00’ N; λ 001°15,00’ W	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 37°13,00’ N; λ 000°45,00’ W		
		C	φ 36°56,00’ N; λ 000°45,00’ W		
		D	φ 36°56,00’ N; λ 001°15,00’ W		
Alboran Sea	British Advice to Mariners Area LE-D103	A	φ 39°13,00’ N; λ 003°05,00’ E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 39°13,00’ N; λ 002°52,00’ E		
		C	φ 39°07,00’ N; λ 002°52,00’ E		
		D	φ 39°07,00’ N; λ 003°05,00’ E		
Alboran Sea	British Advice to Mariners Area M 135	A	φ 39°54,80’ N; λ 000°04,30’ E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 39°54,80’ N; λ 000°40,80’ E		
		C	φ 39°53,00’ N; λ 000°40,80’ E		
		D	φ 39°53,00’ N; λ 000°04,30’ E		
Alboran Sea	British Advice to Mariners Area M 134	2	φ 37°27,00’ N; λ 001°00,00’ W	n.d.	Circular area marked on nautical charts as "firing practice and exercise area"
Alboran Sea	British Advice to Mariners Area LE-D58	A	φ 35°51,00’ N; λ 005°00,00’ W	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 35°51,00’ N; λ 004°42,00’ W		
		C	φ 35°45,00’ N; λ 004°42,00’ W		
		D	φ 35°45,00’ N; λ 005°00,00’ W		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Alboran Sea	British Advice to Mariners Area LE-D95	A	φ 38°35,00' N; λ 001°07,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 38°25,00' N; λ 001°27,00' E		
		C	φ 37°40,00' N; λ 000°52,00' E		
		D	φ 37°57,00' N; λ 000°18,00' E		
		E	φ 38°25,00' N; λ 000°33,00' E		
Alboran Sea	British Advice to Mariners	A	φ 35°47,80' N; λ 001°42,50' W	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 35°39,80' N; λ 001°39,10' W		
		C	φ 35°44,30' N; λ 001°41,60' W		
Alboran Sea	British Advice to Mariners	A	φ 35°22,00' N; λ 004°04,04' W	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 35°15,00' N; λ 004°28,80' W		
		C	φ 35°35,40' N; λ 004°04,00' W		
Central Adriatic Sea	Italian advice to mariners	A	φ 41°09,00' N; λ 016°49,50' E	45	Polygonal area marked on nautical charts as "explosives dumping ground"
		B	φ 41°09,00' N; λ 016°50,00' E		
		C	φ 41°07,00' N; λ 016°51,50' E		
		D	φ 41°07,00' N; λ 016°51,00' E		
Central Adriatic Sea	Italian nautical chart n° 6011/1990 and Royal Navy	2	φ 42°08,00' N; λ 018°31,50' E	50	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Central Adriatic Sea	Italian nautical chart n° 6012/1997 and Royal Navy	3	φ 42°08,30' N; λ 018°31,40' E	40	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Central Adriatic Sea	Italian nautical chart n° 921/2001 and Royal Navy	3	φ 42°00,00' N; λ 017°00,00' E	60	Circular area marked on nautical charts as "unexploded ordnance dumping area"

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Central Adriatic Sea	Italian nautical chart n° 922/2005 and Royal Navy	2.5	φ 43°08,33' N; λ 015°26,00' E	50	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Central Adriatic Sea	Italian nautical chart n° 923/2004 and Royal Navy	1	φ 43°58,85' N; λ 014°46,61' E	50	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Central Adriatic Sea	ICRAM	A	φ 42°13,67' N; λ 015°44,51' E	50	Polygonal area marked on nautical charts as "unexploded ordnance dumping area"
		B	φ 42°13,67' N; λ 015°45,20' E		
		C	φ 42°13,27' N; λ 015°45,20' E		
		D	φ 42°13,27' N; λ 015°44,51' E		
Central Adriatic Sea	Italian nautical chart n°1050 Zone E344	A	φ 43°57,60' N; λ 012°45,60' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°58,74' N; λ 012°49,98' E		
		C	φ 43°58,74' N; λ 012°54,60' E		
		D	φ 43°55,56' N; λ 012°35,58' E		
East Central Tyrrhenian Sea	Mediterranean Pilot Book Vol. 1B and Royal Navy	0.12	φ 40°45,28' N; λ 014°05,83' E	n.d.	Circular area marked on nautical charts as "shipwreck loaded with war surplus"
East-Central Tyrrhenian Sea	Italian nautical chart n°1050 Zone E335	A	φ 40°48,36' N; λ 014°02,22' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 40°48,36' N; λ 013°48,36' E		
		C	φ 40°59,40' N; λ 013°48,36' E		
		D	φ 40°59,40' N; λ 013°58,38' E		
East-Central Tyrrhenian Sea	Italian nautical chart n°1050 Zone M531	A	φ 40°49,50' N; λ 013°42,48' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 40°45,96' N; λ 013°51,00' E		
		C	φ 40°43,38' N; λ 013°50,52' E		
		D	φ 40°44,04' N; λ 013°40,56' E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
East-Central Tyrrhenian Sea	Italian nautical chart n°1050 Zone E332	A	φ 41°27,36' N; λ 012°41,28' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 41°22,14' N; λ 012°57,36' E		
		C	φ 41°16,08' N; λ 012°55,56' E		
		D	φ 41°22,08' N; λ 012°14,64' E		
East-Central Tyrrhenian Sea	Italian nautical chart n°1050 Zone E333	A	φ 41°22,26' N; λ 012°57,40' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 41°13,02' N; λ 012°56,94' E		
		C	φ 41°08,94' N: λ 012°50,64' E		
		D	φ 41°13,02' N; λ 012°41,94' E		
		E	φ 41°24,78' N; λ 012°35,70' E		
		F	φ 41°27,42' N; λ 012°39,30' E		
East-Central Tyrrhenian Sea	Italian nautical chart n°1050 Zone E334/T831	A	φ 41°20,88' N; λ 012°55,98' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 41°20,16' N; λ 012°59,16' E		
		C	φ 41°18,42' N; λ 013°00,48' E		
		D	φ 41°16,50' N; λ 013°00,00' E		
		E	φ 41°16,08' N; λ 012°55,56' E		
Eastern Mediterranean	British Admiralty Charts	0.5	φ 32°08,40' N; λ 034°45,50' E	30	Circular area marked on nautical charts as "explosives dumping ground"
Eastern Mediterranean	British Admiralty Charts	A	φ 34°24,80' N; λ 034°06,50' E	2000	Polygonal area marked on nautical charts as "explosives dumping ground"
		B	φ 34°24,80' N; λ 034°10,00' E		
		C	φ 34°22,00' N; λ 034°10,00' E		
		D	φ 34°22,00' N; λ 034°06,50' E		
Eastern Mediterranean	British Admiralty Charts	A	φ 36°47,60' N; λ 030°35,50' E	50	Polygonal area marked on nautical charts as "explosives"
		B	φ 36°47,60' N; λ 030°36,80' E		
		C	φ 36°46,80' N; λ 030°36,80' E		
		D	φ 36°46,80' N; λ 030°35,50' E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
East-Southern Tyrrhenian Sea	Italian advice to mariners	1	φ 39°48,90' N; λ 015°47,00' E	45	Circular area marked on nautical charts as "explosives dumping ground"
Ligurian Sea	British Admiralty Charts	A	φ 43°39,00' N; λ 009°12,10' E	1300	Polygonal area marked on nautical charts as "explosives dumping ground"
		B	φ 43°39,00' N; λ 009°20,00' E		
		C	φ 43°31,00' N; λ 009°03,00' E		
		D	φ 43°29,00' N; λ 009°08,00' E		
Ligurian Sea	British Admiralty Charts	0.5	φ 43°34,40' N; λ 007°09,20' E	20	Circular area marked on nautical charts as "explosives dumping ground"
Ligurian Sea	Italian advice to mariners	0.5	φ 43°07,30' N; λ 10°30,70' E	45	Circular area marked on nautical charts as "Shipwreck probably loaded with conventional weapons"
Ligurian Sea	Italian advice to mariners	0.5	φ 43°07,40' N; λ 010°30,06' E	45	Circular area marked on nautical charts as "Shipwreck probably loaded with conventional weapons"
Ligurian Sea	Italian advice to mariners	0.5	φ 43°09,00' N; λ 010°29,10' E	45	Circular area marked on nautical charts as "Shipwreck probably loaded with conventional weapons"
Ligurian Sea	Mediterranean Pilot Book Vol. 1C 1982	1	φ 44°02,57' N; λ 009°41,81' E	n.d.	Circular area marked on nautical charts as "unexploded ordnance dumping area"

Location	Source	Vertex and radius (nm) of areas	Coordinates	Depth (m)	Notes
Ligurian Sea	Mediterranean Pilot Book Vol. 1C 1982	0.8	φ 44°00,00' N; λ 009°42,13' E	n.d.	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Ligurian Sea	Italian nautical chart n°1050 Zone T803	A	φ 44°03,00' N; λ 009°13,98' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°54,00' N; λ 010°07,20' E		
		C	φ 43°51,00' N; λ 010°00,00' E		
		D	φ 44°00,00' N; λ 009°41,82' E		
		E	φ 44°03,24' N; λ 009°42,00' E		
Ligurian Sea	Italian nautical chart n°1050 Zone T801	A	φ 43°44,34' N; λ 009°21,48' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 44°00,54' N; λ 009°31,50' E		
		C	φ 44°00,54' N; λ 009°50,28' E		
		D	φ 43°43,98' N; λ 009°55,98' E		
Ligurian Sea	Italian nautical chart n°1050 Zone T802	A	φ 43°58,98' N; λ 009°51,78' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°54,06' N; λ 009°30,12' E		
		C	φ 43°59,40' N; λ 009°10,98' E		
		D	φ 44°04,32' N; λ 009°30,96' E		
Ligurian Sea	Italian nautical chart n°1050 Zone E301	A	φ 43°48,84' N; λ 010°10,50' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°48,90' N; λ 010°16,08' E		
		C	φ 43°45,84' N; λ 010°16,50' E		
		D	φ 43°45,90' N; λ 010°10,44' E		
Ligurian Sea	Italian nautical chart n°1050 Zone E303	A	φ 43°41,04' N; λ 010°03,42' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°44,22' N; λ 010°03,00' E		
		C	φ 43°44,34' N; λ 010°05,28' E		
		D	φ 43°42,60' N; λ 010°16,62' E		

Location	Source	Vertex and radius (nm) of areas	Coordinates	Depth (m)	Notes
Ligurian Sea	Italian nautical chart n°1050 Zone M503	A	φ 43°50,46' N; λ 010°06,30' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°54,48' N; λ 009°05,16' E		
		C	φ 44°01,44' N; λ 009°42,48' E		
		D	φ 44°01,14' N; λ 010°05,16' E		
		E	φ 43°57,60' N; λ 010°10,14' E		
Ligurian Sea	Italian nautical chart n°1050 Zone M502	A	φ 44°04,26' N; λ 009°06,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 44°01,32' N; λ 009°54,66' E		
		C	φ 44°00,48' N; λ 009°45,00' E		
		D	φ 44°03,48' N; λ 009°54,30' E		
Ligurian Sea	Italian nautical chart n°1050 Zone M501	A	φ 44°08,64' N; λ 009°00,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 44°08,64' N; λ 009°55,62' E		
		C	φ 44°00,00' N; λ 009°06,48' E		
		D	φ 44°00,00' N; λ 009°26,28' E		
Ligurian Sea	Italian nautical chart n°1050 Zone E302	A	φ 43°00,06' N; λ 010°31,56' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°00,06' N; λ 010°27,48' E		
		C	φ 43°03,00' N; λ 010°27,48' E		
		D	φ 43°03,00' N; λ 010°32,40' E		
Libyan Sea	British Admiralty Charts	A	φ 32°57,50' N; λ 015°07,20' E	720	Polygonal area marked on nautical charts as "explosives dumping ground"
		B	φ 32°57,50' N; λ 015°13,20' E		
		C	φ 32°52,00' N; λ 015°13,20' E		
		D	φ 32°52,00' N; λ 015°07,20' E		
Northern Adriatic Sea	Italian nautical chart n° 39/1991 and Royal Navy	4	φ 44°53,40' N; λ 013°24,90' E	41	Circular area marked on nautical charts as "unexploded ordnance dumping area"

Location	Source	Vertex and radius (nm) of areas	Coordinates	Depth (m)	Notes
Northern Adriatic Sea	Italian nautical chart n° 38/1992 and Royal Navy	0.4	φ 45°08,15' N; λ 012°59,10' E	31	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Northern Adriatic Sea	Italian nautical chart n° 239/1994	A	φ 45°39,19' N; λ 013°44,95' E	20	Polygonal area marked on nautical charts as "unexploded ordnance dumping area"
		B	φ 45°39,52' N; λ 013°44,94' E		
		C	φ 45°39,52' N; λ 013°44,45' E		
		D	φ 45°39,27' N; λ 013°44,45' E		
		E	φ 45°39,19' N; λ 013°44,65' E		
Northern Adriatic Sea	Italian nautical chart n° 923/2004	4	φ 44°25,00' N; λ 014°22,50' E	40	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Northern Adriatic Sea	Italian nautical chart n° 924/2004 and Royal Navy	2	φ 44°51,00' N; λ 013°44,50' E	40	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Northern Adriatic Sea	Italian nautical chart n° 924/2004	4	φ 44°20,00' N; λ 014°21,67' E	50	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Northern Adriatic Sea	Mediterranean Pilot Book Vol. 1C 1982	1.29	φ 45°17,25' N; λ 012°35,05' E	14.5	Circular area marked on nautical charts as "shipwreck loaded with war surplus"
Northern Adriatic Sea	Mediterranean Pilot Book Vol. 1C 1982	0.5	φ 45°26,68' N; λ 012°34,94' E	n.d.	Circular area marked on nautical charts as "unexploded ordnance dumping area"

Location	Source	Vertex and radius (nm) of areas	Coordinates	Depth (m)	Notes
Northern Adriatic Sea	Italian nautical chart n°1050 Zone E349	A	φ 45°37,68 N; λ 012°59,58' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 45°39,06 N; λ 013°06,36' E		
		C	φ 45°39,48 N; λ 013°17,52' E		
		D	φ 45°31,62 N; λ 013°17,52' E		
		E	φ 45°31,56 N; λ 012°59,52' E		
Northern Adriatic Sea	Italian nautical chart n°1050 Zone E348	A	φ 45°27,12 N; λ 012°28,44' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 45°28,32 N; λ 012°32,46' E		
		C	φ 45°26,40 N; λ 012°34,38' E		
		D	φ 45°25,26 N; λ 012°30,06' E		
Northern Adriatic Sea	Italian nautical chart n°1050 Zone E347	A	φ 45°11,40 N; λ 012°19,26' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 45°12,18 N; λ 012°23,10' E		
		C	φ 45°09,60 N; λ 012°23,10' E		
		D	φ 45°09,54 N; λ 012°20,40' E		
Northern Adriatic Sea	Italian nautical chart n°1050 Zone E346	A	φ 44°39,12 N; λ 012°17,10' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 44°42,18 N; λ 012°30,54' E		
		C	φ 44°34,44 N; λ 012°30,06' E		
		D	φ 44°34,08 N; λ 012°26,40' E		
		E	φ 44°31,56 N; λ 012°26,10' E		
		F	φ 44°32,46 N; λ 012°18,30' E		
Northern Adriatic Sea	Italian nautical chart n°1050 Zone E345	A	φ 44°02,04 N; λ 012°37,38' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 44°02,04 N; λ 012°44,58' E		
		C	φ 44°01,08 N; λ 012°44,64' E		
		D	φ 44°01,02 N; λ 012°38,88' E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Northern Adriatic Sea	Italian nautical chart n°1050 Zone E343	A	φ 43°50,76 N; λ 013°02,64' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°53,04 N; λ 013°02,58' E		
		C	φ 43°53,04 N; λ 013°06,60' E		
		D	φ 43°50,04 N; λ 013°06,60' E		
		E	φ 43°50,04 N; λ 013°03,42' E		
Northern Adriatic Sea	Italian nautical chart n°1050 Zone M541	A	φ 43°51,06 N; λ 013°27,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°47,04 N; λ 013°32,58' E		
		C	φ 43°39,12 N; λ 013°21,42' E		
		D	φ 43°42,54 N; λ 013°14,70' E		
Northern Adriatic Sea	Italian nautical chart n°1050 Zone T841	A	φ 43°46,98 N; λ 013°33,06' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°46,98 N; λ 013°50,64' E		
		C	φ 43°37,02 N; λ 013°50,64' E		
		D	φ 43°37,14 N; λ 013°33,00' E		
Northern Adriatic Sea	Italian nautical chart n°1050 Zone T842	A	φ 43°12,18 N; λ 014°16,98' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 43°24,30 N; λ 014°34,44' E		
		C	φ 43°10,08 N; λ 014°54,54' E		
		D	φ 42°58,26 N; λ 014°39,30' E		
Northern Adriatic Sea	Italian nautical chart n°1050 Zone E341	A	φ 42°05,88 N; λ 014°44,46' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 42°07,08 N; λ 014°44,46' E		
		C	φ 42°07,08 N; λ 014°47,46' E		
		D	φ 42°04,38 N; λ 014°47,52' E		
Northern Balearic Sea	British Admiralty Charts	0.5	φ 42°55,00' N; λ 005°03,90' E	2000	Circular area marked on nautical charts as "explosives dumping ground"

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Northern Balearic Sea	Italian nautical chart n° 908/2001	0,5	φ 42°54,67' N; λ 005°53,67' E	10	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Northern Ionian Sea	British Admiralty Charts	1	φ 39°55,00' N; λ 018°00,00' E	100	Circular area marked on nautical charts as "explosives "
Northern Ionian Sea	Italian nautical chart n° 920/2000 and Royal Navy	5	φ 39°49,00' N; ̣019°00,00' E	1100	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Northern Ionian Sea	Italian nautical chart n°1050 Zone M552	A	φ 38°12,78' N; λ 015°17,46' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 38°14,16' N; λ 015°17,46' E		
		C	φ 38°20,10' N; λ 015°30,42' E		
		D	φ 38°20,10' N; λ 015°37,44' E		
		E	φ 38°16,62' N; λ 015°37,44' E		
Northern Ionian Sea	Italian nautical chart n°1050 Zone T834	A	φ 40°03,36' N; λ 017°13,20' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 39°52,08' N; λ 017°37,98' E		
		C	φ 39°33,96' N; λ 017°37,98' E		
		D	φ 39°33,96' N; λ 017°13,20' E		
Northern Ionian Sea	Italian nautical chart n°1050 Zone E337	A	φ 38°50,28' N; λ 016°39,78' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 38°49,44' N; λ 016°43,26' E		
		C	φ 38°47,10' N; λ 016°41,46' E		
		D	φ 38°46,86' N; λ 016°39,24' E		
		E	φ 38°46,86' N; λ 016°36,30' E		
		F	φ 38°50,10' N; λ 016°37,98' E		
Northern Tyrrhenian Sea	British Admiralty Charts	A	φ 42°21,50' N; λ 011°26,00' E	40	Entry Prohibited (explosives)
		B	φ 42°18,50' N; λ 011°33,00' E		
		C	φ 42°17,00' N; λ 011°32,50' E		
		D	φ 42°19,00' N; λ 011°24,00' E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Sardinia Channel	Mediterranean Pilot Book Vol. 1C 1982	A	φ 38°53,45’ N; λ 008°37,34’ E	n.d.	Polygonal area marked on nautical charts as “unexploded ordnance dumping area”
		B	φ 38°51,55’ N; λ 008°37,34’ E		
		C	φ 38°51,55’ N; λ 008°39,98’ E		
		D	φ 38°53,60’ N; λ 008°39,98’ E		
Sardinia Channel	Mediterranean Pilot Book Vol. 1C 1982 and Royal Navy	A	φ 38°58,22’ N; λ 008°34,97’ E	n.d.	Polygonal area marked on nautical charts as “unexploded ordnance dumping area”
	Mediterranean Pilot Book Vol. 1C 1982 and Royal Navy	B	φ 38°51,31’ N; λ 008°34,97’ E		
	Mediterranean Pilot Book Vol. 1C 1982 and Royal Navy	C	φ 38°51,31’ N; λ 008°43,03’ E		
	Mediterranean Pilot Book Vol. 1C 1982 and Royal Navy	D	φ 38°55,38’ N; λ 008°43,03’ E		
Sardinia Channel	Italian nautical chart n°1050 Zone T811	A	φ 38°59,28’ N; λ 008°46,14’ E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 39°00,36’ N; λ 008°33,78’ E		
		C	φ 39°00,42’ N; λ 008°54,96’ E		
		D	φ 38°50,16’ N; λ 008°53,46’ E		
		E	φ 38°40,68’ N; λ 008°06,78’ E		
		F	φ 38°40,32’ N; λ 008°24,66’ E		
		G	φ 38°49,68’ N; λ 008°20,28’ E		
		H	φ 38°55,50’ N; λ 008°01,98’ E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Sardinia Channel	Italian nautical chart n°1050 Zone E311	A	φ 38°56,40’ N; λ 008°12,66’ E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 38°57,12’ N; λ 008°24,66’ E		
		C	φ 38°48,36’ N; λ 008°10,62’ E		
		D	φ 38°43,20’ N; λ 008°44,28’ E		
		E	φ 38°47,22’ N; λ 008°05,28’ E		
		F	φ 38°49,08’ N; λ 008°03,30’ E		
		G	φ 38°55,38’ N; λ 008°00,48’ E		
Sardinia Sea	Italian nautical chart n° 6012/1997	A	φ 41°30,40’ N; λ 018°59,83’ E	0-500	Polygonal area marked on nautical charts as "mine field"
		B	φ 40°30,40’ N; λ 018°59,96’ E		
		C	φ 40°14,98’ N; λ 019°09,97’ E		
		D	φ 40°15,40’ N; λ 019°25,78’ E		
		E	φ 41°30,70’ N; λ 019°31,18’ E		
Sardinia Sea	Mediterranean Pilot Book Vol. 1C 1982 and Royal Navy	1	φ 39°47,43’ N; λ 008°28,62’ E	n.d.	Circular area marked on nautical charts as “unexploded ordnance dumping area”
Sardinia Sea	Italian nautical chart n°1050 Zone T812	A	φ 39°43,38’ N; λ 008°31,32’ E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
	Italian nautical chart n°1050 Zone T812	B	φ 39°43,32’ N; λ 008°16,32’ E		
	Italian nautical chart n°1050 Zone T812	C	φ 39°47,04’ N; λ 008°16,14’ E		
	Italian nautical chart n°1050 Zone T812	D	φ 39°49,02’ N; λ 008°45,78’ E		
	Italian nautical chart n°1050 Zone T812	E	φ 39°47,52’ N; λ 008°17,64’ E		
	Italian nautical chart n°1050 Zone T812	F	φ 39°46,86’ N; λ 008°16,32’ E		
	Italian nautical chart n°1050 Zone T812	G	φ 39°44,46’ N; λ 008°54,12’ E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Sicilian Channel	British Admiralty Charts	A	φ 37°24,00' N; λ 010°11,50' E	70	Polygonal area marked on nautical charts as "dangerous for trawling"
		B	φ 37°24,00' N; λ 010°13,00' E		
		C	φ 37°22,50' N; λ 010°11,50' E		
		D	φ 37°22,50' N; λ 010°13,00' E		
Sicilian Channel	Italian nautical chart n° 917/1986	1.5	φ 36°07,00' N; λ 014°15,00' E	200	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Sicilian Channel	British Advice to Mariners	A	φ 37°45,00' N; λ 010°15,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 37°45,00' N; λ 010°30,00' E		
		C	φ 38°00,00' N; λ 010°15,00' E		
		D	φ 38°00,00' N; λ 010°30,00' E		
Sicilian Channel	British Advice to Mariners	A	φ 35°40,00' N; λ 011°30,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 35°40,00' N; λ 011°50,00' E		
		C	φ 35°30,00' N; λ 011°30,00' E		
		D	φ 35°30,00' N; λ 011°50,00' E		
Sicilian Channel	British Advice to Mariners Zone D1	A	φ 35°05,00' N; λ 014°06,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 35°05,00' N; λ 015°21,00' E		
		C	φ 34°20,00' N; λ 016°24,00' E		
		D	φ 34°20,00' N; λ 013°49,00' E		
Sicilian Channel	British Advice to Mariners Zone D3	A	φ 36°01,00' N; λ 014°12,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 35°58,00' N; λ 014°20,00' E		
		C	φ 35°55,00' N; λ 014°20,00' E		
		D	φ 35°51,00' N; λ 014°14,00' E		
		E	φ 35°56,00' N; λ 014°10,00' E		
Sicilian Channel	British Advice to Mariners Zone D4	8.5	φ 35°40,00' N; λ 014°59,00' E	n.d.	Circular area marked on nautical charts as "firing practice and exercise area"

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Sicilian Channel	Italian nautical chart n°1050 Zone M521	A	φ 38°08,52' N; λ 012°00,18' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 38°08,76' N; λ 012°30,24' E		
		C	φ 37°59,70' N; λ 012°30,54' E		
		D	φ 37°47,22' N; λ 012°26,94' E		
		E	φ 37°42,42' N; λ 012°15,06' E		
		F	φ 37°42,12' N; λ 012°00,36' E		
Southern Adriatic Sea	British Admiralty Charts	A	φ 40°28,00' N; λ 017°05,80' E	20	Circular area marked on nautical charts as "entry prohibited (explosives)"
		B	φ 40°27,10' N; λ 017°06,50' E		
		C	φ 40°27,60' N; λ 017°09,80' E		
		D	φ 40°28,50' N; λ 017°10,50' E		
Southern Adriatic Sea	British Admiralty Charts	2	φ 40°21,50' N; λ 016°58,00' E	600	Circular area marked on nautical charts as "entry prohibited (explosives)"
Southern Adriatic Sea	British Admiralty Charts	A	φ 40°25,10' N; λ 017°10,50' E	20	Circular area marked on nautical charts as "entry prohibited (explosives)"
		B	φ 40°25,20' N; λ 017°11,50' E		
		C	φ 40°24,20' N; λ 017°11,50' E		
Southern Adriatic Sea	British Admiralty Charts	A	φ 40°27,00' N; λ 017°08,50' E	45	Circular area marked on nautical charts as "entry prohibited (explosives)"
		B	φ 40°26,10' N; λ 017°10,80' E		
		C	φ 40°25,80' N; λ 017°08,00' E		
		D	φ 40°25,40' N; λ 017°09,40' E		
Southern Adriatic Sea	Italian nautical chart n° 32/2000	1.4	φ 41°56,35' N; λ 016°16,60' E	50	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Southern Adriatic Sea	Italian nautical chart n° 31/1991	1.5	φ 41°33,58' N; λ 016°16,50' E	300	Circular area marked on nautical charts as "unexploded ordnance dumping area"

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Southern Adriatic Sea	Italian nautical chart n° 199/1987	0.5	φ 41°37,00' N; λ 015°54,75' E	10	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Southern Adriatic Sea	Italian nautical chart n° 921/2001 and Royal Navy	5	φ 41°41,40' N; λ 017°47,60' E	1200	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Southern Adriatic Sea	Italian nautical chart n° 921/2001 and Royal Navy	9	φ 41°55,80' N; λ 017°25,50' E	1020	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Southern Adriatic Sea	Italian nautical chart n° 921/2001	5	φ 41°18,17' N; λ 018°28,17' E	1000	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Southern Adriatic Sea	Italian nautical chart n° 921/2001 and Royal Navy	A	φ 41°28,00' N; λ 018°19,00' E	1100	Polygonal area marked on nautical charts as "unexploded ordnance dumping area"
		B	φ 41°28,00' N; λ 018°31,00' E		
		C	φ 41°45,00' N; λ 018°20,00' E		
		D	φ 41°45,00' N; λ 018°51,00' E		
Southern Adriatic Sea	Italian nautical chart n° 920/2000	0.5	φ 40°41,00' N; λ 018°29,50' E	1100	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Southern Adriatic Sea	Italian nautical chart n° 920/2000 and Royal Navy	4.6	φ 40°49,00' N; λ 018°51,67' E	1100	Circular area marked on nautical charts as "unexploded ordnance dumping area"
Southern Adriatic Sea	Pilot Area A.C.A.B. Project	A	φ 41°48,80' N; λ 016°54,78' E	50	Polygonal area marked on nautical charts as "unexploded ordnance dumping area"
		B	φ 41°43,87' N; λ 016°55,83' E		
		C	φ 41°43,55' N; λ 016°53,17' E		
		D	φ 41°48,48' N; λ 016°52,12' E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Southern Adriatic Sea	ICRAM	A	φ 41°12,85' N; λ 016°35,01' E	n.d.	Polygonal area marked on nautical charts as "unexploded ordnance dumping area"
		B	φ 41°12,95' N; λ 016°35,31' E		
		C	φ 41°12,85' N; λ 016°35,35' E		
		D	φ 41°12,75' N; λ 016°35,06' E		
Southern Adriatic Sea	Mediterranean Pilot Book Vol. 1C 1982	A	φ 41°22,51' N; λ 016°14,27' E	n.d.	Polygonal area marked on nautical charts as "unexploded ordnance dumping area"
		B	φ 41°21,06' N; λ 016°15,60' E		
		C	φ 41°20,61' N; λ 016°15,29' E		
		D	φ 41°22,04' N; λ 016°13,43' E		
Southern Adriatic Sea	Italian Naut. Chart n°1050 Zone T835	A	φ 41°07,62' N; λ 017°42,78' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 41°07,62' N; λ 017°54,18' E		
		C	φ 40°52,20' N; λ 017°54,18' E		
Southern Adriatic Sea	Italian nautical chart n°1050 Zone E3310	A	φ 41°22,20' N; λ 016°12,42' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 41°26,04' N; λ 016°13,80' E		
		C	φ 41°24,06' N; λ 016°19,20' E		
		D	φ 41°30,48' N; λ 016°15,30' E		
Southern Adriatic Sea	Italian nautical chart n°1050 Zone E339	A	φ 41°11,58' N; λ 016°47,22' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 41°11,64' N; λ 016°49,62' E		
		C	φ 41°10,20' N; λ 016°50,28' E		
		D	φ 41°09,06' N; λ 016°47,64' E		
		E	φ 41°09,12' N; λ 016°47,46' E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Southern Adriatic Sea	Italian nautical chart n°1050 Zone M534	A	φ 40°38,64' N; λ 018°01,50' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 40°39,36' N; λ 018°03,96' E		
		C	φ 40°36,36' N; λ 018°06,78' E		
		D	φ 40°34,92' N; λ 018°02,34' E		
Southern Adriatic Sea	Italian nautical chart n°1050 Zone E338	A	φ 40°26,10' N; λ 018°15,78' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 40°30,66' N; λ 018°16,80' E		
		C	φ 40°29,64' N; λ 018°19,32' E		
		D	φ 40°25,98' N; λ 018°22,86' E		
		E	φ 40°23,34' N; λ 018°23,28' E		
		F	φ 40°24,54' N; λ 018°18,12' E		
Southern Adriatic Sea	Italian nautical chart n°1050 Zone T833	A	φ 40°24,66' N; λ 017°12,30' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 40°18,24' N; λ 017°30,30' E		
		C	φ 40°00,42' N; λ 017°30,30' E		
		D	φ 40°07,02' N; λ 017°12,30' E		
Southern Adriatic Sea	Italian nautical chart n°1050 Zone M533	A	φ 40°24,06' N; λ 017°12,54' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 40°24,78' N; λ 017°12,54' E		
		C	φ 40°24,84' N; λ 017°13,62' E		
		D	φ 40°24,54' N; λ 017°13,62' E		
Southern Adriatic Sea	Italian nautical chart n°1050 Zone M532	A	φ 40°26,22' N; λ 016°54,06' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 40°26,22' N; λ 017°05,52' E		
		C	φ 40°21,48' N; λ 017°05,52' E		
		D	φ 40°21,48' N; λ 016°50,64' E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Southern Adriatic Sea	Italian nautical chart n°1050 Zone T836	A	φ 40°37,08' N; λ 018°33,12' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 40°39,18' N; λ 018°45,06' E		
		C	φ 40°21,78' N; λ 018°45,42' E		
		D	φ 40°32,10' N; λ 018°33,36' E		
Southern Adriatic Sea	Italian nautical chart n°1050 Zone T832	A	φ 40°17,22' N; λ 016°47,58' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 40°17,22' N; λ 016°51,36' E		
		C	φ 39°58,32' N; λ 016°51,60' E		
		D	φ 39°58,32' N; λ 016°38,16' E		
Southern Baleares Sea	British Advice to Mariners Area LE-D21	10	φ 39°51,10' N; λ 000°40,30' E	n.d.	Circular area marked on nautical charts as "firing practice and exercise area"
Southern Baleares Sea	British Advice to Mariners Area LE-D58	5	φ 39°15,50' N; λ 004°59,50' E	n.d.	Circular area marked on nautical charts as "firing practice and exercise area"
Southern Baleares Sea	British Advice to Mariners	A	φ 39°05,00' N; λ 002°24,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 39°05,00' N; λ 002°49,00' E		
		C	φ 39°21,30' N; λ 003°11,40' E		
Southern Baleares Sea	British Advice to Mariners	A	φ 39°35,20' N; λ 003°25,20' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 39°30,00' N; λ 003°49,00' E		
		C	φ 39°50,00' N; λ 003°49,00' E		
Southern Ionian Sea	British Advice to Mariners Zone D2	A	φ 36°31,00' N; λ 017°00,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 35°30,00' N; λ 017°35,00' E		
		C	φ 35°41,00' N; λ 015°25,00' E		
		D	φ 36°31,00' N; λ 015°50,00' E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Southern Ionian Sea	British Advice to Mariners Zone D6	A	φ 36°31,00' N; λ 016°00,00' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 36°31,00' N; λ 017°00,00' E		
		C	φ 36°11,00' N; λ 016°00,00' E		
		D	φ 36°11,00' N; λ 017°00,00' E		
Southern Ionian Sea	Italian nautical chart n°1050 Zone T821	A	φ 37°15,06' N; λ 015°15,66' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 37°22,92' N; λ 015°19,98' E		
		C	φ 37°22,86' N; λ 015°29,58' E		
		D	φ 37°04,86' N; λ 015°29,58' E		
		E	φ 37°04,92' N; λ 015°21,54' E		
		F	φ 37°13,98' N; λ 015°15,54' E		
Southern Ionian Sea	Italian nautical chart n°1050 Zone T823	A	φ 37°25,08' N; λ 015°34,98' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 37°25,08' N; λ 015°48,60' E		
		C	φ 37°15,36' N; λ 015°48,60' E		
		D	φ 37°15,18' N; λ 015°36,48' E		
Southern Ionian Sea	Italian nautical chart n°1050 Zone T824	A	φ 37°10,98' N; λ 015°21,96' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 37°11,10' N; λ 015°43,08' E		
		C	φ 37°00,06' N; λ 015°43,50' E		
		D	φ 37°00,18' N; λ 015°25,50' E		
Southern Ionian Sea	Italian nautical chart n°1050 Zone T822	A	φ 37°00,18' N; λ 015°25,50' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 37°00,06' N; λ 015°43,50' E		
		C	φ 37°11,10' N; λ 015°43,08' E		
		D	φ 37°10,98' N; λ 015°53,46' E		
		E	φ 36°51,12' N; λ 015°53,58' E		
		F	φ 36°51,12' N; λ 015°25,50' E		

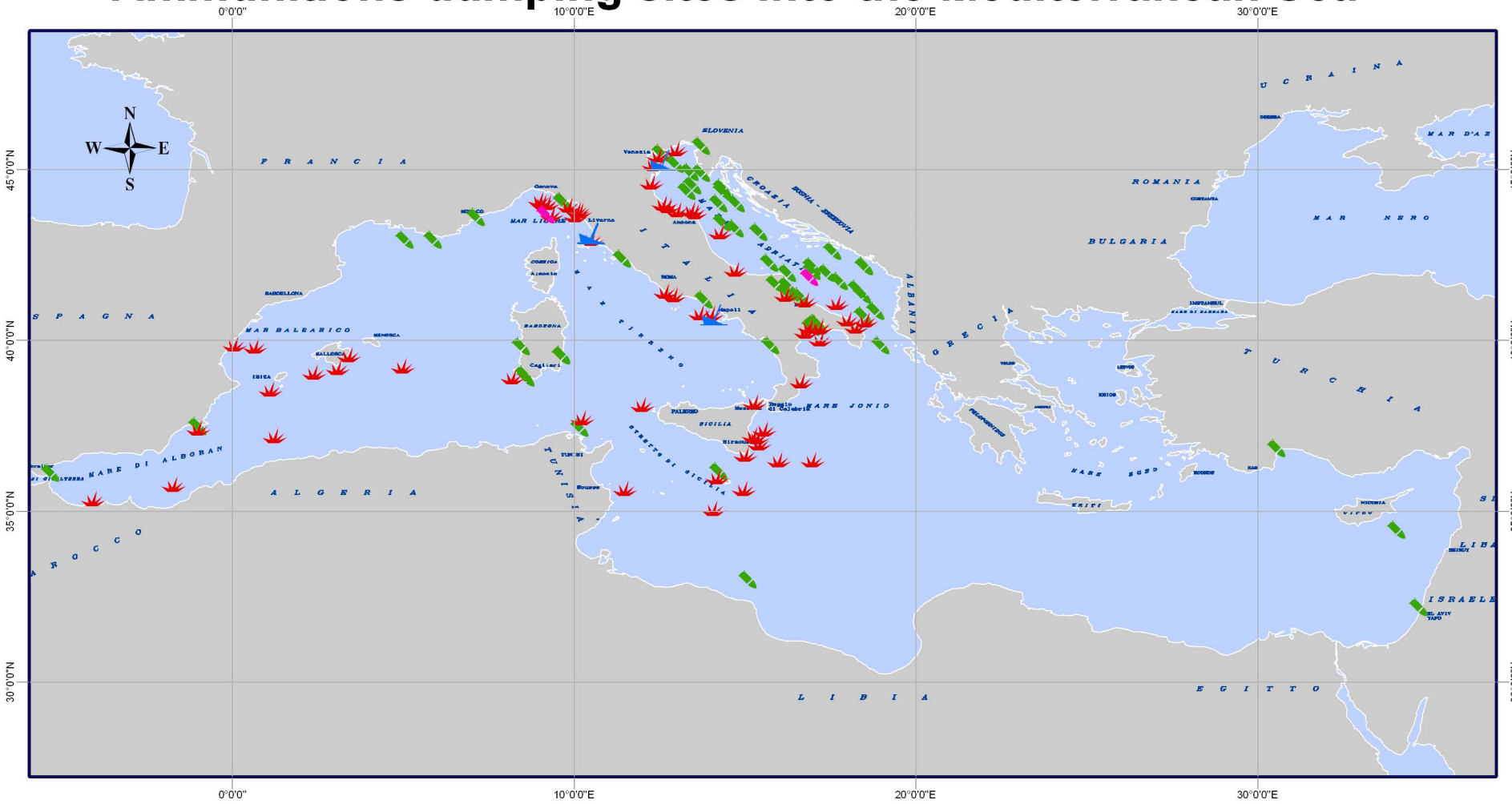
Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Southern Ionian Sea	Italian nautical chart n°1050 Zone E321	A	φ 36°40,86' N; λ 015°01,26' E	n.d.	Polygonal area marked on nautical charts as "firing practice and exercise area"
		B	φ 36°38,28' N; λ 015°01,26' E		
		C	φ 36°39,36' N; λ 014°59,58' E		
		D	φ 36°39,36' N; λ 015°02,46' E		
West-Southern Tyrrhenian Sea	British Admiralty Charts	1	φ 39°31,25' N; λ 009°39,25' E	50	Circular area marked on nautical charts as "entry prohibited (explosives)"
West-Southern Tyrrhenian Sea	British Admiralty Charts	2.5	φ 39°32,00' N; λ 009°40,00' E	100	Circular area marked on nautical charts as "entry prohibited (explosives)"
Northern Adriatic Sea	Pilot book for the Adriatic Sea, 1964	A	φ 44°52,50' N; λ 013°44'00' E	n.d.	Polygonal area in front of the port of Pula marked on nautical charts as "firing practice and exercise area"
		B	φ 44°44,00' N; λ 013°53'00' E		
		C	φ 44°39,00' N; λ 013°43'00' E		
		D	φ 44°49,00' N; λ 013°33'00' E		
Northern Adriatic Sea	Pilot book for the Adriatic Sea, 1964	A	φ 44°57,50' N; λ 013°42'00' E	n.d.	Polygonal area north of Brijuni islands marked on nautical charts as "firing practice and exercise area"
		B	φ 44°59,50' N; λ 013°40'00' E		
		C	φ 44°59,70' N; λ 013°42'20' E		
		D	φ 44°58,50' N; λ 013°44'50' E		
		E	φ 44°57,00' N; λ 013°44'50' E		

Location	Source	Vertex or radius (nm) of areas	Coordinates	Depth (m)	Notes
Central Adriatic Sea	Pilot book for the Adriatic Sea, 1964	A	φ 43°37,50’ N; λ 015°44,80’ E	n.d.	Polygonal area between Island Kornat and Island Zirje marked on nautical charts as "firing practice and exercise area"
		B	φ 43°28,00’ N; λ 015°45,50’ E		
		C	φ 43°33,00’ N; λ 015°25,00’ E		
		D	φ 43°33,90’ N; λ 015°24,80’ E		
		E	φ 43°44,30’ N; λ 015°27,80’ E		
Central Adriatic Sea	Pilot book for the Adriatic Sea, 1964	A	φ 42°43,00’ N; λ 017°00,00’ E	n.d.	Polygonal area SW of the Island of Mljet marked on nautical charts as "firing practice and exercise area"
		B	φ 42°43,00’ N; λ 017°20,00’ E		
		C	φ 42°34,00’ N; λ 017°20,00’ E		
		D	φ 42°34,00’ N; λ 017°00,00’ E		
Central Adriatic Sea	Pilot book for the Adriatic Sea, 1964	A	φ 42°27,00’ N; λ 018°22,00’ E	n.d.	Polygonal area SW from the Boka Kotorska Bay marked on nautical charts as "firing practice and exercise area"
		B	φ 42°22,00’ N; λ 018°32,00’ E		
		C	φ 42°12,00’ N; λ 018°32,00’ E		
		D	φ 42°21,00’ N; λ 018°14,00’ E		

Annex III

Map of the Mediterranean Sea reporting the officially recorded ammunitions dumping sites and fire practice areas

Ammunitions dumping sites into the Mediterranean Sea



Legend

- *Shipwreck with ammunitions*
- *Firing Practice Area*
- *Chemical Weapons Dumping Area*
- *Ordance Dumping Area*
- *200 m*

Locations are mapped according with the data gathered from pilot books, nautical charts and specific studies

Map produced by the MEDU Secretariat in June 2008

by E. Amato, L. Alcaro, P. Giordano

Annex IV

Map reporting the officially recorded ammunitions dumping sites in the Southern Adriatic Sea*

***as noticed within the RED COD project**

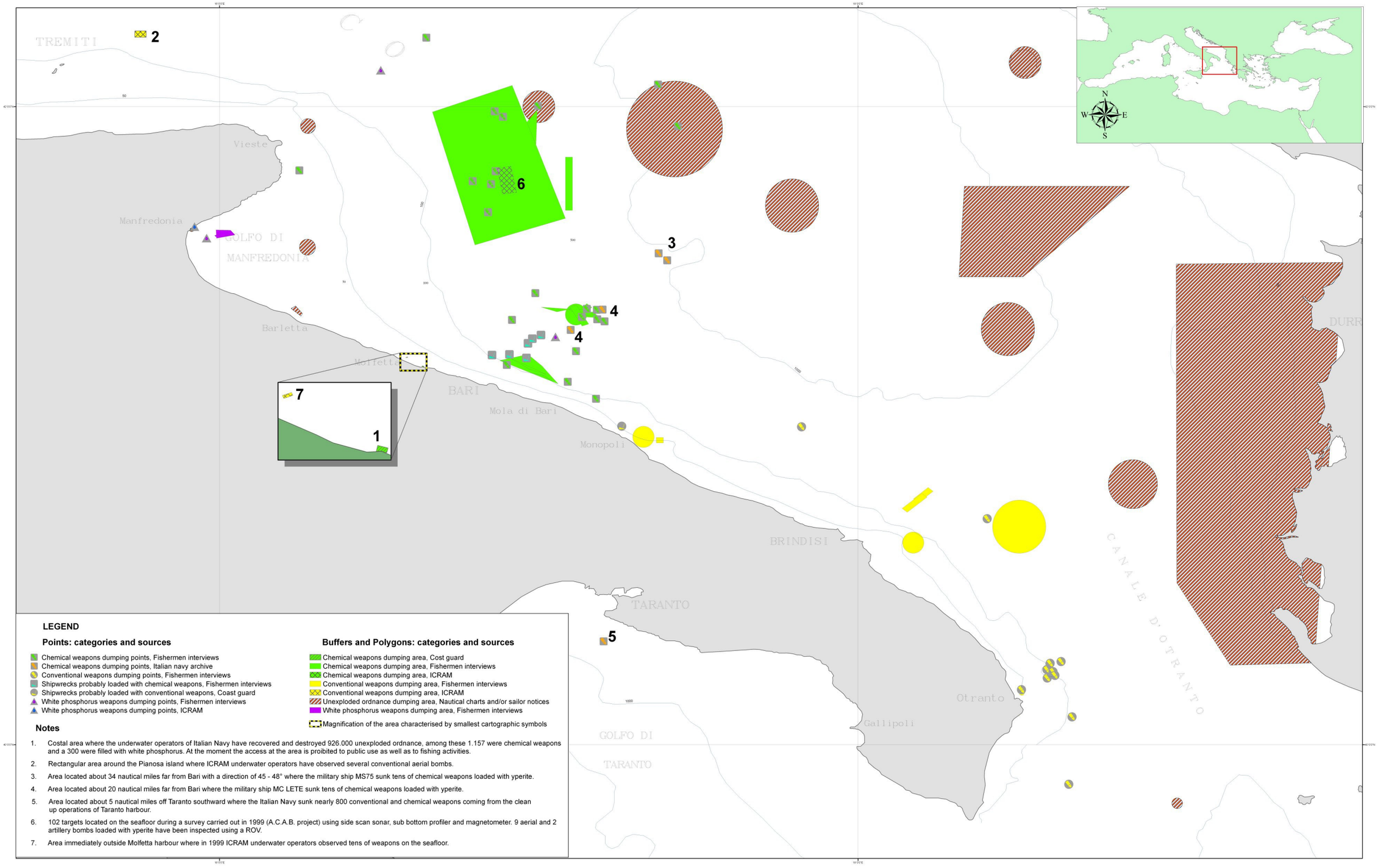
MAP OF UNEXPLODED ORDNANCE DUMPING SITES IN THE SOUTHERN ADRIATIC SEA

R.E.D. C.O.D. project (Research on Environmental Damage caused by Chemical Ordnance Dumped at sea)
co-financed by the European Commission DG Environment (action B4-3070/2003/368585/SUB/D.3).

Amato E., Agnesi S., Alcaro L., Annunziatellis A., Giordano P.

0 5 10 20 30 40 Miles

Geographic Projection
Datum: ED 50



LEGEND

Points: categories and sources

- Chemical weapons dumping points, Fishermen interviews
- Chemical weapons dumping points, Italian navy archive
- Conventional weapons dumping points, Fishermen interviews
- Shipwrecks probably loaded with chemical weapons, Fishermen interviews
- Shipwrecks probably loaded with conventional weapons, Coast guard
- White phosphorus weapons dumping points, Fishermen interviews
- White phosphorus weapons dumping points, ICRAM

Buffers and Polygons: categories and sources

- Chemical weapons dumping area, Cost guard
- Chemical weapons dumping area, Fishermen interviews
- Chemical weapons dumping area, ICRAM
- Conventional weapons dumping area, Fishermen interviews
- Conventional weapons dumping area, ICRAM
- Unexploded ordnance dumping area, Nautical charts and/or sailor notices
- White phosphorus weapons dumping area, Fishermen interviews
- Magnification of the area characterised by smallest cartographic symbols

Notes

1. Costal area where the underwater operators of Italian Navy have recovered and destroyed 926.000 unexploded ordnance, among these 1.157 were chemical weapons and a 300 were filled with white phosphorus. At the moment the access at the area is proibited to public use as well as to fishing activities.
2. Rectangular area around the Pianosa island where ICRAM underwater operators have observed several conventional aerial bombs.
3. Area located about 34 nautical miles far from Bari with a direction of 45 - 48° where the military ship MS75 sunk tens of chemical weapons loaded with yperite.
4. Area located about 20 nautical miles far from Bari where the military ship MC LETE sunk tens of chemical weapons loaded with yperite.
5. Area located about 5 nautical miles off Taranto southward where the Italian Navy sunk nearly 800 conventional and chemical weapons coming from the clean up operations of Taranto harbour.
6. 102 targets located on the seafloor during a survey carried out in 1999 (A.C.A.B. project) using side scan sonar, sub bottom profiler and magnetometer. 9 aerial and 2 artillery bombs loaded with yperite have been inspected using a ROV.
7. Area immediately outside Molfetta harbour where in 1999 ICRAM underwater operators observed tens of weapons on the seafloor.

Annex V

Map reporting the officially recorded ammunitions dumping sites in the waters surrounding Italy*

***as noticed within the RED COD project**

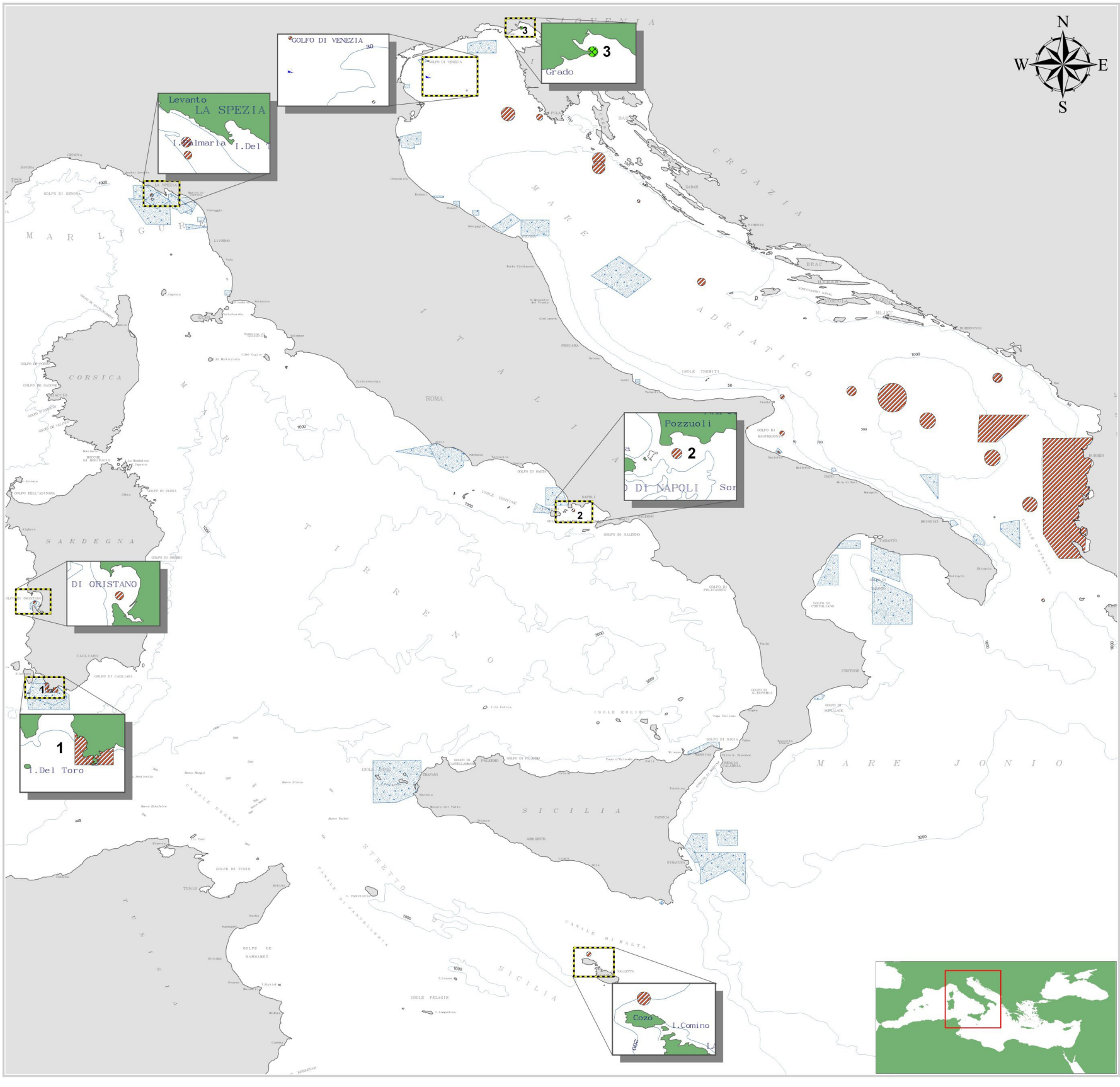
MAP OF UNEXPLODED ORDNANCE DUMPING SITES IN THE WATER SURROUNDING ITALY

R.E.D. C.O.D. project (Research on Environmental Damage caused by Chemical Ordnance Dumped at sea)
co-financed by the European Commission DG Environment (action B4-3070/2003/368585/SUB/D.3)

Amato E., Agnesi S., Alcaro L., Annunziatellis A., Giordano P.

0 15 30 60 90 120
Nautical Miles

Geographic Projection
Datum: ED 50



Legend

Points: categories and sources

- SHIPWRECK PROBABLY LOADED WITH CONVENTIONAL WEAPON, NAUTICAL CHARTS AND/OR SAILOR NOTICES
- MAGNIFICATION OF THE AREAS CHARACTERISED BY SMALLEST CARTOGRAPHIC SYMBOLS

Buffers and Polygons: categories and sources

- UNEXPLODED ORDNANCE DUMPING AREA, NAUTICAL CHARTS AND/OR SAILOR NOTICES
- CHEMICAL WEAPONS DUMPING AREA, ITALIAN ARMY
- FIRING PRACTICE AND EXERCISE AREA, NAUTICAL CHARTS

Notes

1. Teulada Cape (South Sardinia). Presence on the shoreline of unexploded ordnance.
2. Gulf of Naple, near Miseno Cape. Presence on the seafloor of unexploded ordnance. The area is probably the same as the one indicated by the US Army where a huge quantity of chemical weapons were dumped after WWII. On the nautical charts, in the middle of the area a shipwreck is marked.
3. Harbour of Monfalcone. In 2005 the Italian Navy and CETLI recovered and destroyed at sea about 150 artillery munitions of chemical weapons filled with mustard gas.