

Government of Albania & World Bank

Pilot Fishery Development Project

Marine Eco-tourism Planning & Development (Phase 1)

Wreck Evaluator's Report

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A

TERMS OF REFERENCE

The Terms of Reference for the wreck evaluator are summarised below:

Cataloguing of all potentially suitable wrecks (ex-Navy vessels, aircraft, vehicles, etc.) currently committed to the project, with the following information:

- Type (Warship, submarine, fishing vessel, cargo vessel, barge, aircraft, vehicle, bus);
- Ownership (Government, Navy, Air-force, Private);
- Approximate weight (displacement or all-up weight);
- Ability to dismantle (aircraft need to be dismantled for road transport and re-assembled);
- Location and distance to nearest port if not already floating;
- Amount of clean-up work required to rid the wreck of oil and other polluting substances;
- Diving safety requirements such as the removal of doors and windows;
- Approximate cost for placing (transport to port, towing to site, floatation, scuttling, etc).

Assist in preparing a placement plan for these wrecks with details of preparation required for each dive site (less interesting sandy bottoms will require more interesting wrecks to attract custom);

Inputs as required to the preparation of development plans;

The team procured and prepared information on available wrecks together with information on their whereabouts, dimensions, class etc. This information has been gathered together and is presented in two tables, plus a historical review of the principal vessels. This data has been combined with information in the diving survey in the preparation of this report.

B

EXECUTIVE SUMMARY

Introduction

Albania is considered to have potential to expand income-generating opportunities within its fisheries sector due to the country's unique advantages of a long coastline, abundant inland water resources and proximity to lucrative markets. Following the demise of the regime in 1990 and the subsequent economic upheaval, a serious vacuum developed in the management of the marine resources, leading to uncontrolled and illegal fishing and a serious risk of depleting the country's valuable aquatic resources within the next decade. The stock assessment database is 10 years out of date and Albania has very limited resources to monitor the size, quantity or composition of its catch. Amongst the objectives of the Pilot Fisheries Development Project (PFDP) is the sustainable use of the marine resources. To achieve this, the project has established and started to support a number of community co-management Fisheries Management Organisations (FMO) throughout the country during the past nine months as part of the capacity building and institutional development process to strengthen fisheries resource management in Albania.

Project Development Objectives

The PFDP seeks to lessen the current pressure on the inshore fish stocks until adequate stock assessment guidelines and monitoring techniques are in place. The project departs from 'conventional' World Bank financed fishery development projects as the focus is on developing community-based marine resource and port infrastructure management. Pressure on fish stocks cannot be reduced without direct influence on vessel operations themselves, i.e. less fishing effort and fewer fishing trips. In order to reduce fishing effort but mitigate against the economic and social impact of such a strategy on sustainable livelihoods, alternative sources of income generation are needed, such as for example, diving tourism. These options were addressed in brief during preparation of the marine fisheries management plan (Marine FMP) in late 2004/early 2005.

Proposals

The conclusions of the diving survey indicate that the best diving tourism potential in southern Albania is centred around the Karaburuni Peninsula. The northern section of this long coast is accessible by boat from Vlora and the southern part from Himara. These two ports are recommended for development as diving bases.

Wreck diving is very popular with divers. To improve the variety of diving and increase the number of dive sites a goodly number of ex naval vessels have been made available for scuttling. It is suggested that about six areas are selected in the vicinity of both Vlora and Himara for detailed survey to pin point exact sites to place wrecks to form artificial reefs. It is also proposed that about four sites be selected in the vicinity of Saranda for placing wrecks.

Porto Palermo and Sazan island are indicated as a prime location for sinking of wrecks. Military exclusion zones need to be clarified with the Ministry of Defence.

Almost half of available vessels are built from Duralimin (aluminium alloy) that is not conducive to marine growth. The exposed surfaces need to be treated prior to sinking.

All attractive diving sites including wrecks occurring naturally and those purposely scuttled should be designated as Marine Protected Areas.

Project Constraints

Two major constraints have been identified:

1. Total lack of national legislation in all matters relating to the protection of Albania's underwater heritage;
2. Military exclusion zones vis-a-vis sport diving.

1. C

INTRODUCTION

The whole of the Mediterranean is seriously over-fished and there is no reason to believe that the coast of Albania is an exception. Fishing needs to be drastically reduced to allow stocks to recover. However it is impractical to restrict fishing without providing displaced fishermen with alternative source of income. If an activity can be found which also allows them to use their boats and continue their relationship with the sea, we have the perfect solution.

Divers use small boats to reach inshore sites, so Diving Tourism is one such possibility. Obviously other businesses such as dive centres, hotels, restaurants, taxis etc would also reap the benefit.

A recreational dive is not unlike taking a walk underwater. Divers like to watch a variety of coloured fishes, algae and sponges against a backdrop of interesting and spectacular scenery. Because they are weightless they enjoy the feeling of swimming – it feels like flying - through arches and “windows” in the rocks and “swooping” down cliffs. To be able to enjoy this, the visibility needs to be good. On the whole, rocky bottoms and cliffs tend to offer clearer water and a also a good habitat for algae and fish, while sandy or rock covered bottoms do not. Sunken boats form an excellent habitat for many different creatures. Algae and sponges grow and adhere to the structure while fishes and octopus take up residence finding many crevices and corners to live in. Wrecks are therefore interesting places for divers to visit.

An underwater survey of the coast of Albania between the border with Greece and Vlora has recently been undertaken. This was commissioned by the PFDP supported by The Government of Albania and the World Bank. The report on this survey suggests that in some areas the diving *is* sufficiently attractive and interesting to persuade divers to travel to Albania to indulge their pastime and spend their holiday money. To be more exact, it is reported that there are a number of excellent dive sites, by Mediterranean standards, on the outer and exposed western coast of the Karaburuni Peninsula, which protects Vlora, The coast accessible from Himara, especially to the north also offers some very good diving. Regrettably the diving in the vicinity of Saranda is not very scenic while the underwater visibility is limited and oft times poor.

Wrecks are most commonly found in or close to harbours. It is principally while seeking shelter in rough weather or manoeuvring in restricted space that vessels flounder, or if war wrecks, the ships are most easily sought out and sunk while in harbour. Although the water quality in and around harbours tends to be poor and the visibility limited, wreck diving is still very popular with divers. There is usually a large variety of life with much to see and holds and passageways and engine rooms to swim through and around and explore. Four wrecks were dived on during the survey of the southern coast of Albania; one in the harbour of Saranda, two in the bay at Vlora and one on the outside of the Karaburuni Peninsula. Although the visibility on two of the wrecks was poor they were still classified as interesting. Indeed wrecks are so popular that divers will visit some dive destinations just because of their wrecks. The most famous are Scapa Flow in Scotland and Truk Lagoon in Micronesia⁽¹⁾.

Since wrecks are so popular with divers, it follows that intentionally sinking an old or unwanted ship could be a better investment than cutting it up for scrap. There is also the advantage over a “natural” wreck of choosing the most advantage spot in which to sink it. Every year many established dive destinations scuttle wrecks to increase their town’s appeal to holiday divers.

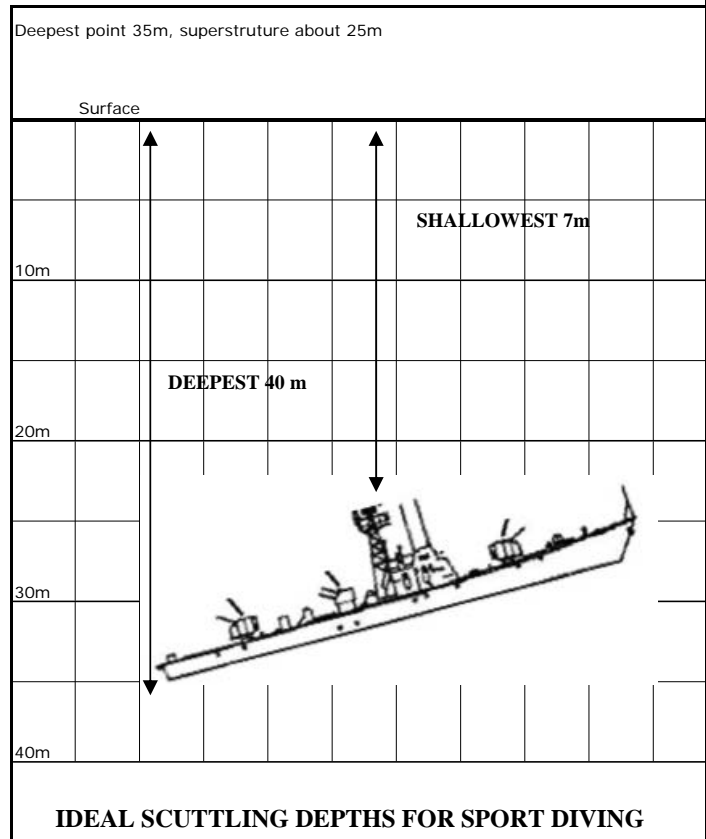
D Criteria for Sinking Wrecks

There is considerable preparatory work to be done to successfully scuttle wrecks in a pre-determined position.

1. Selecting a Suitable Site

To gain the maximum advantage the site for the wreck must be chosen with great care.

- It should supplement already existing dive sites
- A sheltered position is preferable so diving is possible in poor weather
- The maximum number of divers should easily be able to reach the wreck, so it should be accessible from the beach if possible
- It should be deep enough to avoid it breaking up in bad weather; normally 25metres or more.
- If the upper structure is shallow enough, 25 metres or less then this part can also be reached by inexperienced divers.
- Placing it on a slope extends the range of diving depths.
- If the slope is too steep the wreck may slide into deeper water in rough weather
- If placed on a rocky or very firm bottom it will probably be damaged, especially if the bottom is undulating.
- If sunk on a very silted or muddy bottom the wreck may become filled with silt/mud over time.
- Placing it on uninhabited bottom avoids damage to existing life forms
- Placing it in the vicinity of an existing habitat encourages it to become a nursery for fish and fauna to eventually populate the surrounding area



2. Preparing the Wreck

Preparation of the wreck essentially involves protecting both the environment and the diver. It therefore needs to be thoroughly cleaned and hazards to divers minimised. The following procedures need to be carried out

- Remove all oils and chemicals which might pollute the surrounding sea;
- Remove all toxic substances such as asbestos or mercury or items containing such substances, such as gaskets, seals, heaters, evaporators, etc.;

- Remove any materials that may deteriorate or break up when immersed in water, like suspended ceilings, internal partitions;
- Remove or weld into position anything that might move about in a surge, such as doors and hatches.
- Remove any items in which a diver may become entangled, such as ropes, wire hawsers, electrical wiring harnesses.
- Seal all small spaces or tunnels such as shaft accesses or lift shafts;
- Roughen-up exposed surfaces to promote marine growth. Algae normally start to grow on painted steel within a year or two. Aluminium alloy superstructures may need to be etched to allow adhesion of marine growth.

3. Transporting and Scuttling

The final transporting and positioning of the wreck is critical. Controlling a large vessel at sea is a professional task that must be handled by experts. There is always the possibility that the ship slides as it sinks and ends up in the wrong place, in the wrong orientation or even turns upside down.

- The closer the wreck to the planned resting position the better;
- The easiest way to transport the wreck is to tow it;
- If the wreck is not already in the sea it will need to be placed there, possibly by crane;
- The precise position of the planned resting place needs to be marked by buoys fore and aft.

The picture below shows the controlled sinking of a large vessel close to the coast in 35 metres, in a light wind. In addition to the two tug boats shown visible in the picture, underwater mooring lines held the vessel in place.



E. Available wrecks

A list of vessels available for sinking has been prepared. Where known, other useful information is given such as class, material, tonnage and length, their hull number, where they are currently situated and whether they are currently sunk, floating or on shore. This information is helpful in deciding which wreck would best produce an artificial reef at any given site.

1. List of Obsolete Ships of the Naval Fleet Available for Scuttling Based on Command No 617, dated 04.12. 2002

item	Type of ship	Tons	Approx length	material	Class	Hull Number	Status
Pashalimani							
1	Coastal patrol vessel	200	52m	steel	Huchan class		on bottom
2	Coastal patrol vessel	200	52m	steel	Huchan class	S208	on bottom
3	Coastal patrol vessel	60	38m	steel	Shanghai II		on bottom
4	Submarine	600	76m	steel	Whiskey class		floating
5	Submarine	600	76m	steel	Whiskey class		floating
6	Oil tanker	250	48m	steel			floating
7	Torpedo boat	25	38m	duralamin	Shanghai II		on bottom
8	Water tanker	100	36m	steel			on bottom
9	Large Torpedo Boat	8	21m	duralamin	Huchan class	S205	floating
10	Large Torpedo Boat	8	21m	duralamin	Huchan class	S203	floating
11	Large Torpedo Boat	8	21m	duralamin	Huchan class	S210	floating
12	Motorboat M-20	3	11m	steel	Shanghai II		on bottom
13	Small torpedo boat AL-3	5	19m	duralamin	Shanghai II		on bottom
14	Small torpedo boat AL-3	5	19m	duralamin	Shanghai II		on bottom
Bishti Palles							
15	small coastal patrol boat	60	38m	steel			on bottom
16	Large Torpedo boat AL-9	8	21m	duralamin	Huchan class		floating
17	Large Torpedo boat AL-9	8	21m	duralamin	Huchan class		floating
18	Large Torpedo boat AL-10	8	21m	duralamin	Huchan class		on shore
19	Large Torpedo boat AL-10	8	21m	duralamin	Huchan class		on shore
20	Large Torpedo boat AL-10	8	21m	duralamin	Huchan class		on shore
21	Large Torpedo boat AL-10	8	21m	duralamin	Huchan class		on shore
22	Large Torpedo boat AL-12	8	21m	duralamin	Huchan class		on shore
23	Large Torpedo boat AL-12	8	21m	duralamin	Huchan class	S 107	on shore
Shengini							
24	Large Torpedo Boat Al-8	8	21m	duralamin	Huchan class	S101	floating
25	Large Torpedo Boat Al-8	8	21m	duralamin	Huchan class	S103	floating
26	Large Torpedo Boat Al-8	8	21m	duralamin	Huchan class	S104	floating
27	Large Torpedo Boat Al-8	8	21m	duralamin	Huchan class		floating

item	Type of ship	Tons	Approx length	material	Class	Hull Number	Status
Saranda							
29	Large Torpedo Boat	8	21m	duralamin	Huchan class		on shore
30	Large Torpedo Boat	8	21m	duralamin	Huchan class		on shore
31	Large Torpedo Boat	8	21m	duralamin	Huchan class		on shore
32	small patrol boat	60	38m	steel	Shanghai II	P422	on bottom
33	Motorboat M-20	3	9m	steel			floating

4. Data on The Ships

Item	Type	Length (m)	Beam (m)	Freeboard (m)	
1	Submarine	76/60	6.3/4.7	6.4	
2	Mine Layer	58	8.75	19	6m up to the Bridge
3	Coastal patrol boat	52.3	6.45.28	16	
4	Small coastal patrol boat	38.7		8	
5	Large Torpedo Boat	21.5	6.06	4.5	2.4m up to the head
6	Ship	48.25	8.52	11	
7	Large Ship	19	4	4	
8	Water Tanker	36	8	10	
9	Small Torpedo Boat	28	4.3	6	

3. Comments on vessels and suitable sites

Most of the vessels are rather small to generate a lot of diver interest. This can be partly offset by placing two in the same location.

The two submarines however are very unusual and will generate considerable overseas interest. Their value makes it all the more important that they are placed on a site that can be easily reached and at a depth that makes them accessible to divers of all levels of experience.

The Navy have expressed a desire that at least one be sited in the vicinity of their home-port at Pashi Limani within the bay at Vlora. Because of the poor visibility, the southern part of the bay is not suitable for sinking a wreck. However, in the lee of Sazan Island or in front of Porto Radhimu are both options depending on what a detailed survey indicates.

Himara is too exposed for the second submarine but Porto Palermo is a good option; again this depends on the outcome of a more detailed survey.

F Information about available wrecks

Swimming in and around a wreck becomes a completely different and meaningful experience when the diver knows and understands its history. Therefore it is useful to know the history of the wreck, starting from when and where it was built, what it carried, in which seas it operated, how and why it ended up on the bottom. If it was a military vessel, any actions in which it took part. There are many books published worldwide dealing with the history of sunken vessels.

Some basic information is shown below for the main types of wrecks available for sinking as listed in the preceding tables

TYPE 122K NATO CODE NAME KRONSHADT

Russian Designation:	Project-122K (also called Project-122Bis)
Manufacturer:	Zelonodol'sk Zavod (Factory 340)
Role:	Anti-Submarine Warfare Ship
Year Adopted:	1950
Number in Class:	41 ships
Displacement:	
Standard	300 tons
Full Load	320 tons
Operational Status:	<p>Russia: Obsolete. All transferred to other nations by early 1960's.</p> <p>Other Nations: 3 transferred to Romania, 6 transferred to Poland, 4 transferred to Albania, 2 to Bulgaria, 6 to China, 6 to Cuba, and 14 to Indonesia. We are not certain of the operational status of these ships at this time</p>
Armament:	1x 85mm Cannon in forward turret 2x 37mm Anti-Aircraft guns 4x 5-barrel RBU-1200 ASW Rocket Launchers 3x 12.7mm machine guns
Sensor Suite:	1 x air search radar (type uncertain) 1 x navigational radar (type uncertain)
Engine:	3 x diesel engines providing a maximum of 3300 hp to three propeller shafts.
Crew:	25 Officers and Sailors

Length:	161 feet, 3 inches (52 meters)
Draught:	7 feet, 8 inches (2.5 meters)
Beam:	18 feet, 4 inches (5.9 meters)
Maximum Speed:	23 knots
Range:	1500 Nautical miles (2400 km) at 12 knots
Aircraft:	None



HUCHUAN CLASS (TYPE 025/026) (FAST ATTACK CRAFT - TORPEDO) (PHT)

A torpedo boat is a high speed planing boat carrying torpedo as their principal attack weapon. They are small, high speed, powerful, low cost, highly maneuverable, agile and concealed. They are suitable for sea shore and good at attack on enemy surface ships in cooperation with other forces in formation or in single, and is known as the "light cavalry at sea".

It is estimated that all Type 25 torpedo boats had been retired from operational service by the late 1990s, with a few serving with navy schools for training purposes.

In 1966, No.701 Institute designed a four tube torpedo boat, the principal technical leaders responsible for the project were Yan Jianxiu and Cao Guanzhong. The lead boat built by Wuzhou and Gueijiang shipyards was completed and handed over to the Navy in September 1976. Later, after design improvement, sea trials on powering characteristics, seakeeping test, and torpedo director [a four tube salvo hooting check], it was proved that this independently developed four tube torpedo boat had a high hit probability of torpedo, a good seakeeping characteristics and great combat power.

Specifications

Builder

Displacement	45.8 tons (full load)
Length	71.5 ft
Beam	20.7 ft
Draft	11.8 ft (hullborne)
Speed	50 kts foilborne
Endurance	500 miles at 30 kts
Crew	16
Propulsion	3 Type M 50 diesels 3,300 hp(m) (2.42 MW) sustained 3 shafts
Guns	4 China 14.5 mm (2 twin) 85' elevation 600 rds/min to 3.8 nm
Torpedoes	2 - 21 in (533 mm) tubes
Radars	Skin Head or China Type 753 I-Band Surface Search
ACTIVE	31 - No names or hull numbers

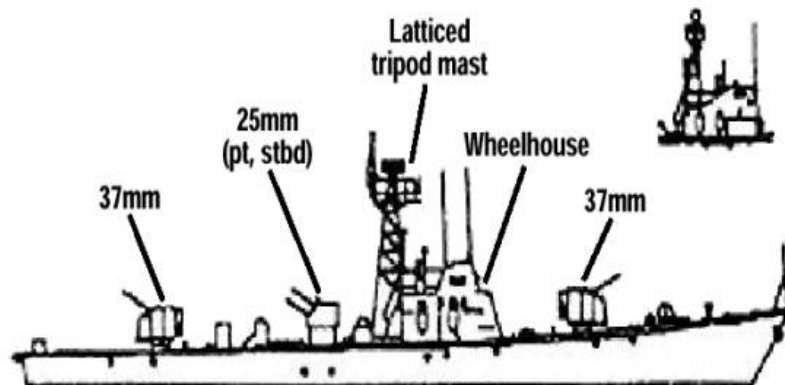


TYPE 62 NATO CODE NAME SHANGHAI II

PC Shanghai II Class

Specifications

Length	127.3 ft
Beam	17.7 ft
Draft	5.3 ft
Maximum Speed	30 kts
Missile Launchers	None
Guns	2 x 37mm and 25mm twin barrel At least one 82mm RR (on some)
Other Weapons	Mines d.c.
Aircraft	None



The Type 62C (Shanghai-II class) is a small coastal patrol gun boat built in the 1980s

TYPE 613 NATO CODE NAME WHISKEY



The Whiskey class was the first post-war submarine design to be deployed by the Soviet navy. Even so the submarine has its origins in the difficult days of the Great Patriotic War. In 1943 the Soviet Naval Staff began looking into a submarine to replace its older Type-S 'Stalinets' and Type-Shch 'Shchuka' class medium range patrol submarines. Soviet designers responded by developing a modernized version of the Type-S submarine known as Project 608. It incorporated many modifications that the war had shown to be necessary, as well as a copy of a British sonar system which they had reverse engineered. The project seemed well on its way to becoming the next generation patrol submarine until the Soviet navy recovered the sunken U-250 in September of 1944. The modern Type-VII German submarine had been sunk weeks earlier in the Gulf of Finland and underwent a thorough examination. The design showed the Soviets how far behind they were in the undersea arms race. Project 608 was immediately cancelled. The design was to be revised to incorporate the lessons that the Soviets had learned in studying the German Type-VII.

When the war ended in 1945 the Soviet Union captured a number of highly advanced German Type-XXI submarines. Work on the revised Project 608 again stopped so that it could be compared to the Type-XXI and improved. The design was eventually finalized as Project 613 in 1948.

Project 613 was a double hull design that was slightly larger than the original Project 609. It was driven by two propeller shafts, each of which had its own engine, electric motor, and creep motor mounted on shock absorbers (the first Soviet design to do so). Armament of the new submarine consisted of four torpedo tubes in the bow and two in the stern. An anti-aircraft gun was also fitted to provide protection from sub-hunting aircraft.

A total of 340 boats were ordered and the first was launched in 1951. When the boat was first seen by NATO observers it was designated the 'Whiskey' class. Production continued until 1958 with some 215 examples serving with the Soviet navy. Advances in nuclear power technology was the primary reason for scaling back the number required from the planned 340 boats.

Total Whiskey Production by Shipyard	
Baltic Works	19
Gorki Shipyard	213
Komsomolsk	11
Nikolayev	72

While the Soviets experimented with the Whiskey as a missile carrier, the standard patrol submarines continued to be modified. This often resulted in the rearranging of the submarine's anti-aircraft gun armament, but other changes were also made.

Throughout the 1950's and 1960's NATO analysts of the era proceeded to catalog every change in the outward appearance, even though they usually remained functionally identical.

The last variant, known as the Whiskey V, entered service in the mid-1960's as the Soviet navy decided to streamline the boat and remove its anti-aircraft guns.

Patrol Variant	Deck Gun Layout
Whiskey I	1x 25mm AA gun forward of tower
Whiskey II	Added a Twin 57mm AA gun on the deck behind the tower.
Whiskey III	No gun mounts, but retained gun platforms.
Whiskey IV	1x 25mm AA gun forward of tower, also added snorkel.
Whiskey V	Streamlined hull with no external gun armament

The Whiskey in Foreign Service

The end of the Whiskey in Russian service did not mark the end of the class as a whole. In its basic patrol configuration the Whiskey proved to be a very popular export submarine. Over the years the Soviet navy transferred some 39 boats to foreign countries. **Albania received four of these**, Bulgaria two, China five, Egypt seven, Indonesia twelve, North Korea four, and Poland five. Another 21 boats were assembled in China from parts made in the Soviet Union. Cuba and Syria later ordered two non-operational Whiskeys to use as battery charging hulks, while Indonesia received a further two to strip for parts. None of the guided missile variants were ever exported to

Despite these advantages the Whiskey was still considered to be a very loud submarine. This was largely the result of having many free-flood holes along the hull. (holdovers from the German Type-XXI.)

G

Marine Protected Areas

The areas of beautiful underwater scenery, the naturally existing wrecks plus any that are sunk purposely, all form part of Albania's heritage. The fact that they are underwater and may only be enjoyed by divers, does not in any way diminish their value and importance. They are vulnerable in the same way as areas of natural beauty above water, and need to be protected to ensure they will not be despoiled.

The only way to protect these features is by enforceable legislation. In many countries the law prohibits the removal or damage to all significant underwater features whether they be natural or placed on purpose. Fishing or the removal of any fauna or flora is also prohibited within designated areas encompassing these features, normally referred to as Marine Protected Areas (MPAs). The most stringent of this type of legislation has normally referred to historical remains. Greece is an example of this, very recently there was a blanket prohibition on diving where in attempt to protect sunken wrecks until except in specified areas.

H **Conclusions**

The quality of the diving in the vicinities of both Himara and Vlora is good enough to support a tourist diving industry. Three existing wrecks were dived from Vlora two of which had diver appeal. No wrecks were discovered near Himara.

The attractiveness to divers of both localities could be greatly increased by sinking wrecks to form artificial reefs. Although there are a large number of vessels available to do this, the variety of vessel is somewhat limited and most are on the small side. At some future time it might be worth considering buying a couple of large vessels say in the range of 100m long. For the immediate future however some excellent artificial reefs could be developed with the available ships.

During the survey several of the places dived on showed potential as sites for placing a wreck. The stringent environmental criteria and the importance of selecting the correct site requires more details surveys at each potential site before final selection would be possible.

Vlora

Dive 42 from the Survey Report, was on a hospital wreck lying in 30 metres and approximately 1500metres from the shore. The visibility on the wreck was still acceptable despite the inshore wind that still persisted from the preceding days. It seems likely that wrecks placed one to the south and one to the north would also be diveable in similar weather. Further detailed exploration along the 30m line, both to the north and to the south of the existing wreck, would be useful in selecting suitable spots.

Also moderately sheltered during an inshore wind, would be a spot just inside the headland of the peninsula. This was dived, dive 37, again in poor conditions. The exact positioning of a wreck on a headland is especially important, as it must be anticipated that traffic leaving the bay will pass over the wreck and ample clearance must be left. The presence of fish and filter feeders plus the current at this site could also be expected to speed up the population of the wreck. To determine the best position to sink a wreck it would be useful to explore further the coastline southwards from the headland to the small island visited in Dive 36

The island or Sazan also afforded sheltered diving during the extended period of onshore wind suffered during the survey. The shallow bottom extends outwards to the east for some 1000m while the 30m contour is about 400m offshore to the south east and only 100metres from the cliff to the north east.

No diving was done on the south-east corner, as the chart suggests there is little likelihood of good diving there. The three dives on the north-east corner reported interesting dives although there was some concern about the ammunition lying on the bottom.

The east coast of Sazan definitely warrants further surveying with the aim of finding some good wreck sites.

Himara

The coast here affords almost no shelter to onshore winds so wrecks can be placed without any consideration to this issue. Proximity to the harbour and to adjacent existing habitats would therefore be the prime considerations. The dive reports for the dives closest to Himara suggest that finding a sandy bottom free of posidonia will likely be the greatest difficulty. Dives 19 and 20 to the south of Himara both suggest the bottom might be suitable for sinking a wreck. Likewise dive 21, to the north, although the sites visited on dives 23 and 24 are closer and could also be suitable.

Unquestionably further research is needed to determine the best locations for sinking of wrecks to further enhance the fine diving accessible from the port at Himara.

Porto Polermo

Without doubt one of the best sites for a wreck or even two would be Porto Polermo. There is good shelter in most winds and it may also be possible to place a wreck within swimming distance of the beach. The decision to sink wrecks in this location would depend entirely on the flexibility of the military authority. The positive attitude received from the military mission at Sazan, when expressing an interest to dive there, suggests that permission to dive within the bay, if requested, may well be given

Further diving within this bay would be needed to determine the optimum sites for wrecks and this would relatively easy if it could be based from a boat moored there. The bay is also within sailing distance of Himara and within driving distance of Saranda

Saranda

Saranda is a beautiful town with a developing tourism industry. Although the quality of the diving is unlikely to attract visitors specifically to dive, it is very possible that some diving centres will develop to service the visiting tourists. There is already a large wreck in the harbour, just within swimming distance of the shore. This and a small area around it should be designated a MPA.

There is no reason why Saranda should not also have some new wrecks. There are many areas of sandy bottom clear of much existing growth. Some sheltered areas within easy reach of the harbour should be surveyed as sites for artificial reefs. Available vessels are lying in port convenient for this purpose.

Marine Protected Areas

The economic and environmental value of prime diving sites cannot be overstated. Areas of natural beauty, existing wrecks plus any which may be placed in the future need protection. Without this, fish, molluscs, octopus, eels, sponges etc may be freely taken and wrecks plundered for saleable scrap materials such as copper, bronze, brass etc or desirable artefacts such as steering wheels, binnacles and portholes, This can best be done by designating Marine Protected Areas and enacting enforceable legislation to safeguard them.

Recommendations

Legislation and Marine Protected Areas

It is strongly recommended that legislation be drawn up at the earliest possible time to protect the underwater environment. This should include

- A blanket prohibition of spear fishing while using an aqualung to bring Albania into line with all of its European neighbours.
- The definition of Marine Protected Areas wherein no flora or fauna may be removed, and no items be removed from nor damage done to, underwater features whether man made or natural; this to include wrecks, caverns or anything of geological or historic interest
- The right of the relevant minister to add, remove or otherwise change, the MPAs

To determine the boundaries for the MPAs on the eastern coast of the Karaburuni peninsula It is recommended that a more detail survey is carried out

Pinpoint Wreck Sites

To enhance the appeal of the diving accessible from both the ports of Himara and Vlora it is recommended that at least six sites be selected in the vicinity of each for the sinking of vessels to form artificial reefs.



Vlora

To this end a more detailed underwater survey should be carried out at these locations

- the eastern coast of Sazan,
- the inside of the northeast point of the Karaburuni peninsula
- the western coast in front of KapiViroj and Porto Radhmis

Himara

With proximity to the harbour as the only proper condition, it is recommended that there is a detailed underwater survey working outwards from the harbour, both to the north and the south to pinpoint suitable sites for sinking a wreck.

Porto Palermo

The area between Kapi Kavadon and Kapi Panormes should be designated as an MPA.

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Existing wrecks in Vlora

NO	DENOMINATION OF SHIP	LAT	LONG	DATE OF SHIPWRECK	TONNAGE
1	Ship "Spitalieri Po'	40° 23' N	19° 28' E	14.03.1941	7289
2	Hydrofoil Craft "Andromeda"	40° 21' N	19° 28' E	17.03.1941	1000
3	War Ship "Stampalia"	40° 20' N	19° 26' E	15.04.1941	1228
4	War Ship "Rovigno"	40° 20' N	19° 25' E	15.04.1941	3329
5	War Ship "Reg. Margherita"	40° 25' N	19° 17' E	22.09.1944	451
6	Armoured Ship "Rosandra"	40° 18' N	19° 22' E	1916	13 427
7	Fighter Ship	40° 27' 9 N	19° 25' 9 E	12.03.1997	230
8	Merchant Ship	40° 57' 8 N	19° 15' 8E	1973	
9	Italian Submarine "Proteus"	<i>Point os Sazani Izobaten 300 m</i>			

This document is based on the verbal reports of the Port Commander of Vlora

- (1) World War 2 Wrecks of Truck Lagoon - Dan E Balley
(2) World War Wrecks of Palau - Dan E Balley