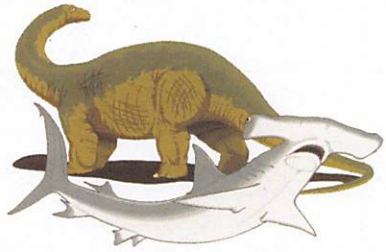
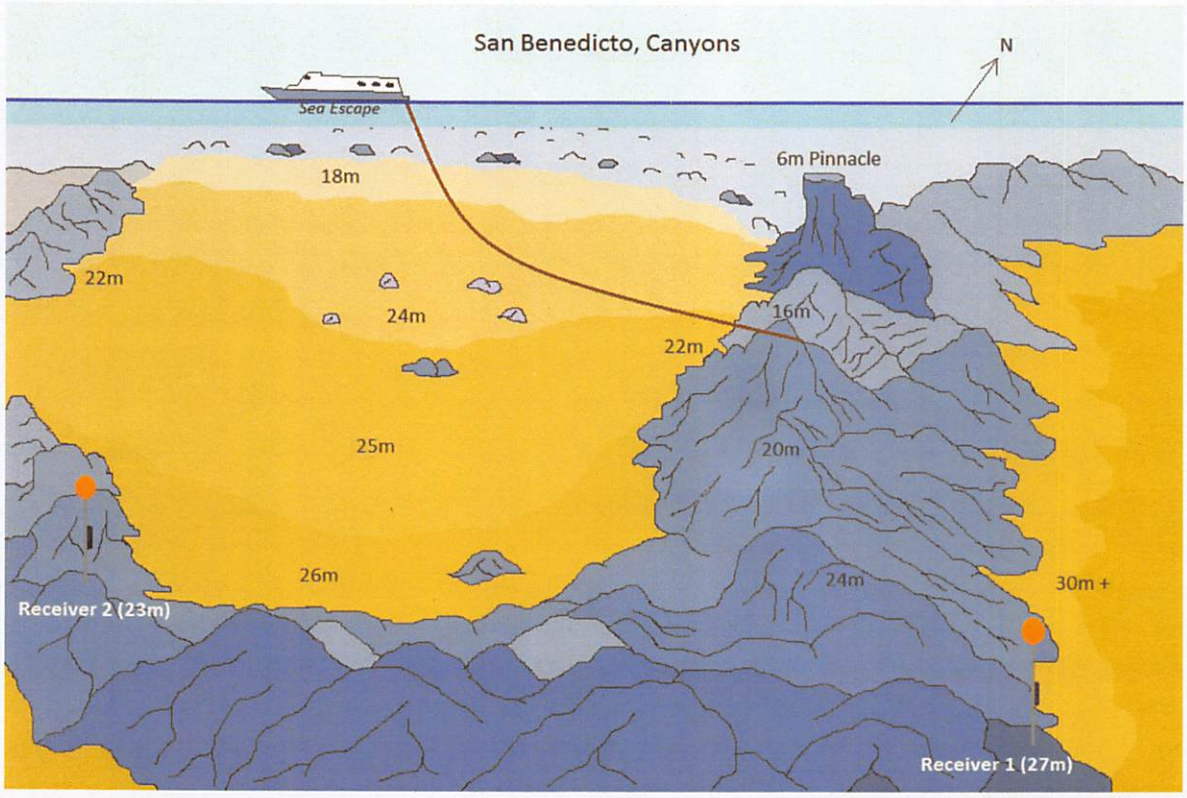
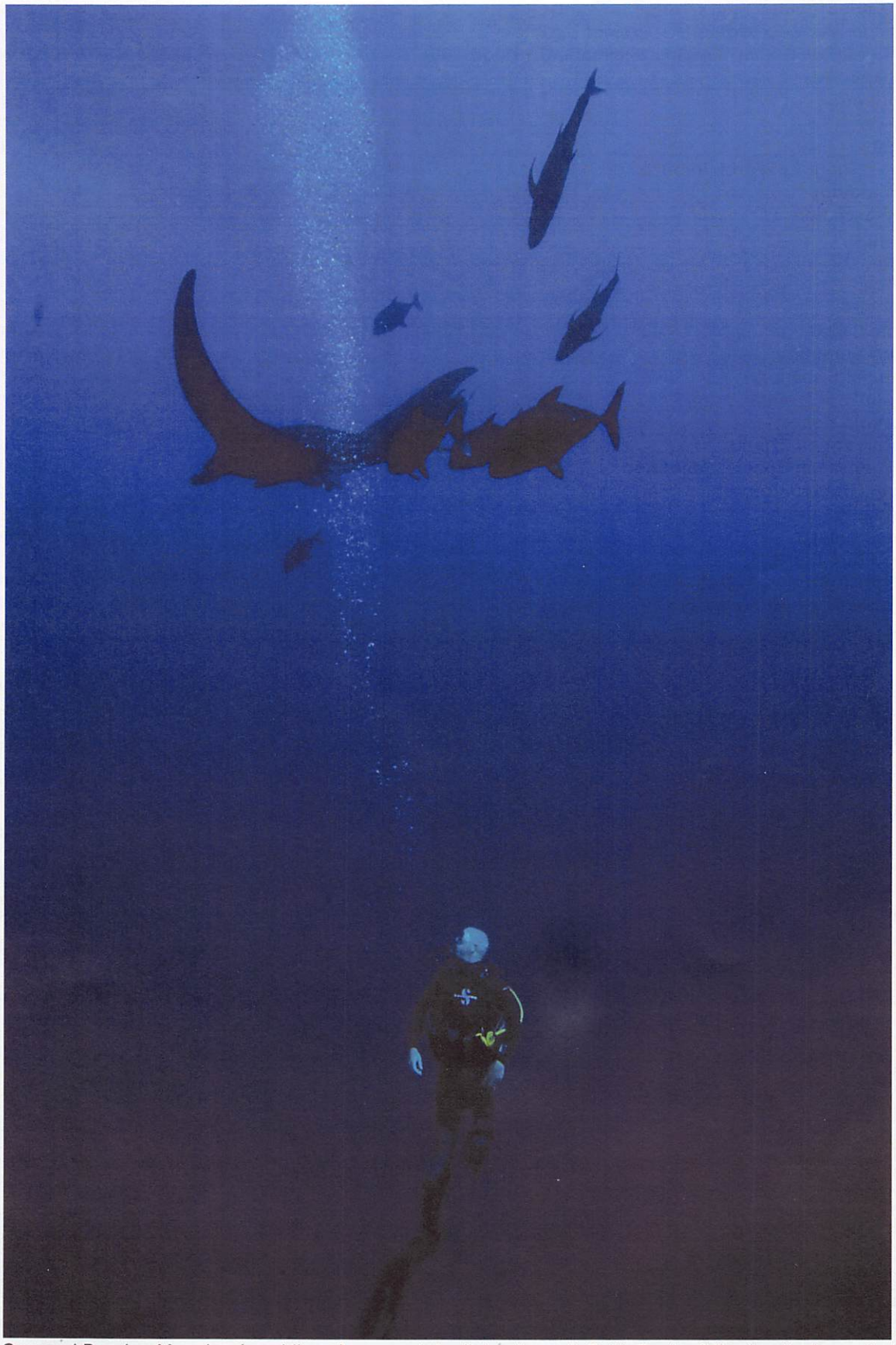
EXERCISE CLARION CALL
(JURASSIC SHARK 4)
REVILLAGIGEDO ISLANDS, MEXICO
25 MAY - 07 JUN 2013

POST EXERCISE REPORT



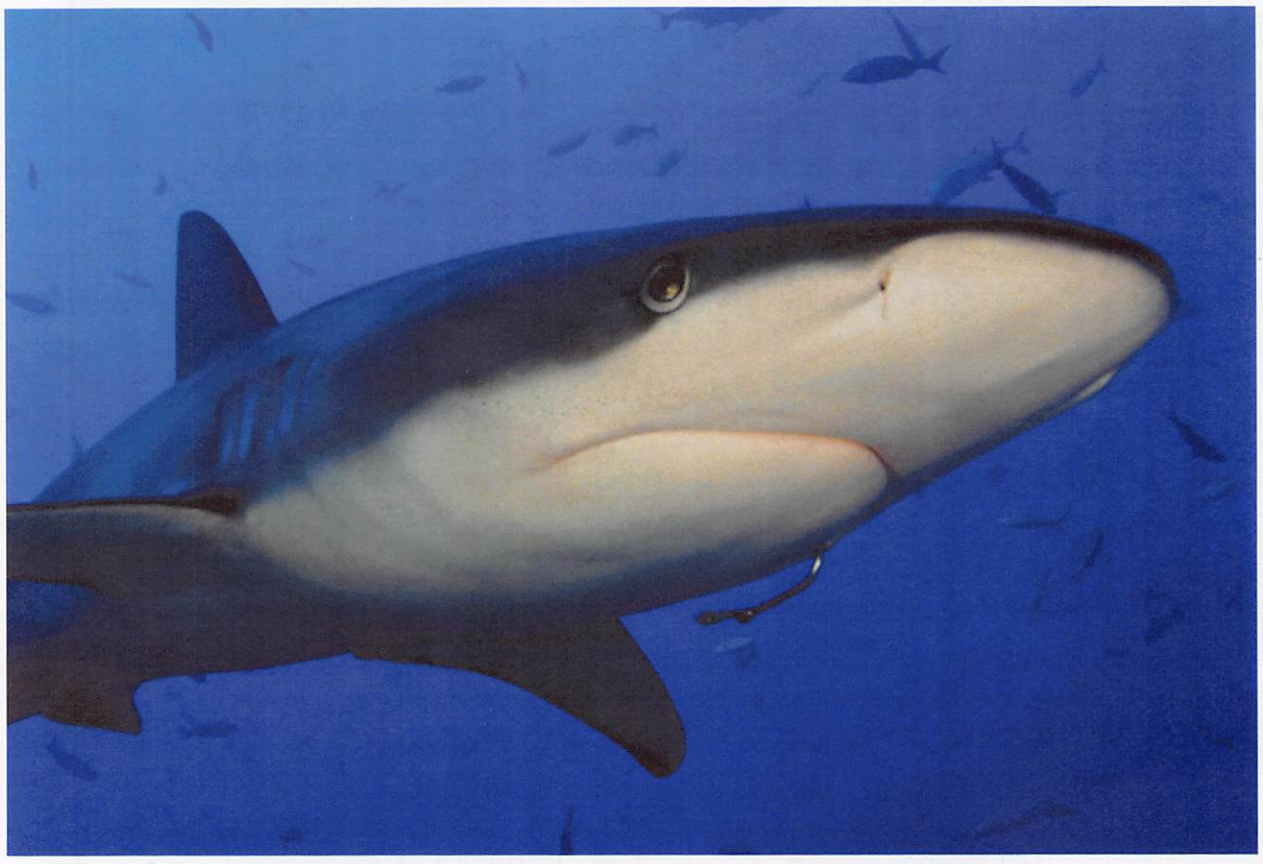


www.jurassic-shark.org.uk



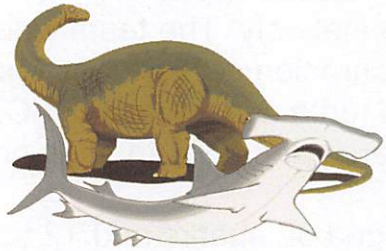
Corporal Damian Manning (a soldier who came into diving through BattleBack - following the loss of a leg on operations) admires a Giant Manta Ray as it passes overhead on JS4.

CONTENTS



Galapagos shark at Roca Partida (note hook).

Vision



The ultimate aim of the Jurassic Shark Project is to provide the scientific basis for an extension to the Eastern Pacific Seascape Corridor

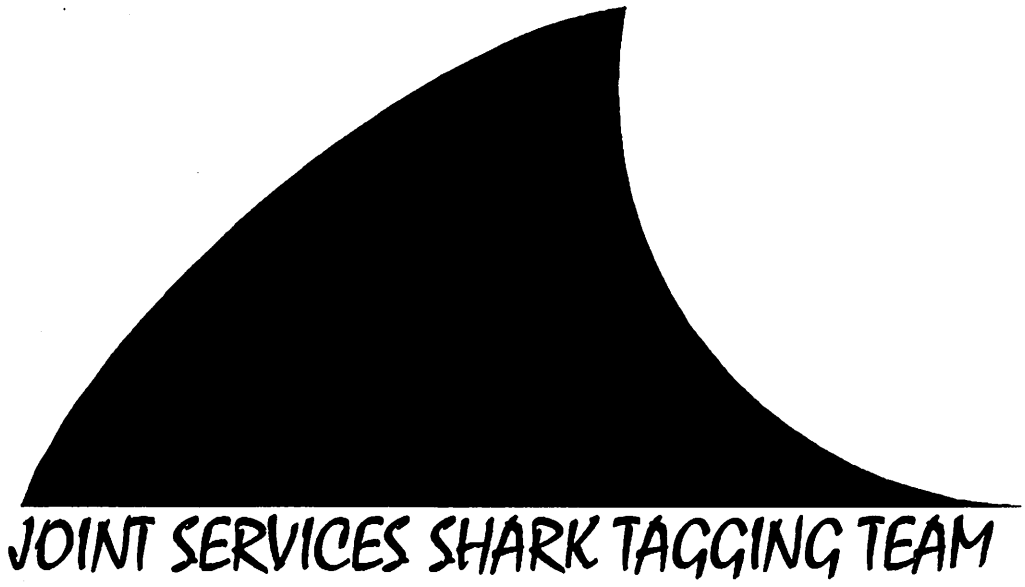
Roca Partida from below.

THE JOINT SERVICES SHARK TAGGING TEAM

A force for good in marine conservation

The Joint Services Shark Tagging Team (JSSTT) is a Tri-Service team of divers from the British Armed Forces. The team provides manpower and resources for shark tagging and other marine conservation projects. JSSTT expeditions are nicknamed JURASSIC SHARK. They are open to military and essential scientific personnel only. The team works alongside two conservation groups: 'Programa Restauracion de Tortugas Marinas' (PRETOMA), a NGO specialising in shark and turtle conservation in Costa Rica and Fins Attached, an American shark research and conservation group.

The JSSTT has now tagged 62 sharks and 12 turtles. In addition the team have placed 7 acoustic receivers in the Eastern Pacific with the aim of building an overall picture of shark movements in the across the Eastern Pacific Tropical Seascape and beyond. The first expedition, EXERCISE JURASSIC SHARK, tagged 15 hammerhead sharks off Cocos Island, Costa Rica in July 2006. The second expedition, EXERCISE JURASSIC SHARK 2, took place in October 2008 and tagged a further 20 sharks (including 10 great white sharks) off Guadalupe and the Revillagigedo Islands (Mexico). EXERCISE JURASSIC SHARK 3 was the second JSSTT (Jurassic Shark) expedition to work in partnership with PRETOMA. The Jurassic Shark team was even more successful on this expedition, successfully tagging 13 scalloped hammerheads, 1 black tip, 1 Galapagos shark and 12 turtles. Finally, EXERCISE CLARION CALL (JURASSIC SHARK 4) returned to the Revillagigedo Islands (Mexico) to tag 9 silvertip Sharks, 2 silky sharks and one Galapagos shark.



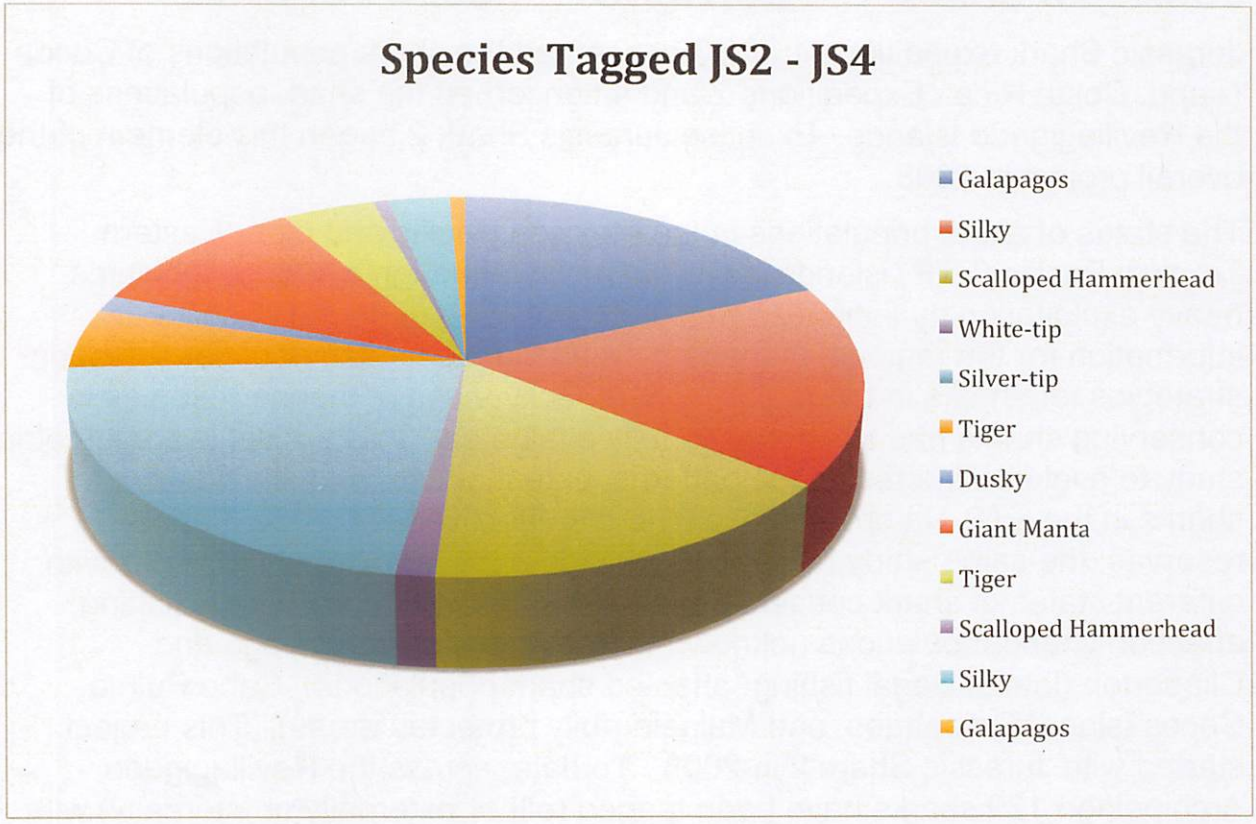
JURASSIC SHARK EXPEDITIONS – PROJECT UPDATE

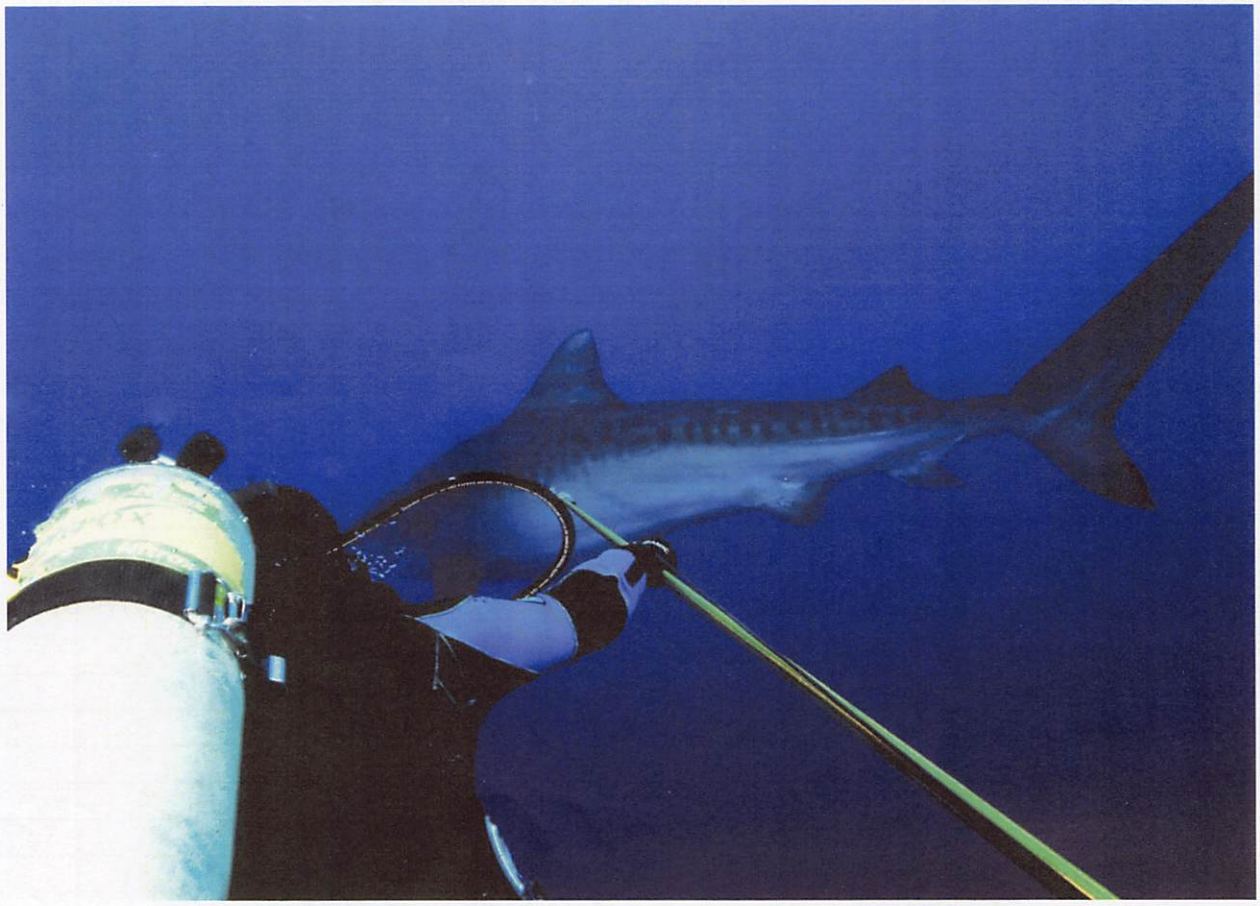
Jurassic Shark expeditions 1 and 3 concerned the shark populations of Cocos Island, Costa Rica. Expeditions 2 and 4 concerned the shark populations of the Revillagigedo Islands. Exercise Jurassic Shark 2 began this element of the overall project in 2008.

The status of shark populations in the Mexican Pacific and other Eastern Tropical Pacific (ETP) islands is still unknown, although evidence indicates heavy exploitation by fisheries. This project aims to generate baseline information for the regional management and implementation of conservation strategies for sharks in the region. The effectiveness of marine reserves in conserving sharks has still not been fully evaluated. This project is a telemetric study to evaluate the residence patterns, extent of use, and site fidelity of sharks in the ETP. In order to examine the effectiveness of the marine reserves, the same study is being conducted at several protected areas with different states of shark conservation: Isla Guadalupe (some illegal fishing, effect on shark populations unknown), Revillagigedo Archipelago and Clipperton (lots of illegal fishing, affected shark populations), Cabo Pulmo, Cocos Island, Galapagos, and Malpelo (fully protected areas). This project started with Jurassic Shark 2 in 2008. To date, across the Revillagigedo Archipelago 129 sharks have been tagged (either externally or internally) with acoustic tags. In addition, a further 12 sharks have been tagged with satellite transmitters as detailed in the table below. 12 underwater receivers have been set and have been gathering information from the tagged animals in the 4 islands from the archipelago. The next stage is to analyse the information and publish it in international journals with the ultimate aim that it is used by the Mexican government to provide the scientific basis for the establishment of Marine Protected Areas in zones that are not currently protected. These will need to give special attention to areas such as pupping grounds and nursery areas.

LIST OF SHARKS TAGGED BETWEEN JURASSIC SHARK 2 AND JURASSIC SHARK 4

Ser	Species	Type of Tag	Quantity tagged
1	Galapagos	External or internal	26
2	Silky	External or internal	24
3	Scalloped Hammerhead	External or internal	22
4	White-tip	External or internal	2
5	Silver-tip	External or internal	31
6	Tiger	External or internal	7
7	Dusky	External or internal	2
8	Giant Manta	External or internal	15
9	Tiger	Satellite	6
10	Scalloped Hammerhead	Satellite	1
11	Silky	Satellite	4
12	Galapagos	Satellite	1
	TOTAL		**141**



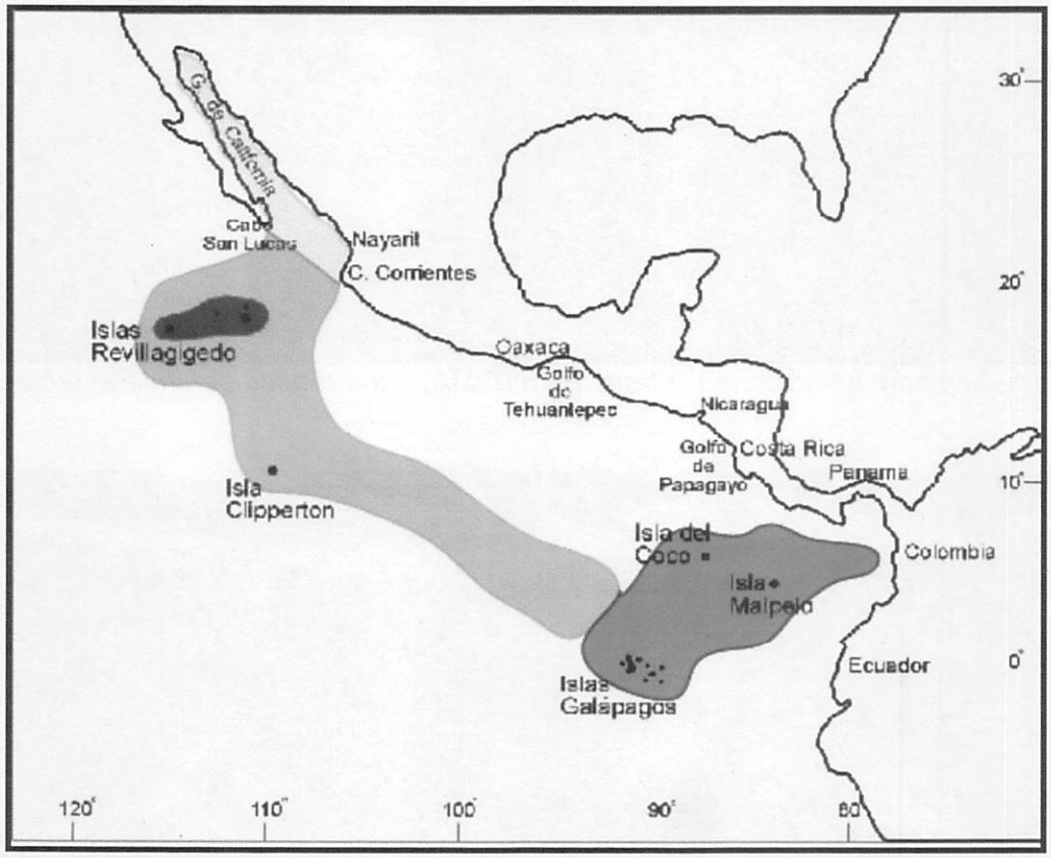


Attempting to tag a Tiger Shark using a pole spear in blue water on JS4.

EXTENDING THE EASTERN TROPICAL PACIFIC SEASCAPE CORRIDOR - THE LINK BETWEEN THE 4 JURASSIC SHARK EXPEDITIONS (JS1/JS3 AND JS2/JS4)

The ultimate aim of the Jurassic Shark Project is to provide the scientific basis for an extension to the Eastern Pacific Seascape Corridor.

The following map shows illustrates how the work of the 4 expeditions might ultimately come together to provide the scientific basis for an extension to the Eastern Pacific Tropical Seascape.



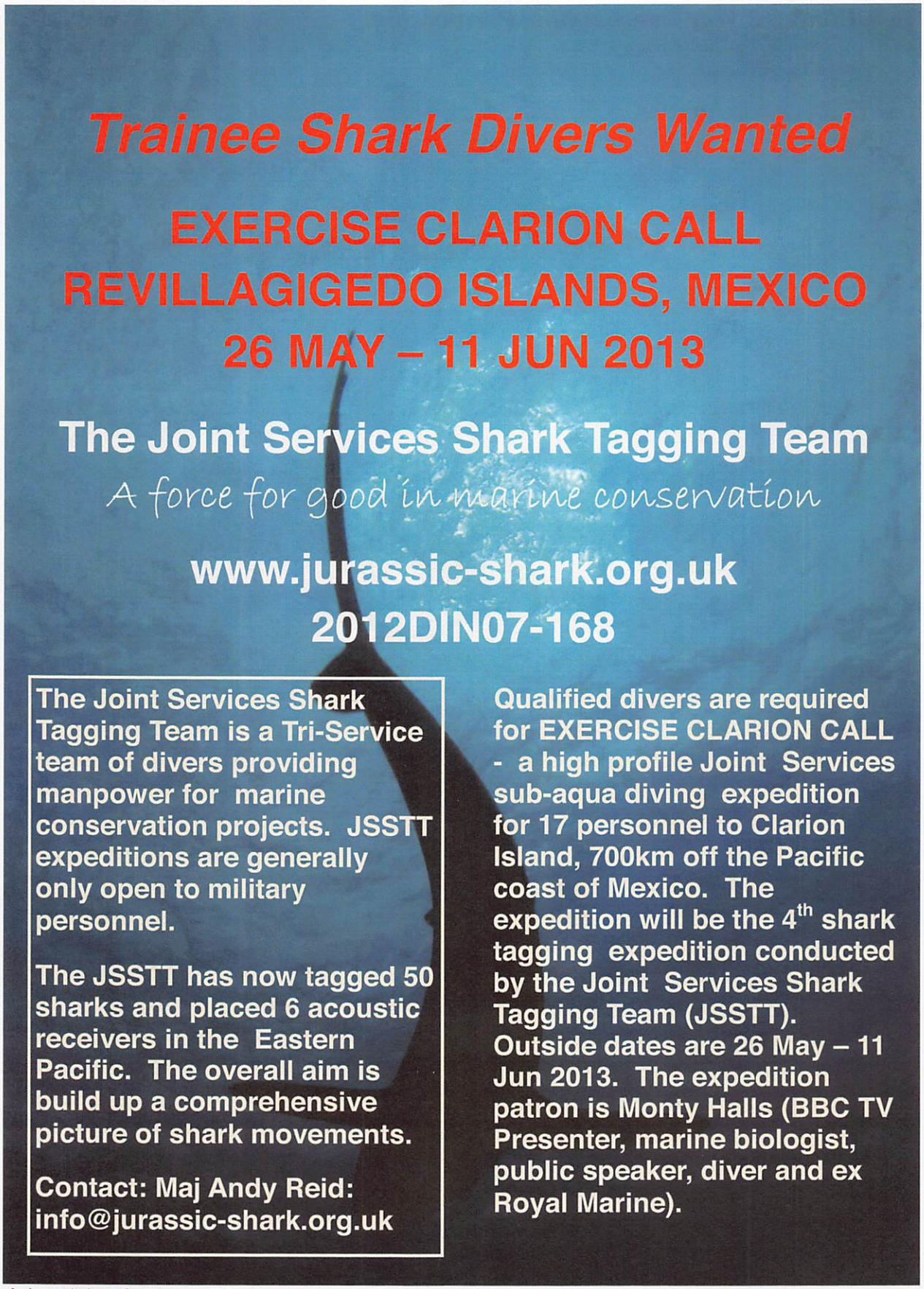
The Eastern Tropical Pacific Seascape Corridor (dark grey) together with the proposed extension to the corridor (light grey).

PUBLICATIONS

The findings to date have been published in the following report by James Ketchum, Mauricio Hoyos (Jurassic Shark scientist), Felipe Galván, Alex Antoniou (Jurassic Shark scientist), Peter Klimley and Alex Hearn: *The Revillagigedo Archipelago as critical habitat for migratory sharks and the establishment of a chain of marine reserves in the eastern tropical Pacific.*

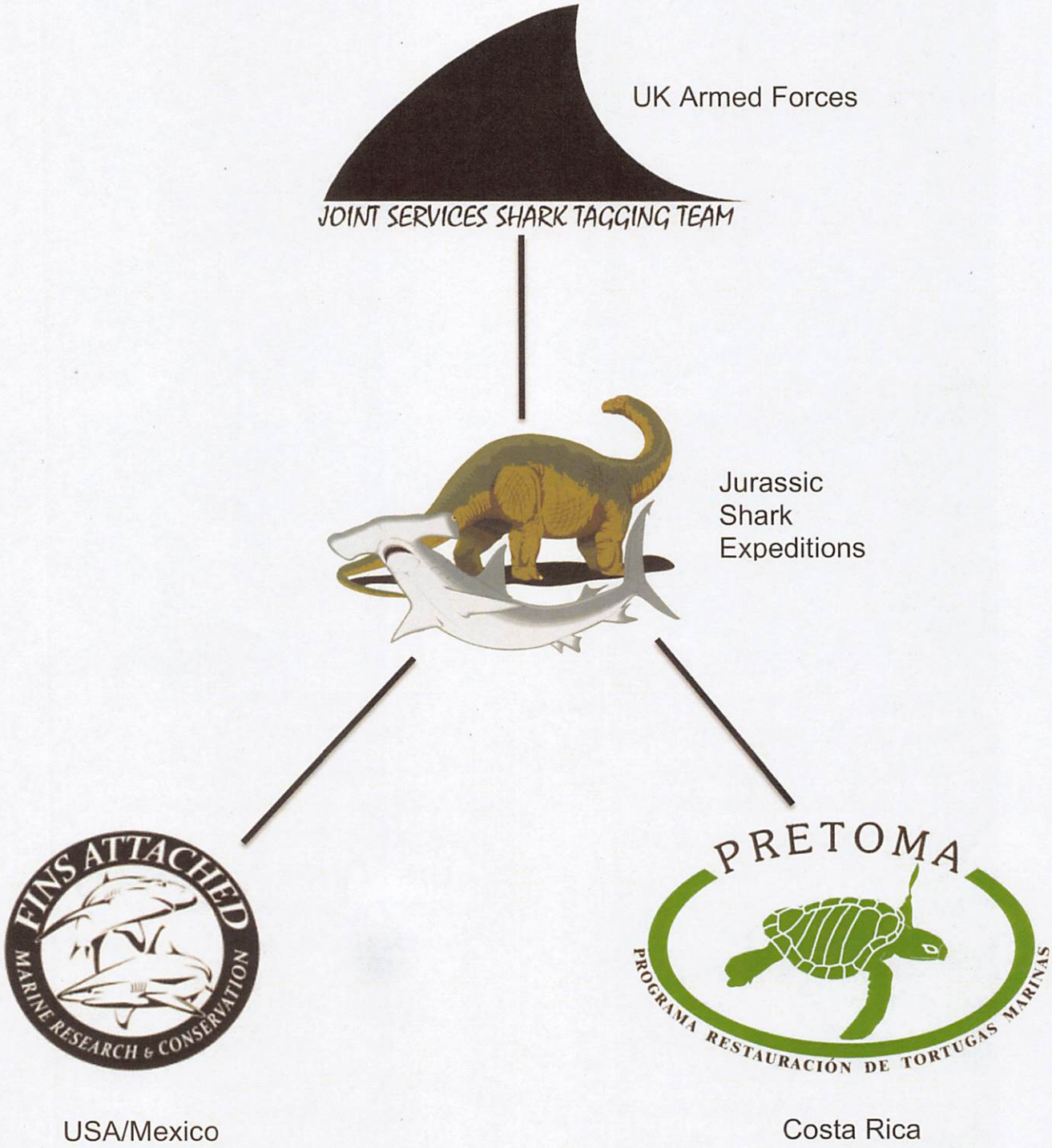
A hammerhead shark being finned (Photo: PRETOMA) – the reason behind the project.

Members of the JSSTT with Monty Halls, expedition patron, on the Fins Attached/Jurassic Shark Expeditions stand at the Birmingham Dive Show 2012.



Advertising for expedition members.

JURASSIC SHARK EXPEDITIONS
– A Unique 3-Way International Partnership



EXERCISE CLARION CALL (JS4)

Revillagigedo Islands, Mexico
25 May – 07 Jun 2013
www.jurassic-shark.org.uk
Patron: Monty Halls

Comd JETS, HQ BFC, Episkopi, BFPO 53
Telephone: 00 357 25963797 Mil: 94120 3797
Fax: 00 357 25963769 Mil: 94120 3769
E-mail: BFG-EPIETSCOMDETS@mod.uk or info@jurassic-shark.org.uk

EXERCISE TIGER CLARION CALL (JURASSIC SHARK 4) – REVILLAGIGEDO ISLANDS (MEXICO), 25 MAY – 07 JUN 2013 - POST EXERCISE REPORT

Reference:

A. G7 AT 7096-0239-13/14 dated 02 May 13 (Exercise Clearance).
B. DIN 2012DIN07-168 dated Dec 12.
C. JSP 917.

INTRODUCTION

1. EXERCISE (TIGER) CLARION CALL (JURASSIC SHARK 4) was a Joint Services expedition to the Revillagigedo Islands, off the Pacific coast of Mexico; based on board the live-aboard boat, *MV Sea Escape*. The expedition enjoyed 'sponsored' status from the Joint Services Expedition Trust (JSET). Clearance was given by Support Command South (Reference A) on 02 May 13. Full details were published in a Defence Information Notice (DIN) in Dec 12 (Reference B).

2. The original plan included the 4th island in the Revillagigedo Archipelago, Clarion Island. However, the distance was such that the trip would have added significantly to the cost. In addition, another dive boat reported that the shark populations had already been decimated. Since it was likely that there would have been no sharks to tag, this element of the trip was cancelled.

AIM

3. The aim of the expedition was to study the population dynamics of scalloped hammerhead and silvertip sharks through the use of acoustic tagging technology.

RESULTS

4. The expedition successfully tagged 9 silvertip sharks, 2 silky sharks and 1 Galapagos shark with acoustic tags. No hammerheads were tagged. In addition, one acoustic receiver was deployed. The full scientific report is at Annex E.

WHY IS SHARK RESEARCH IMPORTANT?

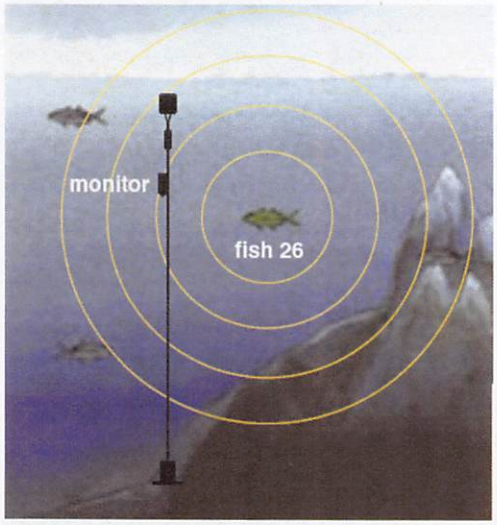
Tiger Shark.

5. Sharks are a vital component of marine ecosystems; as apex predators they control their prey populations: stabilising population fluctuations and removing diseased or genetically flawed individuals. Their disappearance can be extremely damaging. Nevertheless, sharks are being subjected to intense fishing pressure as a result of the high demand for shark fins and cartilage. Since many sharks travel long distances, crossing oceans and national boundaries, they are susceptible to the unregulated fishing efforts of multiple nations. Consequently, shark populations have plummeted worldwide to less than 30 percent of their numbers two decades ago. This decline, coupled with the slow reproductive rate of most sharks has meant that there is now considerable concern about the health of shark populations and an urgent need for effective conservation and management.

METHODOLOGY

6. **External Acoustic Tags**. Underwater, sharks are tagged while they are free swimming. Cleaning stations occupied by small yellow Barber Fish (a type of Butterfly Fish) were the key to the team's success. These stations appear to be the main reason for the high levels of Hammerhead activity around the island. The sharks spend the night feeding in deep water and then come up to the cleaning stations during the day in order to have their parasites removed by these tenacious little fish. Divers wait for the sharks to

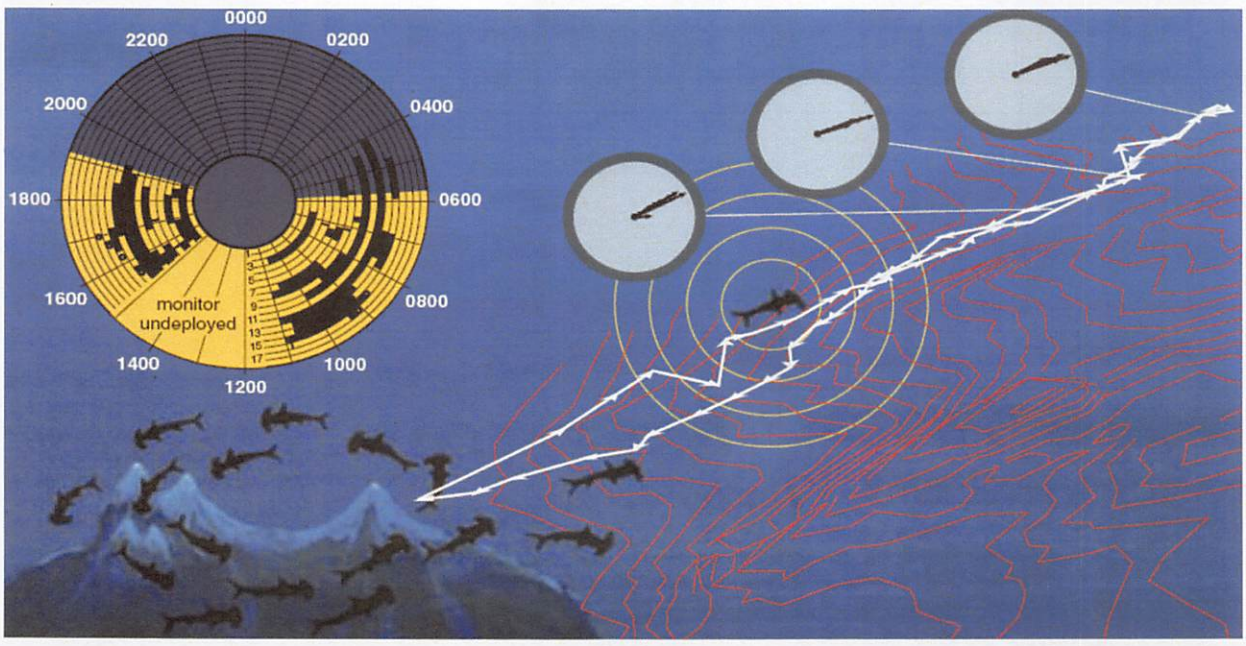
swim into a cleaning station and then move in slowly to tag them using a spear gun or pole spear. Hammerhead sharks swim much more slowly and often roll over to one side while waiting to be cleaned. The sharks seemed to enter a trance-like state when they are at the cleaning station and generally reacted by simply swimming away (catching sharks to tag them, while being the traditional method, is very traumatic on the animal, and in some cases causes the shark to die).



Above: The acoustic tag transmits a unique electronic signature that is picked up and logged by the receiver as the shark swims past.

7. **Internal Acoustic Tags.** This was the first Jurassic Shark expedition to deploy internal acoustic tags. These tags require the shark to be caught so that a tag can be placed inside the body cavity. They work in the same way as external tags.

8. **Acoustic Receivers**. Acoustic receivers record the presence of an acoustic tag when the shark swims past, logging the comings and goings of a tagged shark as it moves around the island (see diagram below). The acoustic receivers give us information about the sharks in relation to specific sites.



Above: Hammerhead sharks at other sites have been found to depart at dusk and return before dawn. They return using the same precise route (as illustrated by the linked arrows). It is thought that they follow geomagnetic signatures (red lines). From: Klimley, A.P., Richert, J.E. and Jorgensen, S. J., 2005 'The Home of Blue Water Fish' American Scientist 93: 42-49.

Above: Preparing sharks to receive an internal acoustic tag.

Maj Mark Foster, an Army plastic surgeon, closes the wound following insertion of a tag.

ADMINISTRATION

9. **Detached Duty.** All personnel were considered to be detached on temporary duty (in accordance with Service regulations for Adventurous Training) whilst participating on this exercise. Field conditions applied.

10. **Personnel.** The nominal roll is at Annex A.

11. **Flights.** A group booking was made with United Airlines; flying from London Heathrow Terminal 4:

a. **Out.**

25 May 13 Heathrow T4 to Houston	UA 971	1335 -1810hrs
26 May 13 Houston to San José Cabo	UA 657	1056 -1242hrs

b. **Return.**

06 Jun 13 San José Cabo to Houston	UA 4231	1427 - 1810hrs
06 Jun 13 Houston to Heathrow T4	UA 970	2035 - 1205hrs **(+1 day: 07 Jun)**

12 **Baggage Allowance.** The baggage allowance was a single 23Kg bag + hand luggage. The use of a NATO Travel Order did, however, ultimately prove sufficient to convince United Airlines to waive the excess baggage fees on both outward and inward journeys.

13. **Land Accommodation.** The expedition spent the first night (25 May 13) in the Ramada Houston Intercontinental Airport South. The second (26 May 13) and last nights (05 Jun 13) of the expedition were spent in the Quinta Del Sol hotel, located at the entrance of Cabo San Lucas.

14. **Insurance.** It was mandatory for all expedition members to possess Divers Alert Network (DAN) insurance in order to facilitate CASEVAC should it be required. DAN Sports Silver was the minimum cover required for this expedition. This applied irrespective of any other travel insurance that might be in place and was the responsibility to of individual team members to organise. The cost was 87 Euros (approx. £74) from: www.daneurope.org.

15. **Cancellation Insurance.** This expedition was not booked through a travel agent meaning that there was no organisation responsible for covering costs associated with cancelled flights etc. Expedition members were therefore required to adequate travel insurance to cover issues such as failing to gain diplomatic clearance. DAN insurance does not cover cancellation or kit loss.

16. **Electronic System for Travel Authorisation (ESTA).** Every member of the expedition was given a NATO travel order at the start of the expedition. For this reason completion of an ESTA form was not a requirement for transiting the USA on this occasion. Further information on ESTA requirements can be found at www.esta.cbp.dhs.gov. The ESTA normally costs $14 and is valid for 2 years.

17 **Mexican Visas.** The planning phase of this expedition was hindered slightly by conflicting messages regarding the requirement for a visa to enter Mexico whilst on duty. In the end it was the British Embassy in Mexico (rather than the Mexican Embassy in London) that facilitated the identification of the correct sort of visa. This involved extensive collaboration with the expedition scientist who was required to submit valid shark research permits. These permits were required to specifically identify the expedition as being allowed to carry out the work. Once the Mexican Embassy in London had finally confirmed the visa requirement all expedition members were required to travel to London to collect their visa. The last of these were collected on the day before the expedition. There was no charge for the visas. It was, however, interesting to note that the Mexican immigration staff on entry into Mexico appeared to be baffled by the visa. The contact details for the Mexican Embassy in London are:

Consular Section
Embassy of Mexico
to the United Kingdom
16A Saint George St
W1S 1FD
Tel: 020 790 79 475
e-mail: consulmexuk@sre.gob.mx

18. **Documentation.** All personnel were required to be in possession of the following documentation on arrival at Heathrow Terminal 4. In addition, a scanned image of passport photo was required for the National Park permit. These were placed in the expedition *Dropbox* folder prior to the start of the expedition.

a. Passport (valid for a minimum of 6 months from 07 Jun 13).

b. NATO Travel Order (issued by the expedition leader at the airport).

c. Mexican Visa.

d. Current medical certificate (Leaflet 12-03 to BRd 1750A).

e. DAN Membership Card (Minimum DAN Sports Silver).

f. Diving Qualification book (or cards).

g. Nitrox qualification card.

h. Proof of current BSAC membership.

i. Diving Logbook.

19. **Shark Research Permit**. CENTRO INTERDICIPLINARIO DE CIENCIAS MARINAS (CICIMAR) sponsored the research permit for the expedition. The full permit is reproduced at Annex E (Science Report).

20 **Financial Summary**. A breakdown of the expedition finances is at Annex C. The currency is the peso; however, US$ were universally accepted.

21. **CILOR**. The CILOR rate for Mexico was £4.87 per person per day. On this occasion, all personnel were requested to claim their own CILOR through their appropriate Brigade HQ Logistic Support Branch (or equivalent) and pay it into the expedition bank account. CILOR was often not claimed by expedition members.

22 **Clothing**. Civilian clothing was worn at all times during the expedition. Shoes were not required on board the boat and there were no opportunities to go ashore. Soft bags were recommended for easy luggage storage on board the boat. A hooded top, polo shirt and 2 x T-shirts were distributed to expedition members at Heathrow Airport. In addition, a supply of T-shirts was taken as gifts for members of the boat crew etc.

23. **Personal Equipment**. Individual expedition members were responsible for all their personal equipment.

24. **Group Equipment**: The following equipment was taken on behalf of the group:

a. **Satellite Phone.** A satellite phone was loaned to the expedition by ATG(A).

b. **Laptop Computers.** Laptop computers are essential to expedition of this nature. All expedition members were therefore encouraged to take a personal laptop if available. Military laptops were, however, not permitted.

c. **Shark Tags/Spear Guns.** Dr Alex Antoniou from Fins Attached was responsible for all scientific equipment (including the spear guns acoustic tags and ancillary equipment). He personally delivered the tags plus ancillary equipment to the expedition in Houston. Dr Mauricio Hoyas (expedition scientist) supplied the remainder.

d. **Air Testing.** Lt Cdr Mark Jameson was responsible for air testing in accordance with Reference C. He was responsible for the FACTAIR testing equipment.

LOCATION

25. **Revillagigedo Islands**. The Revillagigedo Islands (also Revillagigedo Archipelago or Islas Revillagigedo) are a group of four volcanic islands in the Pacific Ocean, known for their unique ecosystem. They have been part of Manzanillo municipality of the Mexican state of Colima since 1861, but are nevertheless under Mexican federal jurisdiction, and lie 386 km southwest of Cabo San Lucas, the southern tip of Baja California peninsula. They are located around 18°49′N 112°46′W. There is a naval station in the south of Socorro Island, with a population of 250 (staff and families). On Clarión, there is a small naval garrison with 9 men. The islands are otherwise uninhabited

Roca Partida

26. **Roca Partida** (Spanish: "Broken Rock") is the smallest of the Revillagigedo Islands. It is uninhabited, with an area of 1.4 Hectares (0.014 km²) only. Like the other islands in its group, it is volcanic in origin, but unlike San Benedicto and Socorro which are still active, Roca Partida has eroded to a piece of bare rock, devoid of terrestrial vegetation. It is some 100 m (300 ft) long and about 8 m (25 ft) wide, and rises into two peaks divided by a low-lying area - hence the name. These were some 25 and 34 m (75 and 100 ft) high in 1953 but the higher one appears to have eroded several meters since then (see photo above). No land animals or fresh water occur on Roca Partida.

DIVING

27. **Regulations.** All diving was carried out in accordance with Reference C.
EX
28. **Nitrox.** All diving was conducted on Nitrox 32. A nitrox qualification card was mandatory for all expedition members.

29. **Re-breathers.** This expedition was conducted on open circuit. No re-breathers were used on this occasion.

30. **Diving Computers.** A nitrox diving computer was mandatory on this expedition.

31. **Summary.** A summary of the diving can be found at Annex B. The Diving Officer's Report is at Annex H.

32 **Science Report.** The science report can be found at Annex E. The list of tagged sharks and a description of the Elasmobranch (shark and ray) species identified is at Annexes F and G.

MEDICAL

33 **Medicals.** An in-date Medical Certificates of Fitness to Undertake Service diving Under Joint Service Sub-Aqua Club and British Sub-aqua Club Regulations (Leaflet 12-03 to BRd 1750A) was required for this expedition.

34. **Medical Plan.** The expedition doctor is Sgn Cdr Don Batham RN. He produced a comprehensive Medical Plan, which, when taken in combination with the Remote/High Risk presentation resulted in a Certificate of Compliance being issued. This is re-produced at Annex I.

35. **Vaccinations.** No specific vaccinations (or Malaria prophylaxis) were required for this expedition.

SUMMARY

36. EXERCISE CLARION CALL (JS4) was a hugely successful exercise that brought the number of sharks tagged in the Northern section of the project as a whole to 141. As with previous Jurassic Shark expeditions the majority of the team were entirely new to the project and some were at the beginning of their diving careers. For many of this expedition was a life changing experience.

{Signed on Original}

AJA REID
Lt Col
Expedition/Project/Joint Services Shark Tagging Team Leader

Galapagos Shark at Roca Partida.

Return to the dive boat.

ANNEX A TO
JS4 PXR
DATED 22 JUN 14

EXERCISE (TIGER) CLARION CALL – NOMINAL ROLL

Ser	Rank	Name	Service	Unit	Quals	Service No	E-mail
1	Lt Col	Andrew Reid	Army	HQ BFC	SADS/1st Class Diver/Adv Instr	541682	expedandy@hotmail.com
2	Maj	Mark Ackrill	Army	JSCSC	Sports Diver	547283	mackrill.jscsc@da.mod.uk
3	Maj	Mark Foster	Army	AMD H/S (Birmingham)	SADS/Adv Instr	547525	maf1@me.com
4	Maj	Alexander MIlls	Army	Army HQ	DL/OWI/ADP	559642	alexmills80@me.com
5	Capt	Jessica Eagan	Army	RCDM, Birmingham	Sports Diver	W1061966	jessica.eagan@uhb.uk
6	Lt	Nick Dawnay	Army	2 Rifles	PADI OWSI	30133352	ndawnay@hotmail.com
7	Cpl	Jason Hickman	Army	1 RSME	Adv Diver	25207101	hickbum@hotmail.co.uk
8	Cpl	Damian Manning	Army	23 Engr Regt	Dive Leader OWI	24960638	damian.m.198@hotmail.co.uk
9	Sgt	Jon Mountfield	RAF	27 Sqn A Flt	PADI RD	30004341	snowyo66@hotmail.com
10	Sgt	Anthony Whelan	RAF	RAF Akrotiri	Sports Diver	B8426579	whelana428@mod.uk
11	Cpl	Philip Blake	RAF	RAF Brize Norton	Adv Diver	F8439425	phil.blake881@mod.uk
12	Cpl	Laura Mcaulay	RAF	RCDM Birmingham	Sports Diver	30022608	lauramcaulay1988@hotmail.com
13	Surg Cdr	Donald Batham	RN	Gibraltar	1st Class Diver/Adv Instr	C027093B	donald.batham505@mod.uk
14	Lt Cdr	Mark Jameson	RN	815NAS	Dive Leader	C036594L	rogerjameson390@mod.uk
15	Lt	Martin Seal	RN	FDU1	MCDO	C040559B	FDS-FDG-FDU1-OIC@mod.uk
16	LNN	Pippa Rumbold	RN	RCDM	Sports Diver	30131407	Pippa.Rumbold@uhb.nhs.uk

ANNEX C TO
JS4 PXR
DATED 22 JUN 14

EXERCISE (TIGER) CLARION CALL – FINANCIAL SUMMARY

EXPENDITURE		**INCOME**	
Item	**£**	***Source***	**£**
Boat Hire	28326	**Personal Contributions (a)**	**16014**
Recce (flight only)	990	**(Individual Contributions)**	**1001**
Flights (part funded by JSET)	17991	ATG(A)	20000
Food	810	JSET	12000
Land Transport ($35 x 16)	346	RAF Trenchard Fund	1734
National Park Fees ($78 x 16)	770	Sp Comd South (Recce Grant)	990
Land Accommodation (Houston)	370	Army Sports Lottery	1000
Land Accommodation (Cabo)	735	RAF Sports Lottery	964
Nitrox ($120 per person)	1185	RN/RM Sports Lottery	964
DAN Sport Silver Membership	1185	RN/RM Charity	750
Expedition Clothing	1017	Defence Academy Athletic Union	900
Website	226	BIBMTF	600
Shark Tagging Equipment	3595	CILOR	422
NSSL Satphone Bill	34	Defence Academy Station Grant	300
		Royal Engineers	300
		2 Rifles	200
		Army Air Corps	150
		Adjutant General's Corps	100
		RAF Akrotiri Grant	100
		Defence Academy COPF	50
		RAF Akrotiri Gym	42
		TOTAL GRANTS (b)	**41566**
TOTAL EXPENDITURE	**57580**	**TOTAL INCOME (a) + (b)**	**57580**

ANNEX D TO
JS4 PXR
DATED 22 JUN 14

EXERCISE (TIGER) CLARION CALL - SCHEDULE OF EVENTS

Sat 25 May 13	Meet at 1000hrs - Heathrow T4. Fly to Houston (UA 971)1335 - 1810hrs. Overnight in Houston.
Sun 26 May 13	Fly Houston to San José Cabo (UA 657)1056 -1242hrs. Overnight stay in Cabo San Lucas.
Mon 27 May 13	Embark the *MV Sea Escape*. Depart Cabo San Lucas. Travel to San Benedicto Island (406 km by sea).
Tue 28 May 13	Arrive San Benedicto (2 Dives).
Wed 29 May 13	Dive San Benedicto (3 Dives).
Thur 30 May 13	Dive San Benedicto (3 Dives). Move to Roca Partida overnight.
Fri 31 May 13	Dive Roca Partida (4 dives).
Sat 01 Jun 13	Dive Roca Partida (3 Dives).
Sun 02 Jun 13	Dive Roca Partida (3 Dives).
Mon 03 Jun 13	Dive San Benedicto (4 Dives).
Tue 04 Jun 13	Dive San Benedicto (3 Dives). Return to Cabo San Lucas.
Wed 05 Jun 13	Arrive Cabo San Lucas. Overnight Stay.
Thur 06 Jun 13	06 Jun 13 San José Cabo to Houston (UA 4231) 1427 - 2010hrs. 06 Jun 13 Houston to Heathrow T4 (UA 970) 2035 - 1205hrs.
Fri 07 Jun 13	1205hrs – Arrive London Heathrow T4.

ANNEX E TO
JS4 PXR
DATED 22 JUN 14

EXERCISE (TIGER) CLARION CALL - SCIENTIFIC REPORT

1. **Introduction**. During Ex JURASSIC SHARK 4, Silvertip, Silky and Galapagos Sharks were tagged, either internally, externally or with satellite transmitters. This Annex details the equipment and methodology by which this was achieved.

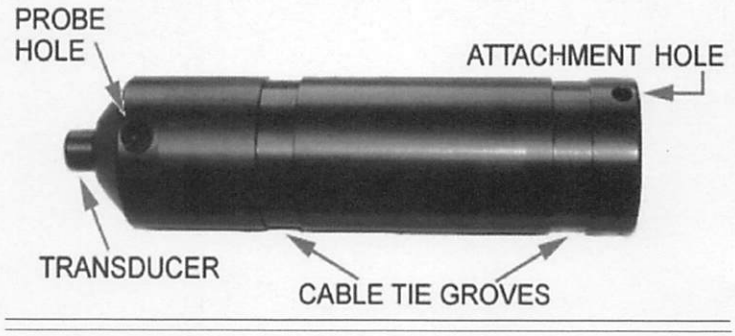
2. **Equipment**.

a. **Pole Spear**. Pole spears were used to externally tag sharks on Ex JURASSIC SHARK 4. They were simple and commonly used fishing spears, adapted with a tip specifically designed for the tags and applicator tips. Previous JURASSIC SHARK expeditions had used spear guns with varying degrees of success. On this occasion it was decided that Pole Spears would be more effective, as was proved to be the case.

b. **External Tags**. Signature transmitters emit uniquely pulsed ultrasonic signals that identify a particular tagged individual, have a life of 3 – 5 years, and are detected by automated receivers moored at different sites. A dart mounted in an applicator needle mounted at the end of the pole spear is inserted into the dorsal musculature of the shark at the base of the dorsal fin, left side if possible.

c. **Applicator Tips**. The applicator tips are manufactured by a machine shop to specifications provided by the Fins Attached. They are approximately 120mm long, designed to penetrate through the skin and into the muscle just below a shark's dorsal fin. They carry a barb approximately 35mm long. It is essential that the barb lodges in the animal's muscle tissue. If it penetrates just the skin, the shark's natural defence mechanisms will gradually reject the barb, just as the human body will gradually force out a splinter in the skin.

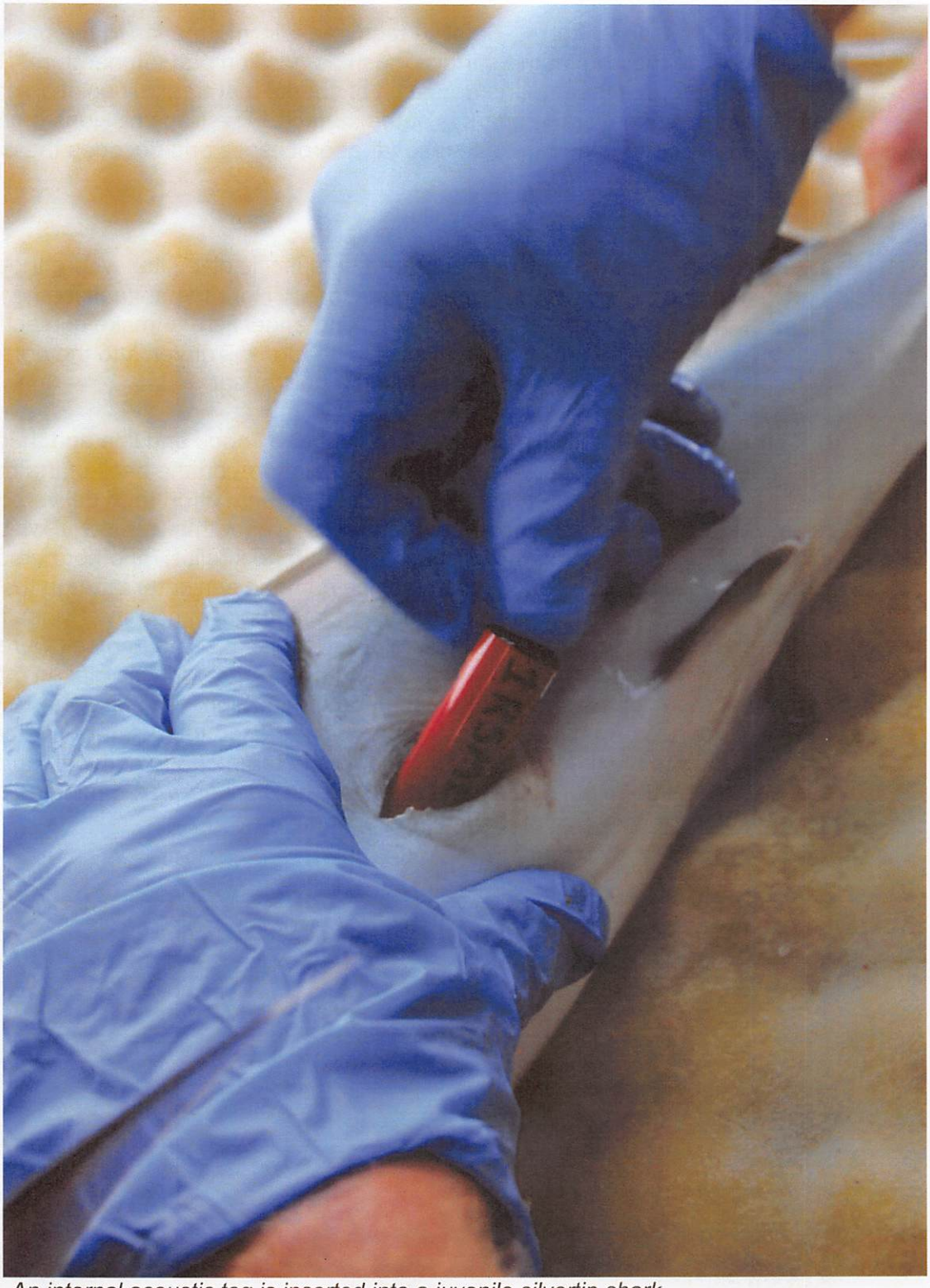
d. **VR2W Automated Receivers**. Used to detect sharks tagged with the signature transmitters and to monitor their behaviour, these devices register whenever tagged shark swim within the range of detection of the receiver. The automated receivers recognize an individual shark carrying a transmitter by its unique signal and store the date and time of detection and a numeric code in an electronic memory. After several months the receiver is removed from the water, attached to a computer, and interrogated. Monitoring devices typically have a detection range of 300 – 500 meters.



Sgt Whelan prepares an acoustic receiver for deployment

The RAF team deploy an acoustic receiver underwater.

Learning how to put the acoustic tags together.



An internal acoustic tag is inserted into a juvenile silvertip shark

e. **Internal tags**. The V16 internal transmitters emit uniquely pulsed ultrasonic signals that identify a particular tagged shark, have a life of 1269 days, and are detected by the VR2W automated receivers. They are activated by removing a magnet and deactivated by replacing it. The acoustic transducer is located in the end of the tag opposite the serial number. The sensors transmit the data on two channels and all the information is stored by the VR2W automated receivers. The external packaging materials of transmitters are epoxy and silicone polymer combinations.

f. **Satellite transmitters**. Satellite tags transmit information to the passing satellites once they are at the surface, such as position and temperature. The SPOT tags are attached on the dorsal fin of sharks that transmit position and temperature, whenever the shark is at the surface. The transmissions of these tags are relayed to a land-based station that processes and decodes the data.

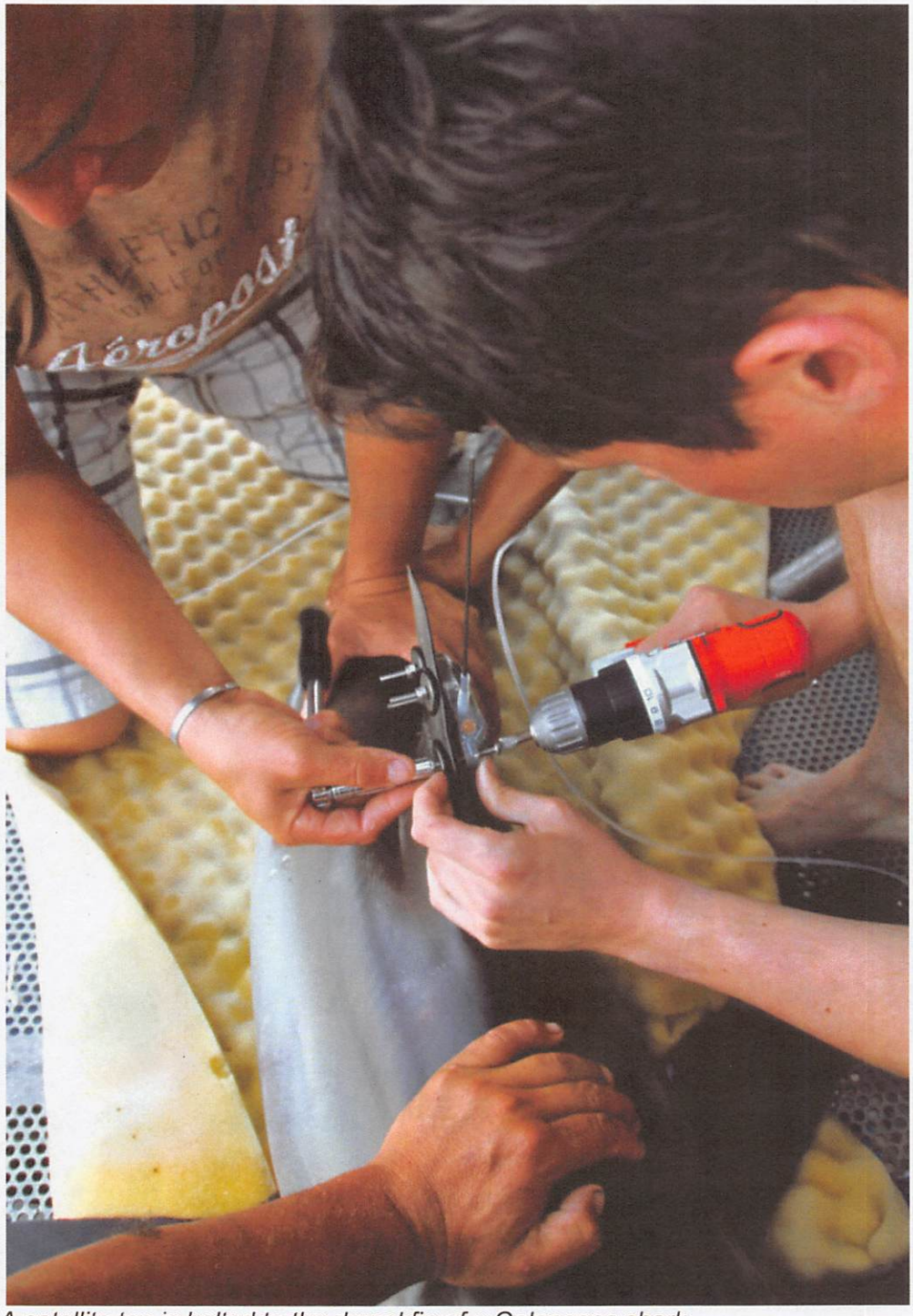
3. **Methodology**.

a. **External**. Sharks were encountered on specific dive sites where they are known to come to because of "cleaning stations." Here the animals come in close to the site for cleaner fish (barber fish and king angel fish) to make contact and pick off any parasites on the shark's skin. The tag was driven into the dorsal musculature below the first dorsal fin using a pole spear.

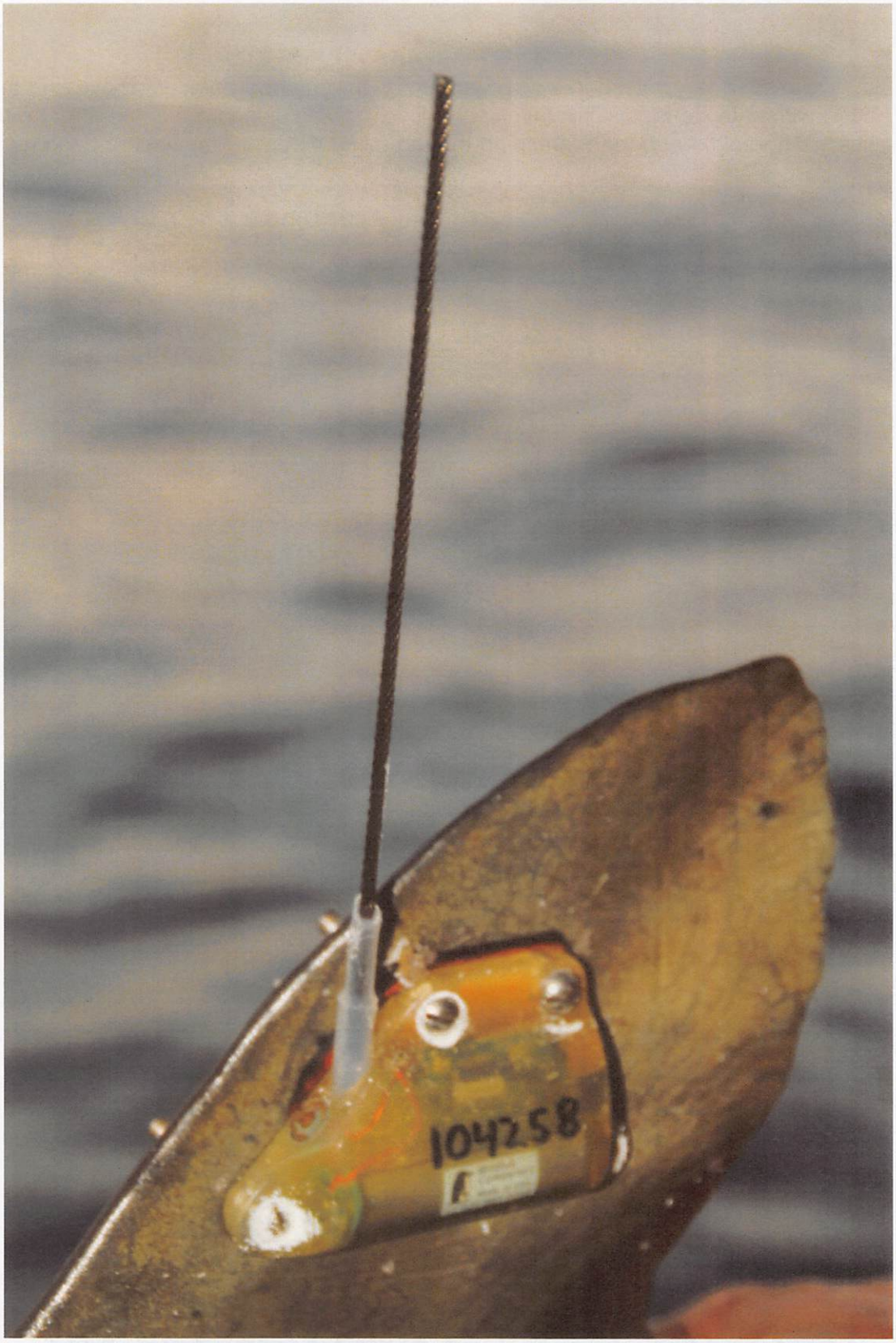
b. **Internal**. Alternatively, sharks were caught by hook and line and then landed by the experienced boat crew onto the diving platform on the back of the boat and they restrained it at head and tail. A coordinated team effort then delivered the following roles; one person covered the shark's eyes with a wet towel, which caused the shark to stop moving (much to everyone's relief), another person placed a hose into the shark's mouth, which pumped seawater through the gills. The shark was placed onto its side, putting it into 'tonic immobility'. Measurements on the shark's dimensions and details of its species, marking and sex were recorded. Finally, an incision was made and an internal tag was placed in the peritoneal cavity of the shark before suturing the incision. The boat crew then removed the hook from the shark's mouth and released the animal. For the health of the shark, the maximum time permitted for the team of 8 to complete this procedure was 20 minutes; on this expedition the quickest was 6 minutes and 27 seconds, the slowest 9 minutes and 46 seconds.

The suture following insertion of an internal acoustic tag

c. **Satellite tags**. 2 sharks were landed by the method detailed above and then fitted with satellite tags. This involved drilling 4 holes using an electric drill into the shark's dorsal fin and then attaching the tag using 4 sets bolts, washers and nuts.



A satellite tag is bolted to the dorsal fin of a Galapagos shark



A satellite tag bolted onto the dorsal fin of a Galapagos shark.

4. **Data Collection Form**. Information about all sharks that were tagged on the expedition was recorded on the following format:

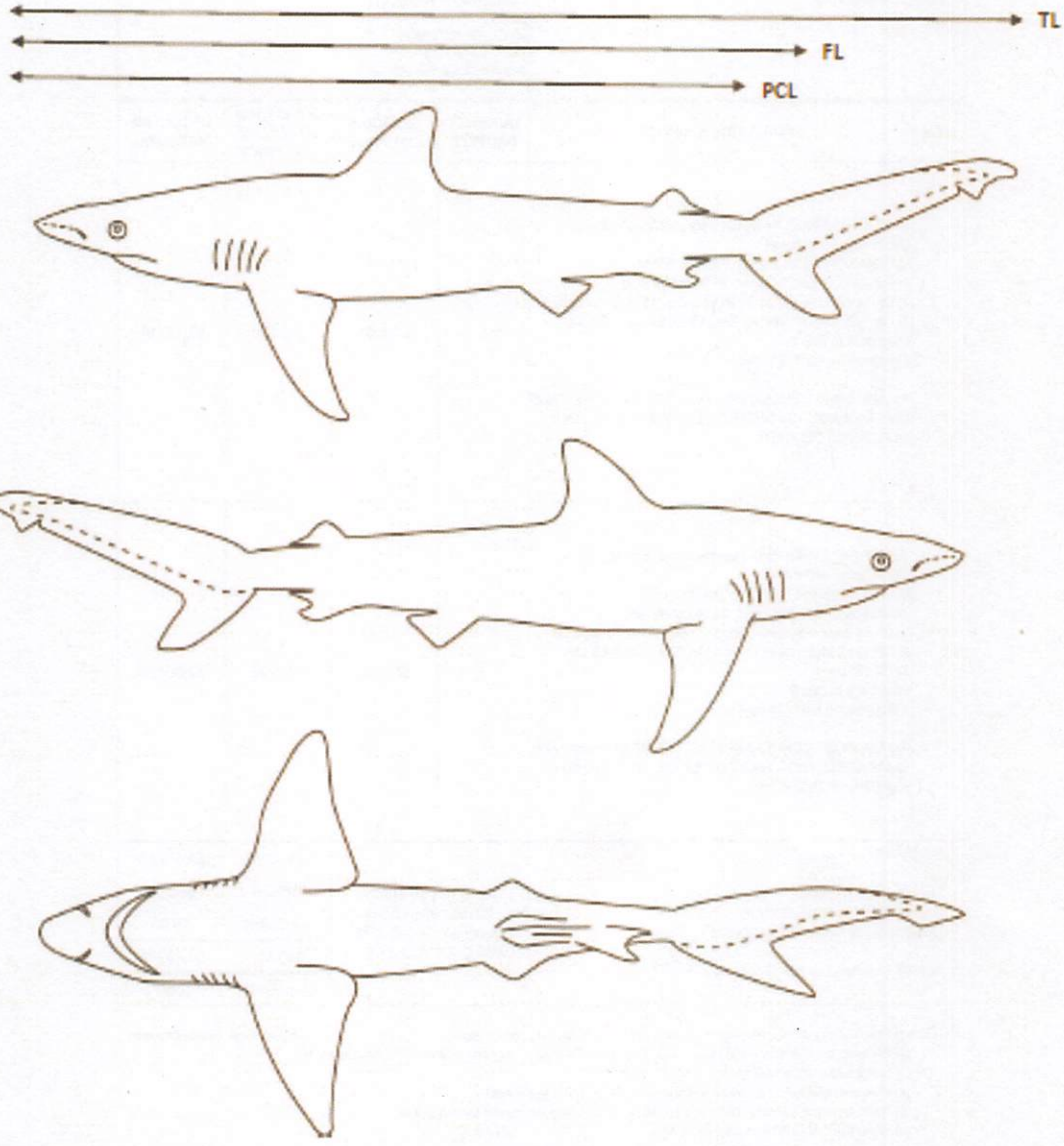
HOJA DE IDENTIFICACION PARA TIBURONES BLANCOS OBSERVADOS EN REVILLAGIGEDO

Date: / / Hour: Place: Lat: Long:

GPS Point: Size (TL): (FL): (PCL): Sex: ♀ ♂ Name:

Transmitter: Coded ID. ( ) SN ( ) Obs.

Biopsy (S) (N) Zone: Vial number: Picture: Video:



5. **Invoice for Tagging Equipment.** The invoice for the tagging equipment is reproduced below:

A division of AMIRIX Systems Inc.

VEMCO, 20 Angus Morton Drive, Bedford, Nova Scotia, Canada B4B 0L9

Phone: +1-902-450-1700 Sales ext 231; Fax: +1-902-450-1704; Web: www.vemco.com

QUOTATION

Current US / Canadian Exchange Rate: $1.001

Please refererence this number

DATE: 2013-04-23 **SALESPERSON:** Dana Allen **CUSTOMER:** FINS01 **QUOTE #:** 15199

EMAIL: dana.allen@vemco.com **CONTACT:** ALEX ANTONIOU

QUOTATION TO:	**SHIP TO:**
FINS ATTACHED MARINE RESEARCH AND CONSERVATION 19675 STILL GLEN DRIVE COLORADO SPRINGS, CO 80908	FINS ATTACHED MARINE RESEARCH AND CONSERVATION 19675 STILL GLEN DRIVE COLORADO SPRINGS, CO 80908 attn: ALEX ANTONIOU Tel: 719-540-9119 alex.antoniou@nspf.org

ITEM	PRODUCT/DESCRIPTION	QUANTITY ORDERED	CANADIAN UNIT PRICE	CONVERTED US DOLLAR UNIT PRICE	US DOLLAR UNIT TOTAL
1	**V16P-6H-A69-9002; Rounded Internal Case** (sharks) Depth range 340 meters MAXIMUM SENSOR DEPTH 340 METERS Worldwide Unique ID Codes: To be determined 1) On 14 days; Power H; Random Delay: 15 to 30 seconds 2) On 1260 days; Power H; Random Delay: 40 to 80 sec Loop back to step 2 Estimated tag life 1260 days AN ADVISORY CONCERNING THE USE OF CLONED TAGS IS ATTACHED.TAGS SHOULD BE DEPLOYED WITHIN 9 MONTHS OF DELIVERY	3	$710.00	$709.29	$2,127.87
2	**V16P-6H-A69-9002; PVC External Case** (Sharks) Depth range 340 meters MAXIMUM SENSOR DEPTH 340 METERS Worldwide Unique ID Codes: To be determined 1) On 14 days; Power H; Random Delay: 15 to 30 seconds 2) On 1260 days; Power H; Random Delay: 40 to 80 sec 3) Off 365 days Loop back to step 3 Estimated tag life 1260 days AN ADVISORY CONCERNING THE USE OF CLONED TAGS IS ATTACHED.TAGS SHOULD BE DEPLOYED WITHIN 9 MONTHS OF DELIVERY	3	$770.00	$769.23	$2,307.69

REMARKS:			
Manufactured in Canada Commodity Code: 9015.80.10.20 Oceanographic Research Instruments AMIRIX Business Number 892153032	TAX ID No.: 98-0456934 EIN No.: 98-0456934 DUNS No.: 24-342-3589 CAGE CODE (CCR): L3480	SUBTOTAL:	$4,435.56
		FREIGHT:	$50.00
		HANDLING:	$0.00
		TOTAL:	$4,485.56
		CURRENCY:	**USD**

NOTE: (1) Freight is an estimate only and will be adjusted on the invoice at time of shipping. **Ship method: FedEx Economy**

(2) Prices do not include any applicable Taxes, Duty, Bank Charges or 3rd party procurement processing fees.

(3) Credit cards can be used for orders less than $5,000.00.

(4) Standard delivery for transmitter and receiver orders is 4 to 6 weeks ARO.

(5) Prices based on Canadian Dollar and converted to US Dollar with current exchange rate.

(6) Prices in effect for 30 days after quote date: 23-Apr-13

(7) To avoid delays, your Tax ID number is required for customs clearance.

Original
THANK YOU

6. **Shark Research Permit.** The research permit is reproduced below:

SEMARNAT

COMISIÓN NACIONAL DE ÁREAS NATURALES PROTEGIDAS.
DIRECCIÓN REGIONAL PENINSULA DE BAJA CALIFORNIA Y PACIFICO NORTE.

CONANP

OFICIO Núm.- F00.DRPBCPN. 000211
La Paz, B. C. S., a 16 ABR 2013
Asunto: Respuesta.
"2013, Año de la Lealtad Institucional y Centenario del Ejército Mexicano"

CENTRO INTERDISCIPLINARIO DE CIENCIAS MARINAS.
POR CONDUCTO DEL DIRECTOR DEL PROYECTO
EL C. FELIPE GALVÁN MAGAÑA.
AV. INSTITUTO POLITÉCNICO NACIONAL S/N,
COLONIA PLAYA PALO DE SANTA RITA, C.P. 23096,
LA PAZ, BAJA CALIFORNIA SUR.

Hago referencia a su escrito recibido el 01 de abril de 2013, ante la Dirección del Área de la Reserva de la Biosfera Archipiélago de Revillagigedo, medio por el cual solicita a esta Comisión Nacional respuesta para realizar actividades de colecta científica para la realización del proyecto "Conservación de tiburones en el Archipiélago de Revillagigedo: último refugio en el Pacífico Mexicano", dentro de la Reserva de la Biosfera Archipiélago de Revillagigedo, durante los periodos comprendidos del 25 de mayo al 11 de junio del 2013; este proyecto se realizará de manera conjunta entre el CICIMAR, la A.C. Pelagios-Kakunjá y el Ejercito Británico, en la expedición llamada Exercise Clarion Call-Clarion Inland (JS4), a bordo del a embarcación Sea Escape de la empresa Club Cantamar, mediante el permiso de la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación con número de Oficio No. DGOPA.06668.150612.1691.

Sobre el particular y con fundamento en lo establecido por los Artículos 2º fracción I, 17, 26 y 32-Bis fracciones I, II, III, VII y XXXIX de la Ley Orgánica de la Administración Pública Federal; 44, 45 fracciones I, II, III y IV, 46 fracción I, 48, 49, 64, 75 bis, 79, 80 y 83 de la Ley General del Equilibrio Ecológico y la Protección al Ambiente; 97 y 98 de la Ley General de Vida Silvestre; 16 y 17 de la Ley Federal de Procedimiento Administrativo; 1, 2 fracción XXXI inciso b), 19, 41, 43, 70, 71 fracciones III, VIII, IX, 74, 79 fracción XXXIII del Reglamento Interior de la Secretaría de Medio Ambiente y Recursos Naturales; 85, 88 fracción I del Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente en Materia de Áreas Naturales Protegidas, publicado en el Diario Oficial de la Federación el día 30 de noviembre del año 2000; Primero y Segundo numeral 1, tercero numeral 1.1.1 del ACUERDO por el cual se establecen nueve Direcciones Regionales de la Comisión Nacional de Áreas Naturales Protegidas publicado en el D.O.F. el 20 de julio de 2007 entre las que se encuentra la Dirección Regional Península de Baja California y Pacífico Norte, con domicilio en la Ciudad de La Paz, Baja California Sur, cuya circunscripción queda comprendida por los estados de Baja California y Baja California Sur, así como la porción marina, descritas topostmicamente; Primero, Segundo y Décimo Segundo del DECRETO por el que se declaró Área Natural Protegida la Reserva de la Biosfera Archipiélago de Revillagigedo, publicado en el Diario Oficial de la Federación el día 6 de Junio de 1994; 1, 2, 3, 4, 6 fracción II, 40, 41, 42, 43, 53, 54, 55, 56, 57, 58, 59, 60, 61 y demás Reglas Administrativas establecidas en el Programa de Manejo cuyo resumen fue

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publicado en el Diario Oficial de la Federación del día 28 de noviembre de 2007; ésta Comisión Nacional NO TIENE INCONVENIENTE en que el CENTRO INTERDISCIPLINARIO DE CIENCIAS MARINAS por conducto del Director del proyecto el C. FELIPE GALVÁN MAGAÑA en compañía de los C.C. Mauricio Hoyos y 16 elementos del Ejercito Británico: Alex Antoniou, Andrew Reid, Mark Foster, Mark Ackrill, Alex Mills, Jonathan Carr, Jessica Eagan, Jason Hickman, Damian Manning, Don Batham, Roger Jamieson, Martin Seal, Nurse Pipps Rumbold, Jon Mountfield, Anthony Whelan y Phil Blake; ingresen a la Reserva de la Biosfera Archipiélago de Revillagigedo, con el propósito de realizar actividades concernientes al proyecto "Conservacion de tiburones en El Archipiélago de Revillagigedo: último refugio en el Pacífico Mexicano" realizando actividades consistentes en: 1) Marcaje de los tiburones: se llevará a cabo el marcaje de las especies de tiburón toro (*Carcharhinus leucas*), tiburón puntas negras (*Carcharhinus limbatus*), tiburón punta plateada (*Carcharhinus albimarginatus*), tiburón galapagos (*Carcharhinus galapagensis*), tiburón piloto (*Carcharhinus falciformis*), tiburón gambuzo (*Carcharhinus obscurus*), tiburón punta blanca oceánico (*Carcharhinus longimanus*) tiburón punta blanca de arrecife (*Triaenodon obesus*), tiburón tigre (*Galeocerdo cuvieri*), tiburón martillo (*Sphyrna lewini*), tiburón ballena (*Rhincodon typus*) y manta gigante (*Manta birostris*) con marcas ultrasónicas codificadas; 2) Recuperación e interrogación de los receptores de la estaciones acústicas; 3) Viaje especial a Clarión con apoyo del personal del Ejército Británico: apoyaran en la colocación de receptores submarinos y el marcaje de tiburones; y 4) Toma de biopsias con vara Hawaina con punta de aluminio modificada, de las especies de tiburón toro (*Carcharhinus leucas*), tiburón puntas negras (*Carcharhinus limbatus*), tiburón punta plateada (*Carcharhinus albimarginatus*), tiburón galapagos (*Carcharhinus galapagensis*), tiburón piloto (*Carcharhinus falciformis*), tiburón gambuzo (*Carcharhinus obscurus*), tiburón punta blanca oceánico (*Carcharhinus longimanus*) tiburón punta blanca de arrecife (*Triaenodon obesus*), tiburón tigre (*Galeocerdo cuvieri*), tiburón martillo (*Sphyrna lewini*), tiburón ballena (*Rhincodon typus*) y manta gigante (*Manta birostris*); a bordo del a embarcación Sea Escape de la empresa Club Cantamar, dentro de la Reserva de la Biosfera Archipiélago de Revillagigedo, durante el periodo comprendido del 25 de mayo al 11 de junio del 2013.

PARA EL DESARROLLO DE LAS ACTIVIDADES DEBERÁN RESPETAR LAS SIGUIENTES CONSIDERACIONES:

1. Deberá establecer comunicación con la Biol. María Jossué Navarro Sánchez, subdirectora encargada del despacho de la Reserva de la Biosfera Archipiélago de Revillagigedo, con domicilio en Edificio Cabañas Cabo San Lucas, Calle El Pescador, Ed. Cabañas, Casa #3, Colonia El Médano, Los Cabos, B. C. S. C. P. 23453, Teléfonos (624) 1720-210 y 1720-219.
2. Se recomienda a los visitantes registrar su estancia ante la autoridad naval en el área y proporcionar una relación de las personas transportadas e informar de las actividades que se llevarán a cabo. Este registro podrá hacerse a través de radiocomunicación con el subsector naval ubicado en Isla Socorro. Asimismo, se recomienda mostrar al personal de la SEMARNAT y SEMAR., las autorizaciones correspondientes para realizar las actividades mencionadas cuantas veces le sean requeridas, para efectos de inspección y vigilancia.
3. Atender las indicaciones que haga el personal de la Dirección de la Reserva y de la Procuraduría Federal de Protección al Ambiente (PROFEPA), referente a la protección del ecosistema y sus recursos naturales, así como las del personal de la Secretaría de Marina-Armada de México.
4. La presente no exime de la responsabilidad de realizar los trámites y procedimiento con otras dependencias del órden federal que tuvieran competencia en la Reserva.
5. No abandonar en el sitio el equipo y material usado para la realización de las mismas; incluyendo la basura generada en su visita.

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6. Al término de su visita y no más de 30 días naturales, deberá enviar un informe detallado de las actividades realizadas a la Dirección de la Reserva, el cual incluya bitácora de monitoreo, imágenes y sonidos captados, todo esto en formato digital.
7. Con el fin de utilizar la información de manera educativa en la difusión de los recursos de la Reserva, deberán de entregar una carta donación de las imágenes captadas a la Comisión Nacional de Áreas Naturales Protegidas, quien se compromete a utilizar únicamente con el fin descrito.
8. Cumplir con todas y cada una de las condicionantes dentro de la autorización de la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentacion con número de Oficio No.DGOPA.06668.150612.1691.
9. Para la realización de las actividades solicitadas, deberá extremar precauciones, sobre todo en aquellas especies que se encuentren enlistadas en la NOM-059-SEMARNAT-2010.
10. Para la instalación de nuevos receptores y/o estaciones acústicas se deberá contar con la autorización de la autoridad correspondiente.
11. Para llevar a cabo la colocación de marcas ultrasónicas se deberá insertar un dardo de acero en la musculatura dorsal de los tiburones con varas hawaianas;
12. Para llevar a cabo la colocación de las marcas ultrasónicas internamente deberán ser mediante una inserción quirúrgica en la cavidad intraperitoneal, capturando los tiburones con línea de nylon y anzuelo, colocandolos en una camilla para restringir su movimiento y la marca se insertará manteniendo el tiburón inmóvil dentro del agua
13. Para llevar a cabo la colocación de marcas satelitales sólo se colocaran del tipo PAT, SPOT o SPLASH en la aleta dorsal, capturando los tiburones con línea de nylon y anzuelo, colocalndolos en una camilla para restringir su movimiento y la marca se insertará manteniendo el tiburón inmóvil dentro del agua.
14. Para llevar a cabo la toma de biopsias para el análisis genético se removerá un trozo de tejido de aproximadamente 1 cm. por 0.5 cm., utilizando una hawaiana para pesca deportiva con punta modificada similar a la utilizada por Robbins (2006).

DURANTE EL DESARROLLO DE LAS ACTIVIDADES QUEDA PROHIBIDO:

1. Molestar, extraer, remover, capturar, cazar, retener o apropiarse de flora y fauna silvestre, terrestre o acuática, o sus productos.
2. Alimentar, acosar o hacer ruidos intensos que alteren la fauna silvestre.
3. Realizar actividades de pesca deportivo-recreativa y/o comercial.
4. Alimentar, molestar, perseguir, acosar, lastimar, montar, forzar cualquier contacto físico, capturar, cazar, extraer, retener o remover cualquier organismo marino, especialmente a los que se encuentren en sus refugios, así como alterar y perturbar las zonas de anidación y reproducción de aves y mamíferos marinos
5. Introducir especies exóticas o domésticas, así como trasladar especímenes de poblaciones nativas de una comunidad biológica a otra, en especial la siembra de semillas o propágalos de especies no nativas en las áreas terrestres de las áreas naturales protegidas.
6. Portar o utilizar armas de fuego, arpones, explosivos y cualquier otro equipo o método que dañe a los organismos de flora y fauna silvestre, terrestre o acuática, o efectuar cualquier actividad que ponga en riesgo o altere los ecosistemas y sus elementos.
7. Remover o extraer o apropiarse de rocas, material mineral, vida silvestre o sus productos sin la autorización correspondiente.
8. Alterar o destruir por cualquier medio o acción los sitios de alimentación, anidación, refugio o reproducción de especies silvestres.

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9. Arrojar, verter o descargar cualquier tipo de desechos orgánicos, residuos sólidos o líquidos o cualquier otro tipo de contaminante al suelo o al agua.
10. Usar altavoces, radios o cualquier aparato de sonido, que altere el comportamiento de las poblaciones o ejemplares de las especies silvestres.
11. El desarrollo de proyectos de investigación científica y cualquier actividad de registro, medición, cuantificación y experimentación sobre especies biológicas, sin la autorización correspondiente de esta Secretaría.
12. El uso de bloqueadores, bronceadores y/o repelentes no biodegradables.
13. Realizar cualquier otra actividad diferente a las autorizadas, así como las demás que establezcan las disposiciones legales en materia ambiental.

DISPOSICIONES DE CARACTER ADMINISTRATIVO.

1. Deberán cumplir con las disposiciones establecidas en la Ley General del Equilibrio Ecológico y Protección al Ambiente y su Reglamento en Materia de Áreas Naturales Protegidas; y demás disposiciones legales aplicables.
2. En caso de que las autoridades de PROFEPA o la Secretaría de Marina-Armada de México lo considere procedente, se deberá permitir al personal comisionado oficialmente por dichas autoridades para el desarrollo de actividades de supervisión y evaluación del cumplimiento a las restricciones que se le señalen en el presente y las que procedan en campo, quedando obligado a otorgar el apoyo necesario para tal efecto y permitir el cumplimiento de sus comisiones sin restricciones.
3. Responsabilizarse de todos aquellos daños provocados a los ecosistemas por motivo de las actividades que deriven de su estancia en el ANP, sujetándose a las sanciones que las leyes en la materia establezcan.
4. Reportar ante las autoridades competentes, cualquier anomalía que se presente en el área, durante el desarrollo de las actividades.
5. La Secretaría de Medio Ambiente y Recursos Naturales se libera de las responsabilidades que correspondan, por los daños que sufran en sus bienes, equipos o persona cualquiera de los participantes o de aquellos causados a terceros, durante su estancia y desarrollo de las actividades que ampara la presente.
6. La presente no exime de responsabilidades legales al solicitante por las sanciones a las que se haga acreedor, de no ser acatadas las disposiciones antes mencionadas.
7. La presente se otorga sin perjuicio de las demás autorizaciones que en el ámbito de su competencia corresponda otorgar a otras dependencias de la Administración Pública Federal relacionadas con las actividades a que se refiere este trámite.

SUFRAGIO EFECTIVO. NO REELECCIÓN
EL DIRECTOR REGIONAL

BENITO R. BERMÚDEZ ALMADA

Copias al reverso

Av. Constituyentes S/N Esq. Ballenas, Fracc. FIDEPAZ, CP. 23090, La Paz B.C.S. Tel (612)12 8-4171
www.conanp.gob.mx

C.c.p.

MARTHA TERESA URRUTIA CÁRDENAS.- Directora de Coordinación Política con los Poderes de la Unión. Unidad de Gobierno, Secretaría de Gobernación. Río Amazonas No. 62 3er. Piso, Col. Cuauhtémoc, México, D.F., C.P. 65000.

ALMIRANTE C.G. DEM.-JOAQUIN ZETINA ANGULO.- Jefe del Estado Mayor General de la Secretaría de Marina. Eje 2Oriente No. 861, Tramo Heroica Escuela Naval Militar. Edificio E, 2do. Piso, Col. Los Cipreses, Delg. Coyoacán, México, D. F. C.P. 04830.

CAP. DE NAV. C.G.DEM. SERGIO ANTONIO ISLAS SANCHEZ.- Jefe de la Sección III del Estado Mayor General de la Secretaría de Marina. Eje 2 Oriente No. 861, Tramo Heroica Escuela Naval Militar. Edificio E, 2do. Piso, Col. Los Cipreses, Delg. Coyoacán, México, D. F. C.P. 04830.

CAPITAN DE FRAGATA C.G.DEM. CARLOS GUERRA ORTEGA.- Jefe de la Subsección de Operación y Contingencia de la Sección III del Estado mayor General de la Secretaría de Marina Eje 2 Oriente No. 861, Tramo Heroica Escuela Naval Militar. Edificio E, 2do. Piso, Col. Los Cipreses, Delg. Coyoacán, México, D. F. C.P. 04830.

ALMIRANTE C.G.DEM. JAIME MEJIA MICHEL.- Jefe de la Sexta Región Naval Manzanillo. Calzada rompeolas s/n, col. Centro, histórico, C.P.28200, Manzanillo, Colima.

CONTRALMIRANTE C.G.DEM. SALVADOR JIMENEZ MIRANDA.- Jefe del Sector Naval Isla Socorro.

ANTONIO ESTRADA VALENCIA.- Encargado del despacho de la Delegado Federal de la SEMARNAT en el Estado de Colima.- Victoria 360.- 105, Col. Centro, C.P. 28000, Colima, Col.

CIRO HURTADO RAMOS.- Delegado Federal de la PROFEPA en el Estado de Colima.- Lerdo de Tejada No. 60, Colonia Centro, C.P.28000, Colima, Col.

LUIS FUEYO MAC DONALD.- Comisionado Nacional. Comisión Nacional de Áreas Naturales Protegidas. Camino al Ajusco Núm. 200. Col. Jardines en la Montaña. C. P. 14210. Delg. Tlalpan, México, D. F.

ALFREDO ARELLANO GUILLERMO.- Director General de Operación Regional. Comisión Nacional de Áreas Naturales Protegidas. Camino al Ajusco Núm. 200. Col. Jardines en la Montaña. C. P. 14210. Delg. Tlalpan, México, D. F.

MARIA JOSSUE NAVARRO SÁNCHEZ.- Encargada del Despacho del área. Calle el pescador camino viejo a San Jose, Edificios cabañas, casas #3, Col. El Médano, C.P. 23453, La Paz, B.C.S.

Expediente. DIR/REBIARRE

BRBA/MJNS/DRMC/JMTV/egn/nlho/cqd

ANNEX B TO
JS4 PXR
DATED 22 JUN 14

EXERCISE (TIGER) CLARION CALL –DIVING SUMMARY

Dive No.	Lt Col Andrew Reid	2Lt Nick Dawnay	Surg Cdr Don Bathan	LNN Pippa Rumbold	Cpl Jason Hickman	Sgt Tony Whelan	Lt Cdr Mark Jameson	Lt Martin Seal	Maj Mark Foster	Sgt Jon Mountfield	Sgt Phil Blake	Cpl Laura Mcaulay	Maj Alex Mills	Capt Jessica Eagan	Cpl Damian Manning	Maj Mark Ackrill
1	41	41	28	28	35	35	30	30	30	30	28	28	40	40	36	36
2	43	43	37	37	41	41	16	16	34	34	31	31	39	39	40	40
3	45	45	47	47	38	38	34	34	34	34	37	37	41	41	39	39
4	50	50	45	45	47	47	45	34	47	47	47	47	44	44	50	50
5	34	34	41	41	41	41	40	Ear Infection Prevented Diving	42	42	39	39	41	41	32	32
6	46	46	44	44	47	47	44		38	38	45	45	43	43	39	39
7	47	47	38	37	37	37	38		47	47	38	38	25	25	25	25
8	37	37	39	39	41	41	39		34	34	37	37	37	37	31	31
9	46	36	41	41	47	47	41		38	38	39	No dive	43	43	39	39
10	55	46	48	44	51	51	40		46	40	45	37	37	48	44	51
11	54	45	46	45	50	54	37		45	37	45	38	38	46	45	50
12	53	41	47	41	40	53	45		41	45	50*	42	40	44	40	40
13	51	40	48	49	52	50	50		40	50	49	40	40	48	48	52
14	49	43	43	40	35	48	46		43	46	40	35	35	43	40	35
15	41	39	39	40	49	41	37		39	37	40	39	39	39	42	49
16	46	48	48	43	42	46	46		43	37	47	42	37	42	43	37
17	60	42	42	36	35	47	60		36	35	47	35	35	35	43	35
18	48	46	46	36	42	47	48		36	32	47	44	32	No dive	43	32
19	35	42	42	34	37	37	35		34	38	38	37	38	40	38	38
20	40	33	33	34	38	43	40		34	33	43	38	33	38	34	33
21	39	43	43	32	38	51	39		32	36	51	38	36	38	32	12
22	43	50	50	34	36	47	43		34	36	47	36	36	36	41	No dive
23	38	41	41	37	38	40	37		37	38	40	38	38	38	38	No dive
24	47	59	60	39	43	60	47		39	37	60	43	37	59	39	No dive
25	41	58	58	49	55	55	41		49	43	55	55	43	58	49	No dive
Total	**1129**	**1095**	**1094**	**992**	**1055**	**1144**	**1018**	**114**	**972**	**964**	**1035**	**939**	**947**	**1005**	**866**	**795**

ANNEX F TO
JS4 PXR
DATED 22 JUN 14

EXERCISE (TIGER) CLARION CALL - LIST OF TAGGED SHARKS

Ser	Date	Species	Dive Site	Type of Tag	Sex	Size (cm)	Tagged by	Remarks
1	28 May 13	Silvertip	Canyon, San Benedicto	Internal	Male	86	Team (internal)	Juvenile
2	28 May 13	Silvertip	Canyon, San Benedicto	Internal	Female	89	Team (internal)	Juvenile
3	28 May 13	Silvertip	Canyon, San Benedicto	Internal	Female	86	Team (internal)	Juvenile
4	28 May 13	Silky	Canyon, San Benedicto	Internal	Female	191	Team (internal)	Adult
5	29 May 13	Silvertip	Caves, San Benedicto	External	Male	150	Sgt Mountfield	Juvenile
6	30 May 13	Silvertip	Roca Partida	External	Female	200	Cpl Hickman	Pregnant adult
7	30 May 13	Silvertip	Roca Partida	External	Female	200	Dr Hoyos	Adult
8	30 May 13	Silvertip	Roca Partida	External	Female	200	Dr Hoyos	Adult
9	1 Jun 13	Silky	Canyon, San Benedicto	Satellite	Female	200	Team (satellite)	Adult
10	1 Jun 13	Silvertip	Canyon, San Benedicto	Internal	Female	87	Team (internal)	Juvenile
11	1 Jun 13	Galapagos	Canyon, San Benedicto	Satellite	Female	226	Team (satellite)	Adult
12	3 Jun 13	Silvertip	Canyon, San Benedicto	Internal	Male	166	Team (internal)	Juvenile

EXERCISE (TIGER) CLARION CALL - ELASMOBRANCH SPECIES IDENTIFIED

Ser	Common Name	Scientific Name	Description	Size	Habitat, Behaviour and Biology
1	Tiger Shark	*Galeocerdo cuvier*	Bigheaded, very short and blunt snouted, large-mouthed requiem shark with a rather slender body behind the pectoral fins. Characteristic dark, vertical tiger-stripe markings faded or obsolete in adults.	0.5 – 5.5m (1.5 – 16.5ft)	Prefers turbid areas in continental waters, large island groups or high volcanic islands where high runoff of fresh water may contribute to a high density of prey. The Tiger Shark is perhaps the least specialized of sharks as far as feeding is concerned. It eats a wide variety of marine life as well as being somewhat of a 'garbage-can with fins' in its taking of carrion and all manner of inedible objects. Apart from people definitely known to be killed and eaten by tiger sharks, some of the other terrestrial vertebrates found in Tiger Shark stomachs may have been taken alive as well as in the form of carrion. One of the most dangerous sharks, with more confirmed attacks on divers and swimmers (including multiple attacks) and attacks on boats being recorded for this species than all other sharks except the Great White Shark.
2	Giant Manta Ray	*Manta birostris*	Manta rays are large eagle rays belonging to the genus Manta. Manta rays have triangular pectoral fins, horn-shaped cephalic fins and large, forward-facing mouths. They are classified among the Elasmobranchii (sharks and rays). Mantas are listed as Vulnerable by the International Union for Conservation of Nature. Anthropogenic threats include pollution, entanglement in fishing nets, and direct harvesting for their	Up to 7m in width	Mantas can be found in temperate, subtropical and tropical waters. Both species are pelagic; M. birostris migrates across open oceans, singly or in groups, while M. alfredi tends to be resident and coastal. They are filter feeders and eat large quantities of zooplankton, which they swallow with their open mouths as they swim. Gestation lasts over a year, producing live pups. Mantas may visit cleaning stations for the removal of parasites. Like whales, they breach, for unknown reasons.

Ser	Common Name	Scientific Name	Description	Size	Habitat, Behaviour and Biology
			gill rakers for use in Chinese medicine. Their slow reproductive rate exacerbates these threats. They are protected in international waters by the Convention on Migratory Species of Wild Animals, but are more vulnerable closer to shore. Areas where mantas congregate are popular with tourists. In general, these large fish are seldom seen and difficult to study.		
3	Silvertip Shark	*Carcharhinus albimarginatus*	Conspicuous white tips and trailing edges of all fins. Stocky body, dark gray above, white below.	0.7 – 3m (2 – 10ft)	Most often observed along outer reefs and blue water near rocks and pinnacles. Usually solitary or in small groups. Feeds on fishes, including small sharks, eagle rays and octopus. Usually shy; reported attacks on divers when injured fish were present.
4	Silky Shark	*Carcharhinus falciformis*	Sloping first dorsal fin begins behind rear tips of pectoral fins; tips of fins dusky. Body dark gray to gray brown above, white below.	0.6 – 3.5m (2 – 11ft)	Most often observed along outer reef slopes and in blue water near rocks and pinnacles; also in blue water from the surface to 50m. Solitary and in small groups. Feeds on fishes, squid, and pelagic crabs, yellow fin tuna, rainbow runners, bottlenose dolphins and brown boobies. Curious; will make a close pass at divers.
5	Galapagos Shark	*Carcharhinus galapagensis*	Moderately large first dorsal fin begins above inner margin of pectoral fin; tip pointed to somewhat rounded. Body brownish grey above, white below.	0.6 – 3.7m (2 – 12ft)	Occurs close to islands and off shore; from the surface to 50m. Solitary and in small groups and aggregations. Feeds on fishes, squid and octopi. Curious and bold; may closely approach divers repeatedly. Known to attack divers.

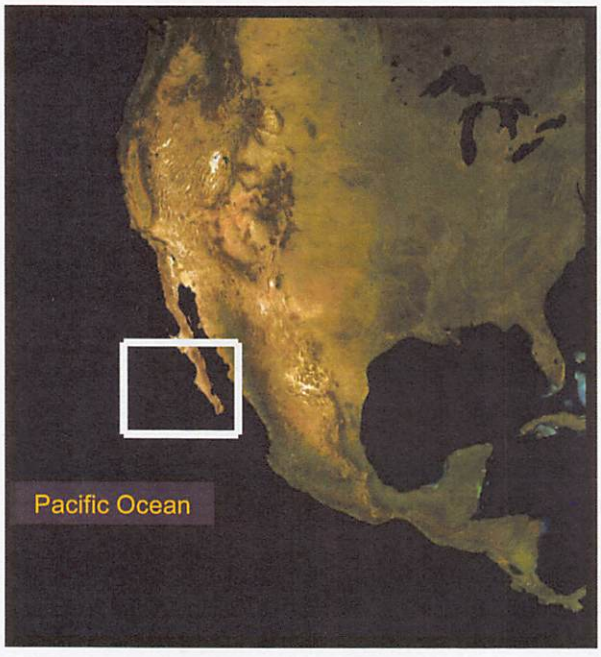
Ser	Common Name	Scientific Name	Description	Size	Habitat, Behaviour and Biology
6	White Tip Reef Shark	*Triaenodon obesus*	Conspicuous white tips on first dorsal fin and upper lobe of tail; second dorsal fin and lower lobe of tail sometimes with white tips. A slender shark with a blunt head, grey-brown above shading to whitish below. Extremely short broad snout.	0.6 – 2m (2 – 7ft)	Often observed resting on the bottom on rocky reefs, boulder areas and in caves, often in groups. Most active at night. Large groups have been observed swimming in place in strong currents. Feeds on small fishes, octopi and crustaceans. Large groups have learned to follow divers at night, opportunistically feeding on prey illuminated by divers' lights. Will approach at close range. Considered harmless, but has bitten divers when harassed.
7	Scalloped Hammerhead Shark	*Sphyrna lewini*	Head broad and hammer-shaped with anterior notches. First dorsal fin begins above or slightly behind base of pectoral fin. Tips of pectoral fins dusky to black. Body grey-brown above, white below.	Max 4.2m (14ft)	Congregates in schools near seamounts and costal islands. Schooling believed to be associated with mating. Feeds primarily on a variety of fishes (sharks, reef fishes, rays, batfish), as well as squid, octopi, shrimp, crabs, and lobsters. Shy and difficult to approach.
8	Dusky Shark	*Carcharhinus obscurus*	A large grey shark with a fairly short, broadly rounded snout, fairly large eyes, a low inter-dorsal ridge, large falcate pectoral fins, a moderate sized first dorsal and no conspicuous markings on fins.	1 – 3.4m (3 – 13.5ft)	A common, coastal-pelagic, inshore and offshore warm temperate and tropical shark of the continental and insular shelves and oceanic waters. Adults of the species occupy an overlapping intermediate offshore coastal habitat between other similar species shark. Adult dusky sharks are often seen offshore and commonly follow ships.

ANNEX H TO
JS4 PXR
DATED 22 JUN 14

DIVING OFFICER'S REPORT

1. As with all military diving expeditions, there is a great deal of work to be done prior, during and even after, for it to be both successful and safe. This expedition was a unique project where all three services combined to form a multi experienced team. It proved a fantastic opportunity for personal development and ticked all the boxes for Adventurous Training. All diving carried out during Exercise Clarion Call; Jurassic Shark 4 (JS4) was conducted in accordance with JSP 917 and British Sub-Aqua Club (BSAC) Safe Diving Practices. All divers were BSAC members and had all joined the Divers Alert Network (DAN), who offers world class diving insurance.

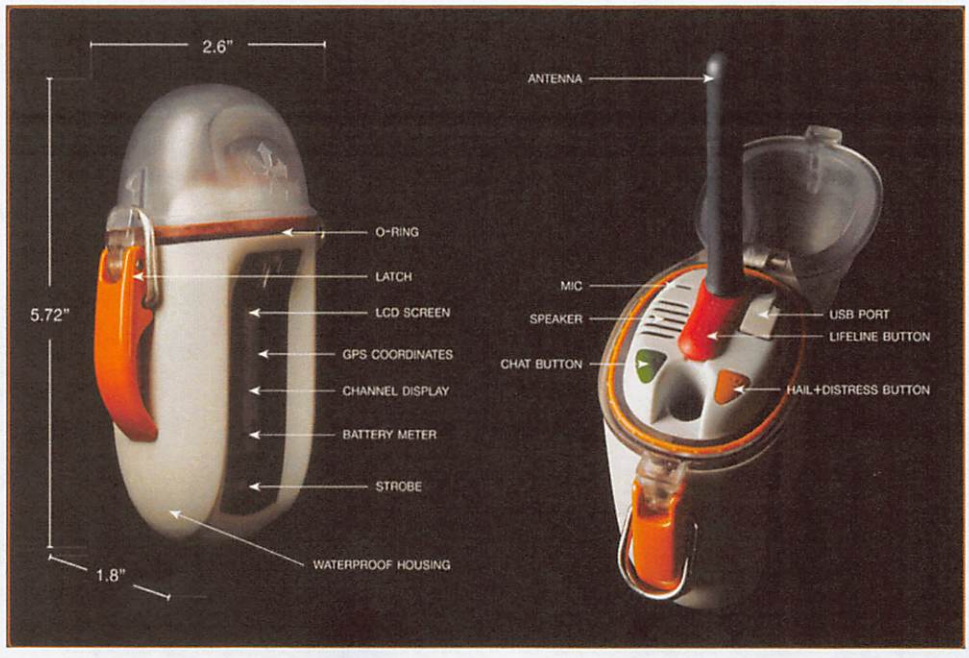
2. The Revillagigedo archipelago is 210 miles south-west from Cabo San Lucas, Baja, Mexico, up to 30 hours sail and over 6 hours round trip by helicopter from the nearest hospital. Due to the islands remoteness, safety for the divers was of critical importance. Having 3 very experience Sub-Aqua Diving Supervisors (SADS) and a hand full of Advanced Divers to deputise graced the expedition. The risks involved in sub-aqua are always present but if managed correctly can be mitigated. Decompression Illness or DCI is a risk that can be managed through careful dive planning and adhering to safety limits. The expedition vessel its self was fitted with a small re-compression chamber and had dedicated emergency first aid oxygen ready to go at any time. Prior to departure from port, the boat crew checked the re-compression chamber for serviceability and its function briefed to the expedition team. The emergency oxygen was also assembled, tested and briefed to all personnel.



3. Air purification samples were taken to ensure the quality of breathing gas being supplied by the vessel's compressors was clean and of the required quality to be used for diving.

4. Nitrox was used on all dives. Using Nitrox allows a diver to remain longer at optimum depths with the added benefit that nitrogen levels within the blood would be reduced. Careful gas planning was carried out and all divers analysed their own cylinders prior to diving. Maximum Operating Depths and No Deco limits were obeyed by all divers and a minimum 3 minutes safety stop at 6 meters was carried out on every dive.

5. The waters around the islands were infinitely changeable. The current was very difficult to predict and missing divers was a risk that needed to be controlled. Having thorough dive plans, buddy teams and strict surface-to-surface dive times enabled the diving supervisor to maintain control and awareness. Taking this into consideration it was still necessary for all divers to carry some vital location devices. The 'Nautilus' EPIRB & PLB (Emergency Position Indicating Radio Beacon and Personal Locator Beacon) and Delayed Surface Marker Buoy (DSMB) were part of every divers kit. The Nautilus has functions enabling a lost diver to communicate direct with the diving vessel or send out a distress signal to any vessel within 8 nautical miles. A DSMB can be inflated under the water and sent to the surface on a line. These were 100% effective and no diver would wait any longer than 2 minutes at the surface before being recovered by the inflatable dingy (Zodiac).



Nautilus' EPIRB & PLB Emergency Position Indicating Radio Beacon and Personal Locator Beacon

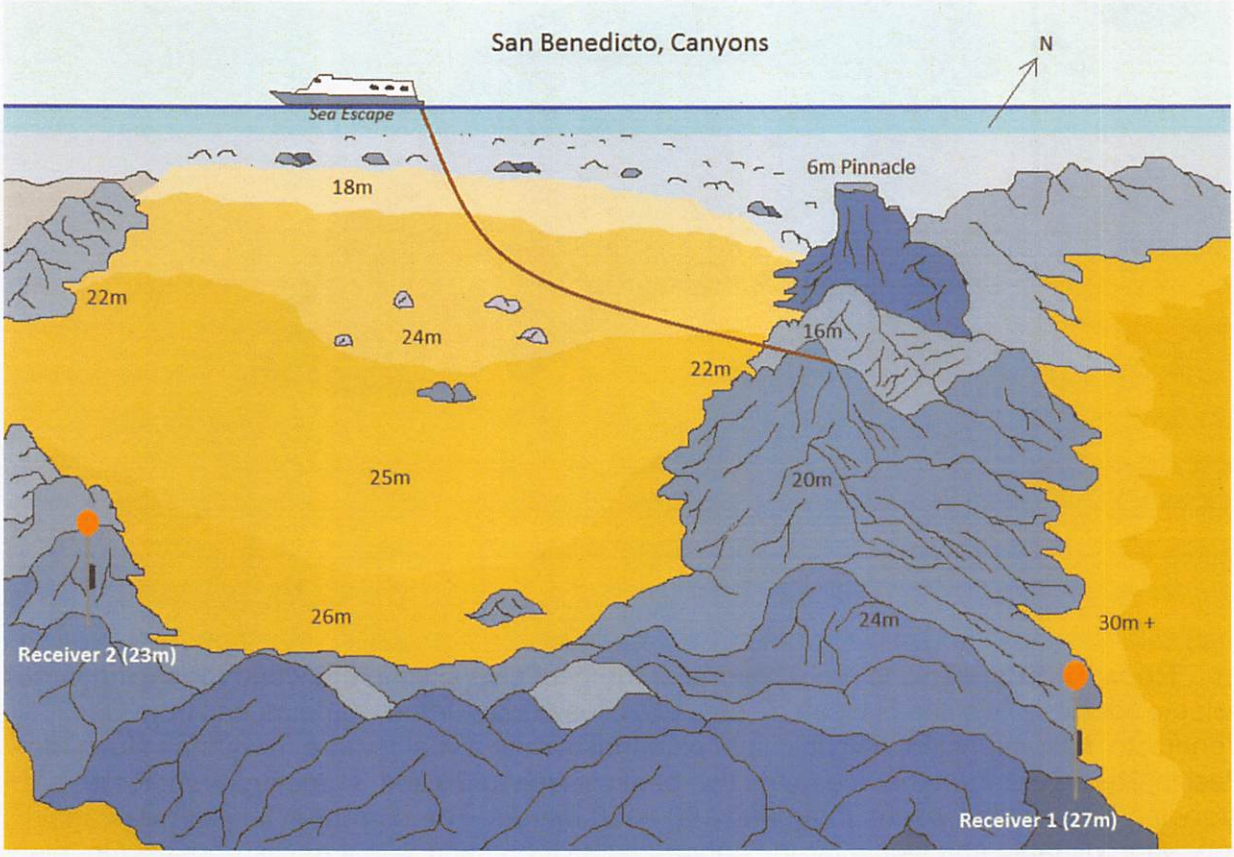
6. Good weather was experienced throughout the expedition. Updated forecasts were received daily by the ships crew and were then included in the morning dive briefings. The water temperature varied from site to site and depending on depth and current, it could change during a dive. The current could bring cooler water up from the depths and a sudden chill could be felt. Typically the temperature was around 24°c but dropped to as low as 21°c at some sites. All divers wore full length 3 to 5mm neoprene wet suits. This provided adequate thermal protection. Injuries and illness were also something to be considered during the planning stage. The expedition had a dedicated doctor and other medical professionals on board. They brought with them a healthy supply of medication for treating minor illness and injury. Anything that could not be dealt with on board would be

treated as an emergency and the relevant action would have been taken. Communication with the mainland was by means of a Satellite telephone. It was also available for welfare purposes.

7. The diving was carried out in only 4 different dive sites at 2 of the islands. It was decided early on that these sites were proving very productive for sharks and so it may have been detrimental to the aims of the expedition to go elsewhere. San Benedicto Canyons and Roca Partida were by far the best places for shark encounters and the team were very successful in tagging at these locations.

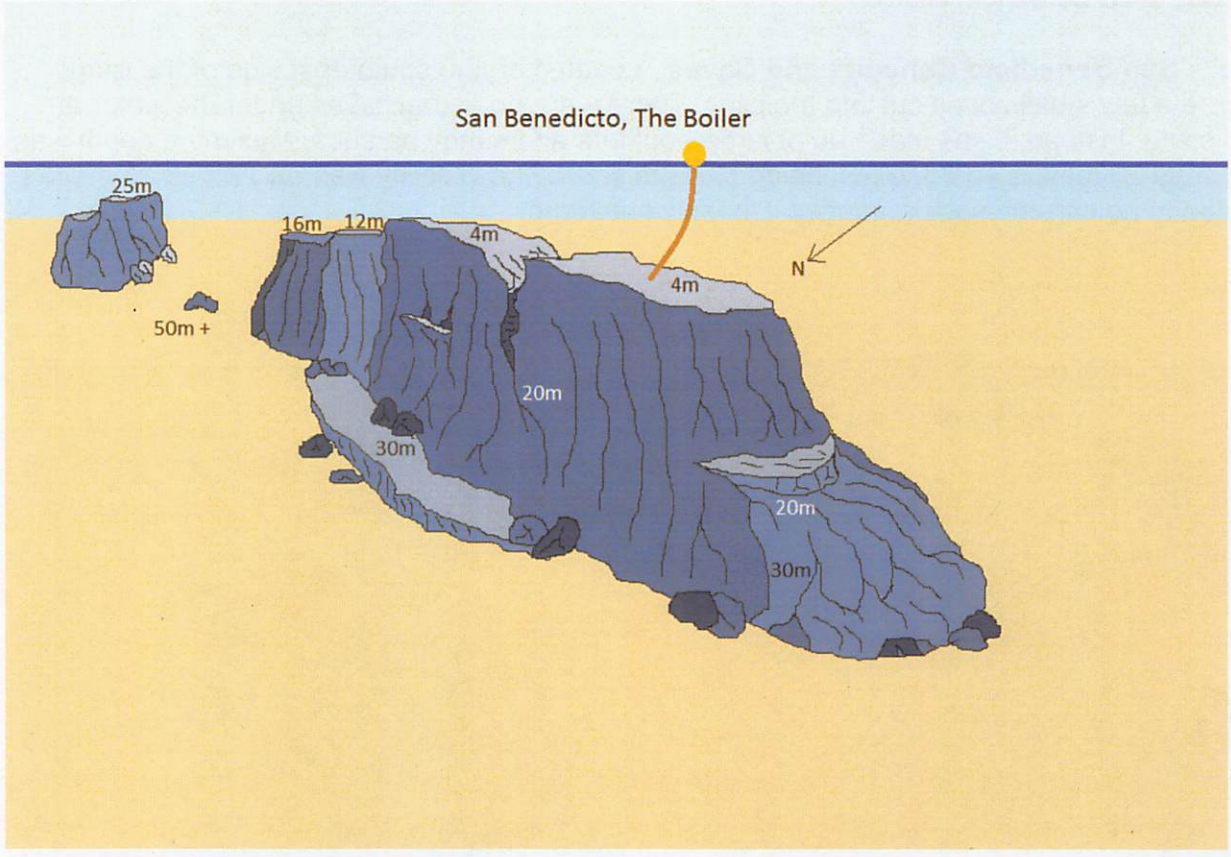
DIVE SITE DESCRIPTIONS

8. **San Benedicto Canyons and Caves.** Located on the south east side of the island were a few small caves cut into the cliffs. There were no actual caves under the water at this site. Instead it was made up of large boulders and sandy patches. Maximum depth was around 20 meters and due to it being close to shore; the visibility was only about 15 meters. Little to no current was present as it is fairly sheltered.

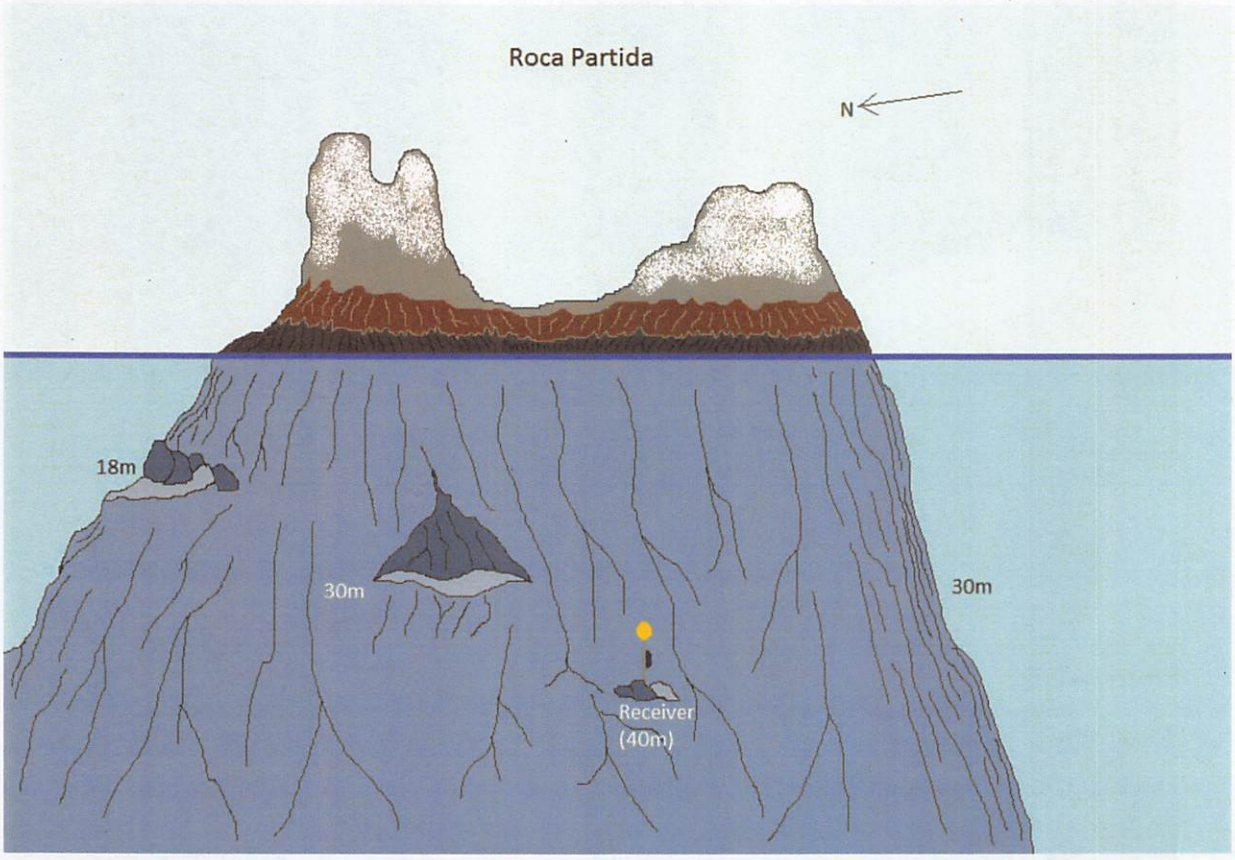


9. This would be the site we dived most over the course of the expedition. The dive vessel would moor to a rock marking the beginning of the canyons. From there it was a matter of navigating your way to a cleaning station at around 27 meters. After spending time there, you could then zigzag your way back up the canyons and onto the sandy area where there were normally a few silvertip sharks. Depending on the current, this dive could be made by jumping from the main boat and returning to it at the end of the dive. The Zodiac would always be near by to pick up any divers that may have been caught in the current or had planned to explore further a field.

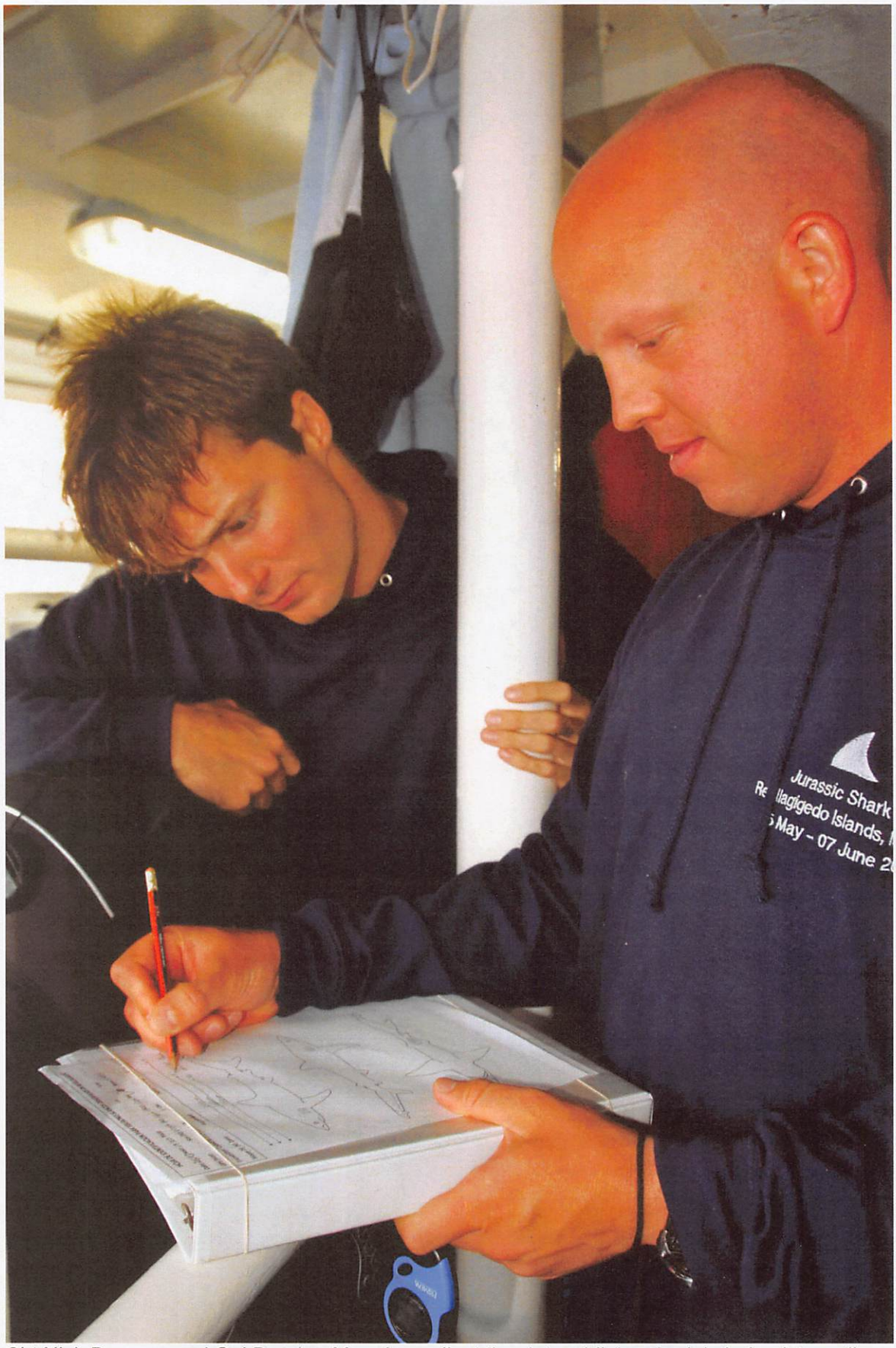
10. **San Benedicto, The Boiler.** This site was given its name because of the turbulent water that appears in the shallows above the rock formation. Starting at around 4 meters, the cliff drops strait down to the sea floor between 30 and 40 meters below. Main features were the steps, to the east and the plateau on the western tip. A large crack on the north edge of the Boiler was also worth a look to see the resting white tip reef sharks. Easy to navigate 2 or 3 times around the formation in one dive and even venture out to the other smaller rock pinnacle just off the eastern tip. The dive would normally end back at the steps where it was easy to make the 3-minute safety stop before swimming into the blue to be picked up by the Zodiac.



11. **Roca Partida.** This is probably one of the best dive sites in the world for seeing large pelagic species. This site is located some 85 miles and a further 10 hours sail from San Benedicto. It is an ancient volcanic lava plug that is now a vital feature for marine life in the Pacific. Rising out from the ocean, its two peaks reach to 25 and 34 meters high, then dropping beneath the waves to around 100 –150 meters. The current at this site was again very unpredictable and would often change mid dive bringing with it new surprises. On this site the vessel would drop anchor 200 meters away then ferry the divers to and from the rock. Dropping off the Zodiac, you would start to fall strait down a sheer cliff and stopping at a point where you were clear of the crashing waves above. From there you picked your route around the rock depending on the current. It was a simple site to navigate, so long as you kept sight of the rock and didn't venture to far into the blue water. If at any point you lost sight of the rock a DSMB would be deployed immediately. At the end of the dive it was best to allow the current to take you away from the rock whilst ascending under the DSMB. It was then that you might be lucky enough to be joined by dolphins or a couple of silky sharks.



Phil Blake
Sgt
Diving Officer
BSAC Advanced Diver



2Lt Nick Dawnay and Cpl Damian Manning collect the data whilst a shark is being internally tagged.

ANNEX I TO
JS4 PXR
DATED 22 JUN 14

MEDICAL PLANNING

Ref: Sp Comd Med-65-09

02 May 13

SO2 AT (south)

EXERCISE TIGER CLARION CALL (JURASSIC SHARK 4) – MEDICAL PLAN – CERTIFICATE OF COMPLIANCE

1. A summary of the CLARION CALL Medical Plan and associated risks is outlined below:

Serial	Subject	Comment
1	References	The Medical Plan complies with the current policy associated with medical planning for exercises and training
2	Acclimatisation Requirements	The Medical Plan clearly identifies the acclimatisation associated training to be undertaken during the exercise. Whilst the information contained in Appendix 2 is pertinent it is more applicable to the current operational locations.
3	Casualty Treatment and Evacuation	The plan clearly identifies the casualty treatment process during this exercise. Having two Doctors as part of the expedition team able to provide a Pre Hospital Emergency Care (PHEC) capability will be invaluable.
4	Environmental Health Assessment	The Environmental health threats have been clearly identified and mitigated. Please Note: Peripel 55 the Permethrin based insecticide treatment issued through the MOD stores system is only licensed for the treatment of combat clothing. Civilian clothing can be treated with DEET based products readily available from camping and outdoor shops like Cotswold Camping.
5	Medical Risk Assessment	The medical control measures outlined in the plan mitigate the risks to an acceptable level.
6	Residual Risk	The Residual Risk is assessed as being low and therefore acceptable.

2. Based on the Medical plan and supporting information provided by the Expedition Team Leader the residual medical risk associated with is this exercise is assessed to be LOW and therefore this medical plan is approved.

Original Signed

NA Taylor
Maj RAMC
For GOC

11 April 13

MEDPLAN - EXERCISE TIGER CLARION CALL (JURASSIC SHARK 4)

MEDICAL

1. **Introduction.** This Medical Directive supersedes previous medical directives for Jurassic Shark III. The Joint Services Expedition Jurassic Shark IV will deploy a team of 15 trained divers to participate in Exercise Clarion Call. The expedition will be deployed from 25 May 13 to 9 Jun 13. All divers will be trained to a minimum of BSAC Sports Diver, be in date for Sports Diving Medical, in date dentally and for all vaccinations. All personnel will be required to hold Divers Alert Network (Dan Europe) Silver insurance, which covers all diving and non diving related medical needs including the organisation of medical evacuation if required. The expedition members include two medical officers (1 x GP, 1 x surgeon) and one nurse. The GP is in date for BATLS, MIMMS, RTCMM and the Standard Underwater Medicine course; he is also one of the two medical officers responsible for the MOD decompression facility in Gibraltar. Appendix 1 covers the relevant SHEF Hazards, Appendix 2 details heat acclimatisation measures that are to be undertaken in these locations, Appendix 3 details the DAN Europe medical insurance policy.

2. **Population at Risk (PAR). The** PAR consists of 8 Army, 4 RN and, 3 RAF and 2 scientists. All personnel will be accommodated on the *MV Sea Escape*, travelling from Cabo San Lucas (Mexico) to/from the Revillagigedo Islands in the Eastern Pacific. Responsibility for this Med Plan lies with:

Rank	Name	Role on the Expedition
Lt Col	Reid, A	Expedition Leader
Surg Cdr	Batham, D	MO, General Practitioner, BATLS, MIMMS, RTCCM trained. Expedition GP
Maj	Foster, M	MO, Plastic Surgeon, Spec Reg, ALS trained. Expedition Resuscitation Officer
LNN	Rumbold, P	Expedition nurse

a. All military personnel are to be in date for sports diving medical, in date dentally and fit to dive as per BR1750a.

b. All personnel are to be current for routine immunisation iaw JSP 311, JSP 950 Leaflet 7-1-1, and any other theatre-specific immunisation and force health protection requirements as identified by PJHQ.

c. Blood grouping is completed for all deployed personnel.

THREATS TO HEALTH

3. **Direct and Indirect Violence**. Threat level in the areas to be visited is considered LOW.

4. **Disease and Non-Battle Injury**. The nature of the roads and driving conditions make the probability of accidents possible.

5. **Major Diseases of Operational Importance**. The diseases below are deemed to be the most significant in the region, because they are likely to degrade operations by affecting a large proportion of personnel, or because they may cause severe illness in a smaller proportion.

a. **Food and Water Borne Diseases**. Sanitation will be assessed in all locations. Local food and water sources (including ice) may be contaminated with pathogens. Diarrhoeal (bacterial & protozoal) diseases can be expected to temporarily incapacitate a high percentage of personnel within days if contaminated food, water or ice is consumed. Hepatitis A and E, and typhoid fever can also cause prolonged illness in a smaller percentage.

b. **Vector Borne Diseases**. There is a year round threat of Malaria and Dengue Fever. Additionally, there are a variety of vector-borne diseases occurring at low or unknown levels, which, as a group, may constitute a potentially serious operational risk.

c. **Respiratory Diseases**. No specific risks (NaTHNaC April 2013)

d. **Water Contact Diseases**. No specific risks (NaTHNaC April 2013)

e. **Contact Diseases / Sexually Transmitted Infections**. HIV is prevalent in the region but rates are unknown. Hepatitis B is a risk to unvaccinated personnel. Gonorrhoea and Chlamydia are also present.

f. **Zoonotic Diseases**. Rabies is prevalent throughout the majority of the region, with higher rates found in rural areas.

6. **Climate**. All personnel are to be alert to the dangers of climatic injury. Acclimatization is to be carried out and precautions taken in accordance with JSP 539 and Appendix 7.

7. **Environmental Hazards**. Debilitating environmental health risks exist throughout. Pollution of water sources by sewage, pesticides and industrial effluent is to be expected.

8. **Industrial**. Personnel may face health risks from the accidental or intentional release of toxic industrial chemicals.

HOST NATION SUPPORT

9. PJHQ SO1 Med was approached for any medical intelligence available April 2013, nil available.

MEDICAL C4I

10. **Command and Control**. The Expedition Leader will have Command and Control of deployed medical assets and will act as such in event of a Major Incident. The Medical Officer will advise on medical matters. OC is responsible for tasking suitable personnel in event of incident requiring additional support. In event OC is unavailable Major Mark Foster will take the lead.

11. **Reports and Returns**.

a. **Notifiable Diseases**. All Notifiable diseases are to be reported using F Med 85 iaw the JSP 950.

b. **Heat Illness**. All cases of heat illness are to be reported to PJHQ J4 Med iaw JSP 539.

c. **Adverse Drug Reactions**. Any adverse drug reactions are to be reported to PJHQ J4 Med, for transmission to HQ Surgeon General (SG). HQ SG will collate adverse drug reaction reports and submit them to the Committee on Safety of Medicines. The reporting Clinician's details are to be completed, but the address is to be left blank.

d. **Significant Events**. Significant Events, which cannot be resolved locally, are to be raised through HQ BF Gib to PJHQ and JFC J4 Med without delay iaw PJHQ Medical Handbook for Operations.

e. **Higher Medical Command Contacts.** The following contacts are to be used as required.

(1) **DAN 24/7 Emergency Assistance** +3906 4211 5685

(2) **Princess Royal Medical Centre Gibraltar** Tel: (+350) 2005 5400 – Reception Tel: (+350) 5800 8087-PRMC Duty Medic 00350 5600 1216 SO2 Med 00350 5800 8087

(3) **AEROMED EVACUATION CONTROL CENTRE** AECC, based at RAF Brize Norton, authorises and organises all strategic Aeromedical evacuation. (Tel: 95461 5300 (civil + 44 1993 895300) or outside working hours +44 7770 648688).

(4) **Duty Diving Doctor INM** 0044 7827 821 980.

f. **Medical Protection/Preparation.**

(1) **Public Health Immunisation Policy.** It is the responsibility of the individual units to ensure that the immunisation states of deployed individuals are up to date at all times. Deploying personnel are to be in date for all entry and normal service vaccinations, as per JSP 950 and JSP 311. The following additional vaccinations are to be offered to all deploying personnel:

- **Hepatitis B vaccination**. HQ SG has issued direction that Hepatitis B is a routine vaccination for all Armed Forces personnel[1]. Full details of the programme are promulgated within JSP 950. Current policy for Hepatitis B vaccination of healthcare workers is not affected by this policy.

- **Rabies Vaccination**. The requirement for Rabies vaccination has been assessed by NaTHNaC and the risk of exposure is considered low. Therefore **there is no requirement for Rabies vaccination**.

(2) **Malaria.**

- **Malaria Warning Cards**. Individuals may be issued with an F Med 568 (Malaria Warning Card).

- **Bite Avoidance Measures**. Avoiding mosquito bites is an essential element, and of primary importance when considering protection from malaria. This also gives a measure of protection against other insect-borne diseases such as leishmaniasis and dengue fever. Personnel should be briefed on the importance of avoiding mosquito bites by:

    - Wearing long sleeves and trousers with boots.

    - Use of insect repellent on exposed skin (e.g. Ultrathion (DET) NSN: H1/6840-01-284-3942).

    - Avoiding exposure at the beginning and end of the day, when mosquito activity is highest.

    - Using other measures to suppress the mosquito population, as advised by deployed medical personnel, including spraying of residual insecticide and the use of 'swing-fogs' at dusk and dawn.

    - Personnel must be issued with mosquito nets impregnated with Permethrin (NSN H1/6840-99-300-0661). Mosquito nets require re-impregnation every 6 months.

    - Uniform or clothes to be worn in theatre should be impregnated by immersion in a solution of Permethrin. This can be achieved using Permethrin mixed with tap water in a suitable container (e.g. plastic dustbin). Clothing is immersed, wrung out and allowed to dry. It can be ironed, and its insect repellent properties can be expected to persist for six weeks. EH staff can give advice, and instruction is given in JSP 371. Care must be taken with the disposal of Permethrin solution, which is to be regarded as toxic waste. Arrangements will be necessary for re-impregnation of uniform in theatre, for those personnel deploying for more

[1] DMSD/13/08 dated 6 May 09.

than 6 weeks. When in civilian clothing it is recommended that loose fitting, light coloured long trousers and long sleeved shirts are worn along with proper footwear. Exposed areas should be protected with 50% DEET insect repellent.

- **Chemoprophylaxis.** The preferred Anti-malarial chemoprophylaxis for Mexico is Chloroquine (NaTHNaC April 13). Dosage location specific advice should be sought from unit Medical staff prior to deployment.

(3) **Tick Borne Diseases.** There are a number of seasonal tick-borne diseases endemic in the region. The risk is heightened during March to October; however these diseases present a low risk to deployed Forces. The bite avoidance measures detailed above, for avoidance of Malaria, are appropriate for protection against tick bites.

o **Leishmaniasis.** Extant policy is based on JSP 950. Individuals who have served in Mexico are to have their F Med 965 annotated to this effect and are to be issued with a Leishmaniasis Warning Card, Alert Card 10/07, which is to be carried for 24 months.

o **Other Diseases - Rabies Policy.** The risk has been assessed as low and anyone requiring post exposure treatment is to be returned using Aeromed procedures for PET.

o **Dengue Fever –** transmitted via mosquito bite, no chemo-prophylaxis available, bite avoidance as per malaria. Unlike the malaria transmitting mosquito the aedes aegypti mosquito bites throughout the day.

o **Blood Borne Viruses Policy.** Personnel who become contaminated with blood or body fluids from humans or animals are to be assessed in accordance with JSP 950. Immediate action will include thorough cleaning of the skin or wound. A risk assessment is to be performed to assess the risk of contamination and assist in the decision on whether or not Post-Exposure Prophylaxis (PEP) is to be given. Personnel needing PEP are to be evacuated ASAP.

(4) **Education/Information** All personnel are to receive a verbal health brief prior to deployment and on arrival in theatre.

(5) **Training.** All personnel are to have completed their relevant single Service Military Annual Training (MATT3) prior to deployment.

ROLE 1 SUPPORT (PHEC AND PHC)

(1) **Role 1 and PHC.** Role 1 and PHC Support will be provided by deployed Medical Officers. Casualties requiring PHEC will be stabilised by

the deployed medical staff and evacuated via the DAN insurance scheme to appropriate medical facilities.

(a) **Emergency Medical Plan.** Within 24 hours in country:

- o Medical Officer to be issued with SIM card and credit for any medical emergency or satellite telephone. All expedition personnel are to be in possession of MO's number.
- o MO to be provided with a list of contact numbers / room locations of expedition personnel.
- o MO to contact DAN insurance as per attached medical insurance policy.
- o If failure of primary line to DAN contact the Princess Royal Medical Centre duty clinician / AEROMED (+350 2005 5400) to confirm lines of communication.
- o MO to carry out liaison visits to local medical facilities.

(b) **Primary Care / Minor Casualties**.

- o Initial Contact with will be via the MO either at sick parades or ad hoc.
- o The expedition will deploy with medical module (NSN: 6545 99494 1680) and PHC Module to treat primary care conditions and minor infections. Additionally or alternative medication can be purchased from local pharmacies.
- o Injuries that require x-ray should be discussed with DAN insurance prior to evacuation to local hospital for X-ray. Any personnel with fractures will be evacuated.
- o For minor wounds were non-invasive closure is not suitable, sterile suture kits provided by PRMC should be used by expedition medical staff.
- o The expedition accommodation can be used as a bedding down facility for those cases that can self-care / rest and require minimal clinical supervision.
- o Dental provision should be sought through British Embassy recommended sources.

(c) **In-patient Admission (Non Infectious).**

o Those cases that may require more regular clinical supervision or IV fluid should be referred to via DAN insurance for inpatient care for maximum of 24 hours. Admission longer than this should be considered for AE.

(d) **Diving Related Conditions.**

o The risk of DCI is very small as all dives will be non-stop and will be performed using nitrox mixtures to reduced nitrogen load. The expedition GP is an experienced diver (35 years) and experienced in dive medicine, being a BSAC Medical Referee for 24 years and first having attended the SUWMC course in 1983. He currently is the senior MO in charge of the decompression facility in Gibraltar. All cases of DCI will be assessed by the exped MO and referred to DAN for appropriate treatment. The onboard recompression facility will only be used if necessary to stabilise a patients prior to transfer to the DAN facility. Transfers will be organised by DAN. See appendix 5 for recompression facilities.

(2) **Clinical Timelines.** Treatment timelines are defined by JDP 4-03 (3rd Edition). Ideally Primary Surgery (PS) should be available within one hour of wounding. However, when this is not reasonably practicable, planning timelines are: catastrophic bleeding and airway management should be achieved in 10 minutes; Battlefield Advanced Trauma Life Support 2005 (BATLS 05) should be available within 1 hour of wounding, Damage Control Surgery should be available within 2 hours of wounding.

(3) **Evacuation timelines.**

	Distance To Cabo San Lucas	Time by Sea to Cabo	Time to Cabo by Sea/Air via Socorro
San Benedicto	406 km	20 hours	10 hours
Socorro Island	475 km	25 hours	5 hours
Roca Partida	600 km	32 hours	12 hours
Clarion Island	711 km	40 hours	21 hours

AEROMEDICAL EVACUATION PLAN.

(2) Medical evacuation will normally be commercially arranged by DAN Europe, **DAN 24/7 Emergency Operating Centre tel +3906 4211 5685.** Strategic AE from Mexico will be provided primarily by the RAF Aeromed system, coordinated by UK AECC, RAF Brize Norton

contactable on (+44)1993 895295/5297/5300, alternatively the duty mobile number is +44 7770 648688.

(3) If AE may be required, the MO will contact PRMC and, depending on the severity of the patient, it will be decided whether the casualty's condition necessitates AE using Banjul International Airport.

- Discuss clinical case with PRMC AE staff (+ 350 2005 5400).
- Transfer to MRC for stabilisation, radiology or bloods analysis if required, prior to AE.
- Discuss with AECC, RAF BRIZE NORTON.
- Inform British Embassy - Mexico City – 0052 (55) 1670 3200 in case assistance is required with host nation support.

(4) **Major Incident Management** Lt Col A Reid will act as lead in all Major Incidents and allocate personnel to task accordingly.

(5) **Routine and Urgent Medical Supply Demands**. There is no routine resupply for expeds. Local facilities will be assessed for local purchase for resupply. MO will deploy with required medical modules.

(6) **Gifting Policy**. Gifting is only to be carried out in accordance with JSP 886. Further guidance may be sought from PJHQ. Gifting of medications or medical materiel is not to occur.

(7) **Contacts**. HQBF Gibraltar contact for expedition medical issues are as follows:

Post	Tel No	Email
SO2 J4 Med	(+350) 20055066	Gib-HGBFG-SO2Med@mod.uk

Appendices:

1. Health, Safety and Environmental Hazards.
2. Acclimatisation.
3. DAN Silver Insurance Policy
4. Health brief reading supplied to all members
5. Decompression facilities
6. Local aeromed details and emergency numbers for use in Mexico

Appendix 1: HEALTH, SAFETY AND ENVIRONMENTAL HAZARDS

References:

A. D/PJHQ/5/4510/45/5 - Commanders Guide to Environmental and Industrial Hazards and Commanders Checklist.

1. **Risk Assessment**. There is a requirement for all Commanders to conduct risk assessments of all health, safety, environmental and industrial hazards (EIH). All work practices are to be assessed to minimise the risk of occupational disease and injury. Reference A is the Commanders' Guide and Checklist for EIH. The JOA is to be actively mapped for EIH to identify hazards and appropriate precautions taken. Particular care needs to be taken when occupying structures that may contain asbestos or operating on sites that may present a hazard to health. Where available, EH personnel are to be utilized to assist in conducting Risk Assessments for specific health hazards.

2. **Documentation**. It is imperative that all documentation (risk assessments, incident reports, marked maps, overlays, etc) is retained after the operation and archived in accordance with JSP 441 (Defence Records Management Manual). VCDS has directed that information on environmental health risks (together with any details of personnel involved) be archived for a minimum of 100 years[2]. Further advice on archiving may be obtained from DG Info, including details on the archiving of electronic records. Incidents of exposure and possible exposure to environmental and industrial hazards are to be recorded in the Joint Personnel Administration (JPA) personnel information system, on F Med 965, and on DMICP.

3. **Environmental Conditions**. All personnel are to be alert to the dangers of climatic injury and illness. All personnel are to receive advice prior to and on arrival in theatre concerning the dangers of these conditions and are to be given guidance on physical training and working in the climate. With respect to heat illness, precautions are to be taken in accordance with Annex I and JSP 539.

4. **Food & Water Safety**.

   a. **Food**. Food should only be obtained from local sources following competent environmental health or veterinary advice. The policy and direction contained within JSP 456 (Defence Catering Manual Vol 3 – Defence Food Safety Management) is to be strictly adhered to.

   b. **Water**. All local water supplies are to be considered as contaminated. They are only to be used with appropriate medical authority.

5. **Sanitation and Refuse Disposal**. It is essential that strict attention be paid to appropriate and effective methods of disposal of clinical waste.

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[2] D/VCDS/20/11 (10/591) dated 30 Oct 02.

6. **Exposure to Harmful Substances.**

a. **Control of Substances Hazardous to Health (COSHH).** The principles of COSHH (JSP 375 - MoD Health and Safety Handbook) are to be applied to work practices.

b. Personnel who believe they may have been exposed to a potentially harmful substance, or where there is evidence that an individual may have been exposed to a potentially harmful substance (i.e. asbestos, DU dust, toxic smoke or other EIH), are to have the following details recorded on their individual F Med 965:

(1) Grid Reference of hazard, and name of site if known.

(2) Nature of hazard.

(3) DTG(s) of the incident

(4) Duration of exposure.

(5) Any protection worn or employed.

On return from theatre this information is to be transferred from the F Med 965 to the individual's F Med 4.

7. **Pesticides.**

a. **Supply.** Only units with an authorised UIN may demand pesticides. Requests for authorisation are to be staffed though PJHQ J4 Med.

b. **Storage and Use.** All insecticides are to be stored and used in accordance with JSP 371 (Manual on Pest Control).

c. **Documentation and Monitoring.** All documentation and monitoring must be correct, clear and unambiguous to ensure a record is kept of any potential exposure to these toxic agents. Where other agencies undertake pest control in working or living areas (e.g. spraying of shared/adjacent spaces), close liaison is to be maintained at all times by medical personnel.

Appendix 2 to
Ex Clarion Call Med
Directive
DATED 11 Apr 13

Appendix 2: GUIDANCE ON HEAT ACCLIMATISATION PRIOR TO AND ON DEPLOYMENT

Introduction

1. Living, operating and fighting in hot and humid conditions increases the thermal load on the body, with consequences that can range from impaired performance to serious heat illness. These dangers can be reduced, but not entirely eliminated, by prior acclimatisation and ensuring that fluid losses are replaced by adequate fluid intake.

2. Continued exposure to exercise in hot conditions will result in physiological adaptations to improve heat dissipation, particularly increased sweat rate and earlier onset of sweating. Expansion of the blood and plasma volumes also improves cardiovascular tolerance to exercise in the heat.

3. Note that acclimatisation increases rather than decreases the water requirement: daily water requirements will increase from 2 - 4 to as much as 10 – 20 litres in extreme conditions depending on physical activity levels. A re-hydration strategy is therefore imperative.

Preparation for deployment

4. Building and maintaining a good level of aerobic power (VO2max) is essential. An indirect relationship has been demonstrated between VO2max and the number of days required to acclimatise.[3] Hence, improved aerobic fitness will help to shorten the ten-day requirement for acclimatisation requirement stated in JSP 539 (Annex A-2 Para. 5). All personnel should undertake a minimum of eight days' acclimatisation, but those perceived to be at greater risk (as indicated by a 1.5 mile run time over 11min 30 secs) should continue to acclimatise for at least ten days.

5. Personnel should be participating in a progressive physical training programme, iaw JSP 539, under the supervision of a Physical Training Instructor for approximately six weeks prior to departure. The initial three to four weeks should aim to build or improve aerobic fitness. This should concentrate on intermittent aerobic endurance activities, at an intensity of not less than 65-70 % of heart rate reserve, for periods of 40 min initially, extending to 90 – 100 min. (Heart rate reserve is defined as the difference between predicted maximum heart rate (220 – age) minus resting heart rate). During this period allow at least 2 days full rest per week and vary the exercise modality to use different muscle groups. In the final ten to fourteen days leading up to deployment, the aim is raise core temperature for a minimum duration of 100 minutes per day; this can be checked by visual assessment of sweating. At all times care should be taken to work within the guidelines given in JSP 539 and to ensure plenty of fluids (ad libitum). The suggested pre-deployment training schedule is given in Table 25.

[3] Pandolf K et al, Physical fitness in heat acclimatisation. Ergonomics (1977); 20: 399-408.

Week[4]	Activity[5]	Intensity (%HRR[6])	Frequency (times per week)	Duration (min)
1	Intermittent exercise	60-70	3	40
2			4	60
3			4	80
4			5	90
5	Continuous aerobic activity	50-60	5	100
6			7	

Table 1: Suggested Pre-Deployment Training Schedule

Note: To be conducted under the supervision of Physical Training staff.

6. During this pre-deployment phase, sweat rates should improve, leading to increased loss of sweat sodium. However, the UK diet contains more than enough sodium to replace these losses. Indeed a low salt diet is preferable since this will stimulate the sweat glands to conserve sodium more efficiently.[7]

Deployment

7. Air transit, with the likely consequences of jet lag, lack of sleep and dehydration, is likely to reduce an individual's tolerance to heat stress. It is imperative that NO EXERCISE is undertaken for 24h after arrival in theatre. Personnel should be encouraged to sleep, eat, and drink plenty of fluids.

8. Beyond the first 24 hours, acclimatisation procedure is based upon the tables below and depends upon the season and the heat injury risk group:

a. Season:

(1) Cool Season - 1 Dec to mid-Mar.

All personnel	24 hours' rest
Commander's Risk Assessment	2nd 24 hour period of rest

Table 2: Suggested Acclimatisation Procedure on Arrival in Theatre - Cool Season

(2) Hot Season - mid-Mar to 30 Nov.

Day	Dress	WBGT (°C)	Duration	Activity
1	**NO ACTIVITY. REST, EAT, DRINK AND SLEEP (for 24h)**			
2	T-shirt and shorts	26 - 30	1 x 50 min	Walk at 3 mph allowing for fluids ad libitum.

[4] Weeks 1-4 are to build or improve aerobic fitness; weeks 5-6 are to raise core temperature
[5] Use different exercise modalities to rest muscle groups.
[6] Heart Rate Reserve
[7] Allsopp AJ et al (1998). The effect of sodium balance on sweat sodium secretion and plasma aldosterone concentration. Eur J Appl Physiol 78: 516-521.

3	T-shirt and shorts	26 – 30	2 x 50 min	Walk at 3 – 3.75 mph allowing for fluids ad libitum; rest for 15 min; resume walking.
4	T-shirt and shorts	26 – 30	100 min	Walk at 3 – 3.75 mph allowing for fluids ad libitum.
5	T-shirt, combat jacket, lightweight trousers	26 – 30	2 x 50 min	Walk at 3 – 3.75 mph allowing for fluids ad libitum; REMOVE JACKET and rest for 15 min; resume walking.
6	T-shirt, combat jacket, lightweight trousers	26 – 30	100 min	Walk at 3 – 3.75 mph allowing for fluids ad libitum.
7	T-shirt, combat jacket, lightweight trousers and webbing (10 kg)	26 – 30	2 x 50 min	Walk at 3 – 3.75 mph allowing for fluids ad libitum; REMOVE JACKET AND WEBBING rest for 15 min; resume walking.
8	T-shirt, combat jacket, lightweight trousers and webbing (10 kg)	26 – 30	100 min	Walk at 3.75 mph allowing for fluids ad libitum.

Table 3: Suggested Acclimatisation Procedure on Arrival in Theatre - Hot Season

Notes:

1. Number of days' acclimatisation required is to be determined from Heat Injury Risk Group, as per Table 26 below.
2. Work rate (march speed) during the acclimatisation procedure should gradually be increased from 3 to 3.75 miles per hour, over the 8 or 10 day period.
3. WBGT temperature needs to monitored at the location used for the training activity.

b. Heat Injury Risk Group, as determined by Table 28 below.

Risk Category	Description	Activity
1	Personnel exposed to heat with 1.5 mile run time < 11mins 30 secs	Pre-deployment fitness training where possible; days 1-8 (incl) of acclimatisation programme.
2	Personnel exposed to heat with 1.5 mile run time > 11mins 30 secs	Pre-deployment fitness training where possible; days 1 -8 (incl) of acclimatisation programme plus a further 2 days' acclimatisation.

Table 4: Heat Injury Risk Group

Note: Applies to all Theatres.

9. The supervised progressive exercise programme should be undertaken during times of day where the wet-bulb globe temperature is below that stated in Table 25. Water should be drunk ad-lib. If at any time an individual feels dizzy or faint, they should be stopped, placed in the shade, stripped and actively cooled with water as advised in JSP 539 (Para 0218). The Table is intended for guidance of fit personnel; those less fit may have to progress more slowly. Exercise heart rate should fall as physiological adaptation occurs despite the progressive increase in thermal load. Note that residence in air-conditioned accommodation will slow the adaptive response.

10. A single bout of exercise lasting 100 min is suggested, as this is more effective than two 50 min bouts or two 100 min bouts conducted morning and afternoon.[8]

11. Average UK sodium intake is approximately 170-180 $mmol.d^{-1}$ (10g of sodium chloride) and is likely to be similar if eating a standard 'UK diet' in theatre. The sodium content for 10-man Operational Ration Packs is unknown at the time of writing but thought to average 100 $mmol.d^{-1}$ (6g of sodium chloride). Although sweat sodium concentration in un-acclimatised individuals is 40-60 $mmol.L^{-1}$, once acclimatised this is diluted to 5 $mmol.L^{-1}$ or less.[9] Hence the requirement to further supplement dietary sodium is rare. For example, solders consumed an intake of 68$mmol.d^{-1}$ during a ten-day acclimatisation study in which they worked intermittently for 8$h.d^{-1}$ without symptoms of heat exhaustion.[10] Furthermore, NATO guidelines[11] indicate that heat acclimatisation is unimpaired if sodium chloride intake exceeds 6$g.d^{-1}$.

12. Adding excess salt to the diet will increase fluid requirements to excrete it (in urine). Furthermore, the body maintains sodium balance (i.e. the net difference between intake and excretion) by matching excretory losses to sodium intake. If sodium intake is suddenly halved, renal output is reduced to restore balance over the ensuing 1-3 days. Thus missing one or more meals is likely to result in a sodium deficit that is higher if ingesting salt supplements compared to an unsupplemented diet, placing those who ingest salt supplements at a greater risk.

13. Residence in air-conditioned accommodation slows the development of acclimatisation. Commanders are to ensure that the amount of time spent in an air-conditioned environment during the acclimatisation period is minimised.

Re-Acclimatisation

14. It is recognised that individuals may return to the UK for a period and have to re-deploy to Th. This raises the issue of decay of acclimatisation and re-induction. Personnel must be advised that they need to re-acclimatise following a brief (two week) period in the UK. The period of acclimatisation will depend on the duration of the period of leave, the environmental temperature in the UK at that time and the fitness of the individual. The decay of acclimatisation will be reduced if personnel continue to take regular exercise. Ideally a minimum of one training session should be conducted in the first seven days[12] followed by five further sessions in the second week of leave (as advised

[8] Lind A, Bass DE (1963). Optimal exposure time for development of acclimatization to heat. Fed Proc 22: 704-708.
[9] Costill DE (1977). Sweating: its composition and effects on body fluids. In: The Marathon: physiological and medical considerations. Ann NY Acad Sci. 160-174.
[10] Armstrong LE et al (1993). Responses to moderate and low sodium diets during exercise-heat acclimation. Int J Sport Nutr. 3: 207-221.
[11] Report TTCP-HUM/97/002 Assessment of potential ergogenic aids for special operations. Annex B Page 36.
[12] Report TTCP/HUM/97/002 Assessment of potential ergogenic aids for special operations. Annex B Page 54.

for week 5 in Table 1). The suggested time required to re-acclimatise is four to seven days. This is based on advice from a recent draft Heat Stress Standard,[13] which reiterates earlier published advice.[14] Given the relative youth and physical fitness of Service Personnel to the general population, the four-day minimum period should be sufficient. It is suggested that, after the initial 24h period of inactivity, the procedure for days 5-8 in Table 2 be followed.

Appendix 3: DAN International Diving Assurance Sports Diving Insurance Policy.

The Dan Europe insurance summary and policy document are available at the following hyperlinks:

http://www.daneurope.org/web/guest/sport-plans

http://www.daneurope.org/c/document_library/get_file?uuid=16fbf1f0-1a5a-433c-9920-da9d38997a1b&groupId=10103

Appendix 4: NathNac medical information sheets sent to all members for pre expedition reading:

Rabies: https://www.nathnac.org/travel/factsheets/rabies1.htm

Malaria: https://www.nathnac.org/travel/factsheets/malaria.htm

Dengue Fever: https://www.nathnac.org/travel/factsheets/denguefever.htm

Bite avoidance: https://www.nathnac.org/travel/misc/travellers_mos.htm

Appendix 5: Recompression facilities and air quality.

The one/two man re-compression facility on-board the SEA ESCAPE will only be used for first aid if needed prior to transfer to the DAN designated facility this chamber is tested alternate months and is fitted with BIBS for on demand oxygen. This chamber is operated by the owner, Fernando Aquilar, who was trained at USC and Catalina Island. Basic operation instruction will also be given to the Expedition MOs.

The nearest fixed facility is at the Socorro Island Naval Base

Next is BMM Cabo San Lucas DAN affiliated facility:
Local E-15, 16, 17,
Plaza Las Glorias Marina
Cabo San Lucas,
BCS 23410, Mexico.
Tel: 1433666 | Fax: 1434088
Email: baja@sssnetwork.com

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[13]. Heat stress standard developed for use in the Australian environment. Australian Institute of Occupational Hygienists, August 2002.
[14]. Bass D (1963). Thermoregulatory and circulatory adjustments during acclimatization to heat in man. In: J D Hardy (ed) Temperature, its measurement and control in science and industry Vol 3 Part 3. NY Reinhold.

There is also a facility at Club Cantamar (Baja Diving) who are owned by the expedition boat operator:

Club Cantamar (Baja Diving)
AlvaroObregon1665-2
23000 La Paz

Telephone number: +52 612 1221826

Fax number: +52 612 1228644

Email: info [at] clubcantamar.com

www page: www.clubcantamar.com

Air quality certificates have been provided for the compressor.

Appendix 5: Local aeromed details and other emergency numbers:

The dive operator has an agreement with for plane rental for flights to the Mexican Navy Base at Socorro Island:

Aereo Calafia based at San Jose del Cabo Airport: Tel **#624 1434302**

General Emergency Number for Mexico: **066**

ANNEX J TO
JS4 PXR
DATED 22 JUN 14

JS4 PRESS RELEASE:

MILITARY PERSONNEL TAG 12 SHARKS IN THE EASTERN PACIFIC

The Joint Services Shark Tagging Team (JSSTT) comprising sixteen military personnel representing the Army, Navy and RAF has just returned from an ambitious diving expedition to tag critically endangered sharks around the Revillagigedo Islands, a group of four volcanic islands 386km off the Pacific coast of Mexico. The expedition named Jurassic Shark 4 tagged 12 sharks, bringing the total tagged by the team over 4 expeditions to 62.

The sharks were tagged with either internal or external tags (including 2 that were tagged with a GPS transmitter). The acoustic tags send signals to underwater receivers allowing the movements of the sharks to be recorded. The use of internal tags requires the shark to be caught so the tag can be placed inside the shark. The resulting wound is then sutured and the shark released. Two military doctors (including an Army plastic surgeon) were key to this task.

This expedition was led by Lt Col Andy Reid (Army), who said: "An expedition such as this is all about experiencing controlled exposure to risk with the aim of developing the kind of leadership, teamwork, courage and co-operation that is vital to military operational capability. This is, however, a truly unique project that goes much further, placing Service personnel in a valid scientific context where they can add real value".

Corporal Laura McAulay (RAF) who had only been diving for 6 months at the start of the expedition said: "I found that my initial trepidation quickly gave way to respect and admiration. I found the expedition both challenging and educational; it changed my outlook."

2nd Lieutenant Nick Dawnay (Army) said: "This expedition has shown me that it is not as dangerous nor as easy as you might think to tag a shark!"

The next expedition (Jurassic Shark 5) is set to return to Cocos Island in 2015, possibly in combination with a new project to tag bull sharks in the waters surrounding the Corcovado National Park, mainland Costa Rica – described by National Geographic as "the most biologically intense places on earth." Lt Col Reid noted that "bull sharks are possibly the most challenging sharks to work with; however, it is probably the crocodiles that should most concern us. This will be a remote, demanding and totally unique expedition that will really test the military team."

Further information on the JSSTT can be found at: www.jurassic-shark.org.uk

Cpl Damian Manning prepares to enter the water with a pole spear and external acoustic tag.

ANNEX K TO
JS4 PXR
DATED 22 JUN 14

EXPEDITION DIARY

Jurassic Shark Day One - Cabo San Lucas (Jameson)

The expedition arrived in Cabo San Lucas the night before after a short flight from Houston where we had spent the night. The transport arrived at 1045hrs to take us to the marina. Once on-board the remainder of the day's tasks included: Travelling with a lot of luggage by bus and small inflatable boat to the *MV Sea Escape*, briefings, setting up dive and camera gear, testing the dive gas and checking dive documentation (including medicals).

Jurassic Shark 4 Day Two – Shakedown San Benedicto (Mills)

We awoke to the now-accustomed rolling and lolling of the *Sea Escape*, as we completed the last few miles to out first dive site: San Benedicto island. Over the course of the morning as we neared our destination we received the first shark conservation briefing from Dr Mauricio Hoyas from the charity organisation Fins Attached who explained in detail both the art of tagging sharks and the science of rigging up the transmitters and tags that we would be using. He also showed us some videos to assist in our shark recognition skills, which we'd certainly need over the next 9 days.

By 1000hrs we had assembled 5 of the external tags that we'd be attempt to attach to the sharks underwater and also familiarised ourselves with the smaller internal tags, which we'd be manually implanting into smaller sharks later that evening. In the final couple of hours of our 22-hour transit, the team completed the final preparatory steps required before we began diving, namely checking the air for purity, checking the O_2 on the boat, analysing our personal NITROX mixes and assembling and checking the spear guns we'd need to tag the sharks.

By 1400hrs we were briefed and split into buddy pairs and two separate teams: Team Tiger and Team Hammerhead. The first dive was to be a shakedown dive to ensure out kit configurations and weightings were correct and fit for the challenging and varied diving activities we'd be undertaking for the remainder of the expedition.

The first dive was rather uneventful but served as the first recce of a site that we'd be spending some time at, as it is a well-known hammerhead cleaning station. There were no hammerheads to be seen on this, however, this dive resulted in most people dropping a kilo or two in weight and re-familiarizing themselves with DSMB deployments.

Dive two was identical to dive one: another chance to get used to the currents and conditions around this keystone site as well as fine tune our diving apparatus. The dive comprised of a stiff swim heading southwest against a slight current to the hammerhead cleaning station, which sits around 27m. For most it was another uneventful dive but one buddy pair, led by the local dive guide Julian, did see a passing hammerhead as well as a pair of silvertip pups – the first of what will hopefully be many such sightings – but hopefully closer next time!!

We were soon busy again on the back of the boat, this time with the task of internally tagging juvenile silvertips. A small team was quickly assembled comprising: an eye coverer (covering a sharks eyes encourages it to lie still), a hose and head holder (sea water is fed down the sharks mouth to prevent it suffocating), a measurer to capture the shark's dimensions, a scanner (to scan the shark for any previous tags), a timekeeper and most importantly the slicer and stitcher, who would be required to physically cut the shark, implant the implant the tags then stitch the wound again. The team included a plastic surgeon and a doctor so the latter task was not a problem.

Our first attempt at this tagging exercise was a resounding success; we tagged three juvenile silvertips and one larger silky who measured just under 2 metres in length. The team was quick to execute each tagging operation, completing each one in less than 7 minutes, each one pictured and videos by the other team members.

Overall a very productive start to the diving on the expedition, with the added benefit of successfully tagging four sharks internally. We look forward to the 0645 start in the morning when the external tagging will begin in earnest.

Jurassic Shark 4 Day Three – San Benedicto (Mills)

We arose early for a 0645hrs brief to enter the water at 0730hrs. The plan was to look for hammerheads - the early morning being the best time to see them. As we were around the cleaning station there were some faints 'click click, click' sounds and suddenly 3 dolphins came in and got very close and personal, recurrently coming to within about a foot. There was a definite thermocline when you dropped below 25 metres. We swam away from the cleaning station to try and find the sharks, but the dolphins re-joined us. Just one hammerhead was seen on this dive, albeit very close.

For the second dive we moved around the island from the 'Canyons' to the 'Cave' so called after some small caves above the water line. A preparatory lecture on shark behaviour was given.. Basically if they lower their pectorals and start weaving they're worried and its time to make yourself scarce. The hammerheads are pretty timid and easily scared, but the Galapagos sharks are very nosy and will come and push you about. There was a draw for the honour of tagging with juniors being given first chance.

A tiger shark was on the bottom as we entered, but this disappeared with indecent haste as we descended. We were, however, treated to a display by 2 white tips over 1.5m in size but too small and the wrong type to tag together with a lot of Morays Eels. A trip out from the shot line proved unproductive so we returned to see a large squat lobster roaming freely then a high pitched underwater shriek from Jay signified that he'd seen a large Manta Ray (3m) but too far away to get a good photo. I again acted as my buddy's air mule once she had got down to 85 bar.

For the third wave we moved back to the 'Canyon'. We dived in smaller groups of 3-4 so as not to intimidate the sharks. A large number of Morays and silvertips circled the shot line but nothing big was seen until the end of the last dive when a large tiger shark was spotted. He was clearly seen from the surface, but the divers had run low in air. Mauricio Hoyos (scientist) re-entered the water with Lt Col Reid as his buddy in an unsuccessful attempt to tag it.

Jurassic Shark Day Four (Mountfield)

Following an overnight transit to Roca Partida, a small outcrop of rock west of San Benedicto, the expedition members awoke at 0645hrs for a brief to prepare and plan the day's dives. The dives would be centred around the iconic rocky outcrop - a wall dive with a bottom in excess of 100m.

Team Tiger were first to enter the water first today. Entry was made in the SE corner via the RIBs. For the first dive of the day and also the first dive at this site, it was a good start for all. Divers were able to consider their buoyancy, as there was no visible bottom to use as a reference. The experience of diving in a swell created a sense of rising or falling very quickly. We also experience small amounts of current at various parts of the wall. As this was the first dive of the day, which had started at 0720hrs, divers were able to see Galapagos Sharks, white tips (including sleeping sharks sitting on ledges), silvertip sharks, hammerheads and dusky sharks.

Dive two was conducted to the same corner, however with hindsight, the divers on Team Tiger entered the water a little too far from the rock and thus, once underwater, the requirement to swim a considerable distance against the current towards an unidentifiable wall meant that some divers made an early exit from the water. The wind had picked up a little meaning that the current and swells around the rock had changed. This was a good way to highlight to the divers that they must keep thinking about all aspects that could affect them and others and that they cannot become complacent at any time.

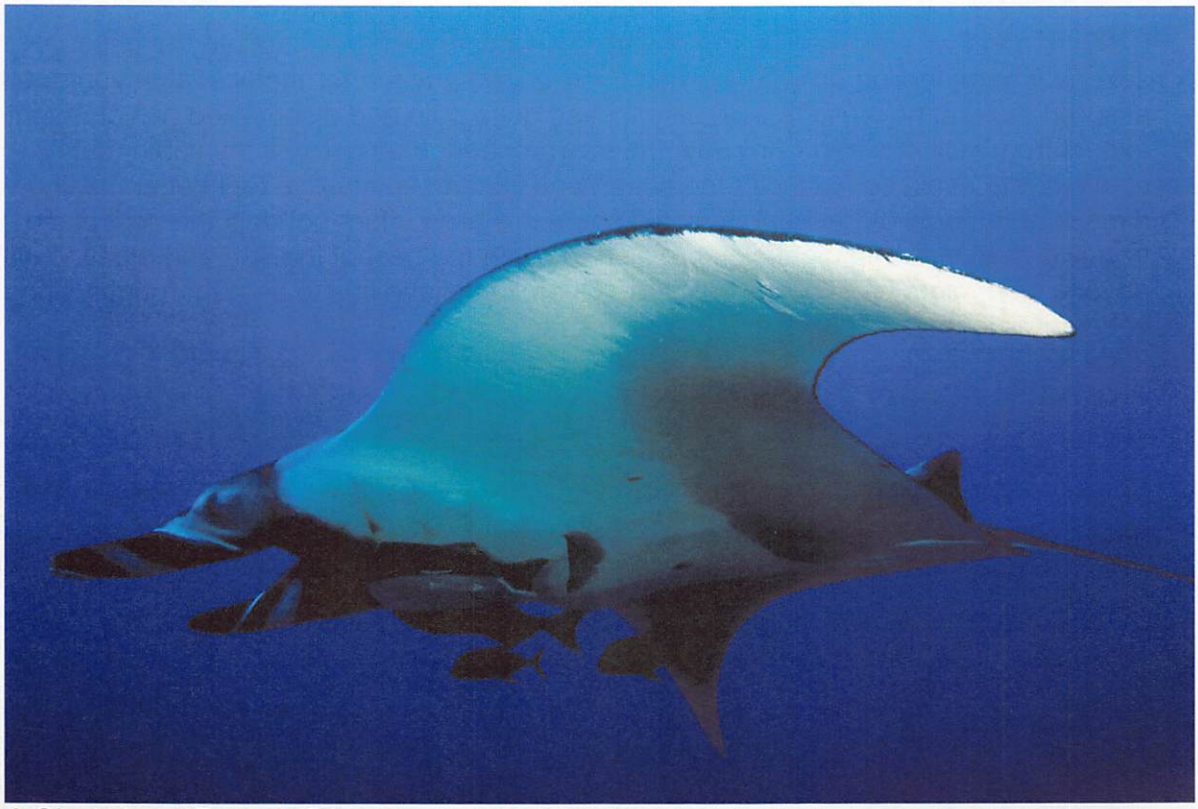
The next set of divers entered the water in the same corner and found that the current had got stronger during their surface period. This meant that the dive was very challenging for all levels. This challenging dive offered the opportunity for the more experienced divers to refresh skills and for the less experienced, it meant a chance to develop skills particular to this type of dive. In the face of the difficult conditions, all the divers in the water relished the opportunity and as such gave everyone a greater sense of achievement on completion. The stronger currents only seem to affect the divers though, as the sharks seem to be able to move around with complete ease.

The last of the day saw the main group of divers planning to dive around the rocky outcrop whilst a smaller group would head off into the blue in order to tag hammerhead sharks. Unfortunately, the hammerheads were unattainable although the team did manage to tag three silvertip sharks. The main group of divers was dropped off at the North corner, due to the current on the previous dive. On entry the divers were immediately met by schools of fish and sharks. Within minutes, large tuna arrived to join the party. The divers followed the eastern side of the rock, and witnessed many Galapagos sharks, whitetips, silvertips, dolphins and the already mentioned tuna.

All in all, the dives today offered varying conditions and offered a lot of experience. The successful tagging of three silvertips is also a key plus point of the day. The difficulty of the dive increased throughout the day, allowing the divers to develop and learn new skills. The sea current, although challenging, created the opportunity for the divers of all levels to push themselves and experience the power of the water. The divers were able to witness an eco-system full of life from the small to the large.

Overall, Day four was an amazingly successful day. The divers experienced some challenges in varying conditions, which can only improve individual skills as well as dive leadership. Three sharks were tagged.

Jurassic Shark Day 5 – The day of the Giant Mantas



A Giant Manta Ray on JS4.

Jurassic Shark 4 Day Six (Whelan)

The dive team awoke again bleary eyed to an overcast day with rolling seas. Today was the final day at Roca Partida. This fact spurred mixed emotions – real sadness to leave the rock that was blessed with such biodiversity in one small area whilst, on the other hand, there was excitement of seeing what the next dive site that awaited the dive team.

The first dive again did not disappoint. The numbers of sharks seemed to have to have increased, unlike the water temperature, which was a chilly 23 degrees, with a noticeable thermocline. On the second dive, hoods now donned, our divers sank down to the unpredictable currents. The rock this time seemed to spawn puffer fish in huge numbers. They seemed to be almost littering the rock as they floated past amongst the nestling white tip sharks on the rock shelves. Also for those that ventured towards the blue were fortunate enough to catch sight of a large school of hammerheads.

The third and final dive on the rock had large yellow fin tuna darting in and out from the blue amongst the schools of fish circling the rock. Slightly away from the rock one dive pair decided to venture into the blue to follow the elusive hammerhead. Before long, however, the current had taken our two divers out of sight of the rock – a real worry when diving on an isolated site 70 miles from the nearest land. After 20 minutes of strong fining our two managed to board a neighbouring dive boat.

After showers and donning of the JS4 polo shirts we gathered at the bow of the ship for a group photo, Roca Partida in the back drop, one of the top dive sights in the world. Another great day of diving, finished off with a nice cup of tea.

Jurassic Shark 4 Day Seven – Return to San Benedicto (Hickman)

0700hrs and I was awoken by the sound of my cabin mate coming into the cabin. He said he'd been feeling unwell. I asked if it required any further medical attention but he assured me that he was OK. He also looked quite pale and dishevelled as you might expect from lack of sleep. Anyway, the day proceeded as normal; my cabin mate continued to avoid contact with the ocean and instead seemed to feel better placing himself at the bow of the boat. It would seem this area offers not only the best place from which to view the night sky, but also to catch the best of the sun and meeting with anyone who might be similarly afflicted. Overall I believe this to be a thoroughly tiring yet enjoyable day.

Diver training on JS4

Jurassic Shark 4 Day Eight San Benedicto (Hickman)

0700hrs and we are still waiting for the expedition SADS to join us for the dive brief. Eventually, we are all paired up and set the goals for the day. The main effort for the day was to lay another receiver on the west side of the cleaning station. This was to enable 360-degree readings of tags. A team was put together along with the film crew (Maj Mark Foster/Lt Col Andy Reid); they deployed on the second dive and successfully placed the receiver in an appropriate place. Meanwhile the budding dive leaders were conducting rescue management lectures as well as rescue skills reviews in the water.

Most students were successful in their training with a minority having to conduct the assessments a second time to ensure skills and drills were to a high standard. During today's dives much wildlife was seen, including: turtles, manta rays, silvertip sharks, Galapagos sharks, tiger sharks, hammerhead sharks and silky sharks.

During the evening we had one more shark to place an internal tag into. At first we were very excited to hear the crew had caught a large 2m plus Galapagos shark but unfortunately the hook bent and it released itself. The crew continued fishing catching a fairly large silvertip shark. The QRF were scrambled to their positions and Maj Mark Foster conducted the surgery. Tagging has now finished.

Jurassic Shark 4 Day Nine – Final Day (2Lt Dawnay)

The clanking of chains as the anchor was drawn up heralded our move from The Canyons to The Boiler. Fifteen minutes later the team was assembled for the briefing, bleary eyed but raring to go. The Boiler is an undersea stack, rising from 45 metres to 5 metres, with shelves at 17 and 10m. It is covered in life, with lots of overhangs, cracks and small caves. The first dive was spent circling the rock with little current, enjoying large schools of jacks in the blue and the resident whitetip reef sharks patrolling their ledge, one of who was heavily pregnant. There was also a proliferation of smaller life to be enjoyed on the rock itself, with colourful nudibranchs peppering the darker side of the wall, and morays and octopus in the cracks. The last group of divers in the water also had a brief encounter with a giant manta on their safety stop, an omen of what was to follow.

After a short surface interval, the group hit the water in two waves. Immediately the same manta was seen close to a stack slightly separated from the main group. They had the elasmobranch to themselves taking turns for the best photo. It flitted in and out of visibility of the main stack but as the dive progressed all members of the expedition had very close and moving encounters with the beast as it circled and danced in the blue allowing huge amounts of footage to be taken. It really did seem like a friendly beast with 2 remora and multiple clarion fish cleaning it. Although it reacted to us (and our bubbles) it seemed happy to turn around for another pass. This encounter on its own was a worthy of the trip and left us with a sense of wonder about the deep. There were also sightings of 5 dolphins hunting jacks and an unconfirmed and spurious spotting of a young tiger shark by Sgt Blake.

After a quick burst of post diving admin, huge amounts of sleep and movie watching took place as the epic journey back began. All that remains is some PXR writing and packing, with the inevitable good-natured squabbling over the choice of films.

ANNEX L TO
JS4 PXR
DATED 22 JUN 14

DEFENCE INFORMATION NOTICE (DIN 2012DIN07-168 dated Dec 12)

EXERCISE CLARION CALL (JURASSIC SHARK 4 – JS4) – REVILLAGIGEDO ISLANDS (MEXICO), 26 MAY – 11 JUN 2013

INTRODUCTION

1. EXERCISE CLARION CALL (JS4) is a high profile Joint Services sub-aqua diving expedition for 17 personnel to Clarion Island, 700km off the Pacific coast of Mexico. The expedition, sponsored by the Army Sub-Aqua Diving Association (ASADA), will be the 4th shark tagging expedition conducted by the Joint Services Shark Tagging Team (JSSTT). Outside dates are 26 May – 11 Jun 2013. The expedition will be entirely based on the *MV Sea Escape,* sailing from Cabo San Lucas at the southern end of Baja California. It should be noted that re-breather use will be fully supported by the expedition. The expedition patron is Monty Halls (BBC TV Presenter, marine biologist, public speaker, diver and ex Royal Marine). Further information can be found at: www.jurassic-shark.org.uk.

THE JOINT SERVICES SHARK TAGGING TEAM (JSSTT)

2. The JSSTT exists to provide manpower and resources for shark tagging projects where diving skills are required. JSSTT expeditions operate under the Joint Services Adventurous Training (JSAT) scheme. They are open to military and essential scientific personnel only.

3. The JSSTT has now tagged 50 sharks and placed 6 acoustic receivers in the Eastern Pacific with the aim of building an overall picture of shark movements in the Eastern Pacific Tropical Seascape (EPTS) and beyond. The first expedition, EXERCISE JURASSIC SHARK, tagged 15 scalloped hammerhead sharks off Cocos Island, Costa Rica in July 2006. The second expedition, EXERCISE JURASSIC SHARK 2, took place in October 2008 and tagged a further 20 sharks (including 10 great white sharks) off Guadalupe and the Revillagigedo Islands (Mexico). EXERCISE JURASSIC SHARK 3 returned to Cocos Island in 2010 and was even more successful, tagging 13 Scalloped Hammerheads, 1 Black Tip, 1 Galapagos Shark and 12 green turtles.

AIMS

4. The main aim of the expedition is to study the population dynamics of scalloped hammerhead sharks and other marine animals (including manta rays and turtles). This will involve both tagging and direct observation of these species under the direction of scientists representing CENTRO INTERDISCIPLINARIO DE CIENCIAS MARINAS - www.cicimar.ipn.mx (a scientific institution based in Mexico) and Fins Attached - finattached.org (an American shark conservation and research non-profit NGO). Secondary aims are:

- To promote experience of Service personnel in safe but challenging expeditionary environments.
- To promote personal improvement in diving experience/skill levels by groups of individuals who have the potential to cascade that experience to other members.

- To promote improvement of a group of divers to aspire to a higher level of achievement by exposure to leadership in an appropriately challenging expeditionary environment.
- To promote Joint Service expeditionary diving and to ensure that cascade of experience occurs as broadly as possible.
- To promote the use of re-breathers in Service sports diving.

ELIGIBILITY

5. This Joint Service expedition is open to all full time and reserve members of HM Forces.

6. The minimum standard is British Sub-Aqua Club (BSAC) Dive Leader (or equivalent) by the start of the expedition; however, BSAC Sports Divers (or equivalent) with sufficient experience and motivation will be also be considered. All expedition members must be able to demonstrate some progression in terms of qualifications and/or experience as a result of participating in the expedition process. This is applicable to all levels of diver including those aspiring to be Sub-Aqua Diving Supervisors (SADS), First Class Divers, and re-breather users. All those selected must play an active part in the planning, administration and leadership of the expedition.

7. All participants must be members of the BSAC, Divers Alert Network (DAN) and hold an in-date medical certificate at the time of the expedition. A scientific visa is also required in order to travel to Mexico on duty.

8. All participants must have an interest in shark conservation and actively participate in the research aims of the expedition.

SELECTION

9. Participants will be selected on the basis of their ability to contribute to the expedition whilst progressing personally as both divers and leaders. Preference will therefore be given to junior or relatively inexperienced personnel in accordance with the criteria for sponsorship by the Joint Services Expeditions Trust (JSET: 2011DIN07-049). It should be noted that the number of places available to each Service is limited by the requirement to reflect the Tri-Service nature of the expedition.

10. Applicants who are not selected in the first instance will remain as reserves. They will then be contacted as spaces arise.

COSTS

11. Participants should expect to pay personal contributions of between £1000 and £2000 depending on the success of the fund-raising effort and the US$ exchange rate. The deposit is £500. If any junior Service personnel are genuinely unable to raise this amount, then the expedition as a whole will consider offering further assistance with the personal contribution element (noting that others will have to pay more as a result). Individuals may apply on this basis.

12. Once a deposit has been paid individual travel insurance covering the cost of trip cancellation must be held. Nevertheless, anyone withdrawing from the expedition with good

reason can expect a full refund of money paid providing their place is taken by someone else.

PROJECTED PAYMENT SCHEDULE

13. The following payment schedule assumes active participation in fund-raising by all participants. The requirement to pay for the boat on specific dates may require additional funds as the expedition approaches; however, any 'borrowing' of this nature will ultimately be refunded. All cheques should be made payable to JURASSIC SHARK EXPEDITIONS.

Date	Amount	Remarks
On acceptance	£500	Deposit
01 Mar 13	£500	
01 May 13	Up to £1000	Or balance
Post Expedition	Refund of any excess funds	Amount TBC

APPLICATIONS

14. Applications from individual members of all three Services should be made directly to the expedition leader using the proforma at Annex A. The deposit is not required until a place on the expedition has been confirmed. Proformas should be returned to:

Maj Andy Reid AGC(ETS)
SO2 TDA
Army Division
Joint Services Command and Staff College
Defence Academy of the United Kingdom
Shrivenham
SWINDON
SN6 8TS

Tel: 96161 4417 (Civ: 01793 314417)
Fax: 96161 4455 (Civ: 01793 314455)
E-mail: areid.jscsc@da.mod.uk or info@jurassic-shark.org.uk

ANNEX:

A. JS4 JOINING PROFORMA

ANNEX A: JS4 JOINING PROFORMA

NOTES

Completion of this form does not mean you will be given a place on the expedition.

No money is required until a place is offered. The initial deposit is £500.

Once your deposit has been accepted you will be liable for the full value of your place on the expedition. This could theoretically be as much as £2000 but is likely to be less. Refunds can only be given if someone else takes the place.

Trip cancellation insurance must be in place as soon as the deposit is accepted.

Please do not leave blank spaces on the form.

Where possible please e-mail the completed proforma to:
info@jurassic-shark.org.uk

Why Me? *Please provide a very brief explanation of why you should have a place on the expedition.*

Full name (Exactly as stated on passport)		**Military No.**			
Rank		**Civilian Status:**	Dr/Mr/Mrs/Miss/Ms/Other* (as stated on passport)		
Passport No.		**Place of issue**		**Exp Date**	
Unit		**Service/ Capbadge**			
Unit Address					
Work Tel. No.					
Mobile Tel No.					
Home Tel No.					
E-mail address(es) ***(V. Important)***					
NOK details (Name/address/ Tel. No.)					
Home address (If different to NOK)					
Age		**DOB**			
Diving Qualifications (Including numbers where applicable)		**No. of Dives**			
Relevant Experience		**Shirt Size**	XXL, XL, L, M, S		
BSAC Club and Club No.		**BSAC No**			
Date of Diving Medical		**DAN Member?**			
Bank Account Details (For the return of any overpayments)	**Name of Account**				
	Sort Code				
	Account Number				

The JS4 Team

ANNEX M TO
JS4 PXR
DATED 22 JUN 14

ANNEX N TO
JS4 PXR
DATED 22 JUN 14

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