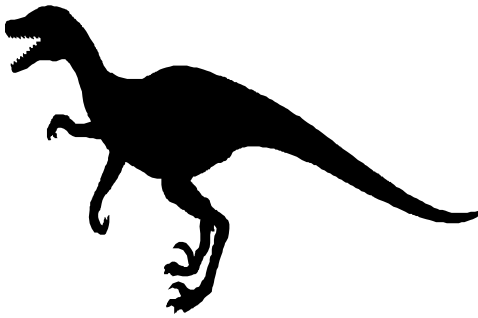




EXERCISE JURASSIC SHARK 3

Isla De Coco, Costa Rica,

22 June - 06 July 2010

www.jurassic-shark.org.uk

HQ Initial Training Group



BSAC Expeditions Officer

Reference:

Date: 31 Dec 09

EXERCISE JURASSIC SHARK 3, COCOS ISLAND (COSTA RICA) – 22 JUN - 06 JUL 10 **APPLICATION FOR A BSAC EXPEDITION SCHEME GRANT**

VISION

EXERCISE JURASSIC SHARK 3 (JS3) will be a high profile Joint Services sub-aqua diving expedition for 16 personnel to Cocos Island, Costa Rica from 21 Jun – 06 Jul 2010. The aim of the expedition will be to electronically tag 15 scalloped hammerhead sharks whilst making a documentary film (TBC). The team will be composed of civilian scientists, Closed Circuit Re-Breather Divers and other divers selected to develop their skills and experience as both divers and leaders. The team will send back on an on-line diary (blog) via satellite each day.

INTRODUCTION

1. EXERCISE JURASSIC SHARK 3 (JS3) is a high profile Joint Services sub-aqua diving expedition for 16 personnel to Cocos Island, 300 miles off the Pacific coast of Costa Rica, Central America. It will be the third shark tagging expedition conducted by the Joint Services Shark Tagging Team (JSSTT) and will take place from 22 June – 06 July 2010 (11 days at sea including 8 days diving). The expedition will be based on the *MV Argo*, one of the Undersea Hunter fleet of boats (www.underseahunter.com). Re-Breather use will be fully supported by the expedition and there is a high probability that the expedition will be the basis for a TV documentary. Further information can be found at: www.jurassic-shark.org.uk

THE JOINT SERVICES SHARK TAGGING TEAM

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

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Adventurous Training (JSAT) scheme and are nicknamed EXERCISE JURASSIC SHARK. They are open to military and essential scientific personnel only.

3. The JSSTT has now tagged 35 sharks and placed 6 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 (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). Post Exercise Reports (PXR) for both expeditions are available from the expedition website.

AIMS

4. The fundamental aim of the expedition is to study the population dynamics of scalloped hammerhead sharks. This will involve both tagging and direct observation of this species under the direction of a two scientists representing PRETOMA (Programa Restauracion de Tortugas Marinas, www.pretoma.org), a Costa Rican non-profit NGO specialising in shark and turtle conservation. Secondary aims are:

- To develop the 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 or presence of a First Class Diver 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.
- To publicise the need for conserving sharks.
- To provide resources and assistance to conservationists engaged in the study of sharks.

OTHER EXPECTED BENEFITS

5. The following benefits are expected from participation in the expedition:

- a. This expedition is the best that diving can offer. As such it represents the top of the pyramid and attracts personnel into diving, the BSAC and into the military.
- b. Military personnel gain direct exposure to marine conservation and those that work in it – broadening their horizons in the process.
- c. It promotes teamwork and collaboration between the Services.
- d. It provides a platform for generating positive publicity for the Armed Forces.

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- e. It helps increase public awareness of the loss of the World's shark populations and is the right thing to do.

COCOS ISLAND

6. Cocos Island is located in the Eastern Tropical Pacific, 300 miles off the coast of Costa Rica. Formed during a volcanic upheaval around two-and-a-half million years ago, Cocos Island is composed from lava flows of basaltic rock, labradorite and andesite. The island's landmass is made up of four mountain peaks - the highest is Cerro Yglesias, at 2,080 ft (634 M). The island has two large bays with safe anchorages and sandy beaches: Chatham is on the northeast side, and Wafer lies on the northwest. The island is completely undeveloped and has no airstrip. It is the only island in the tropical eastern Pacific with a humid tropical forest. Its position as the first point of contact with the northern equatorial counter current and the myriad of interactions between the island and the surrounding marine ecosystem make the area an ideal laboratory for the study of biological processes. The underwater world of the national park is considered one of the best places in the world to view large pelagic species.



Cocos Island

DIVE LOCATIONS

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Dive Sites

MANUELITA (INSIDE)

Depth: 6 - 21m

Marine life: White Tip sharks, Marble and Spotted Eagle Rays

Description: Protected site. Large schools of White Tip sharks feeding at night dive are a key attraction at this site.

MANUELITA (OUTSIDE)

Depth: 18 - 39m

Marine life: Hammerhead sharks, White Tip sharks, Eagle rays, Manta Rays, Yellow Fin tuna, turtles, Jacks

Description: Several cleaning stations for hammerheads are the main attraction of the ocean side of Manuelita. A gradually descending slope, it contains huge boulders where divers can easily hide to watch and tag the hammerheads.

LOBSTER ROCK

Depth: 12 - 33m

Marine life: White Tip sharks, Moray eels

Description: On this finger-like rock, divers can easily approach large white tips lying on the bottom in great numbers.

SILVERADO

Depth: 10 - 12m

Marine life: Silvertip sharks and Red-Lipped Batfish.

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Description: Silverado is the only known cleaning station for Silvertip sharks at Cocos Island. The Red-Lipped Batfish can also be seen here.

ALCYONE

Depth: 27 - 36m

Marine life: Hammerheads, White Tip sharks, Silky Sharks, Marble rays, Eagle Rays, Yellow fin tuna, Wahoos, Dolphins.

Description: This legendary seamount is the key dive site of the expedition. An unbelievable number of Hammerheads can be seen here.

SUBMERGED ROCK

Depth: 6 - 33m

Marine life: White tips, Hammerheads, marble rays.

Description: Arched hole with colourful scenery and plenty of marine life.

SMALL DOS AMIGOS

Depth: 18 - 36m

Marine life: Hammerhead sharks, Galapagos sharks, White Tip sharks, Eagle rays, dolphins.

Description: The southernmost part of the island where the open sea current first reaches the island.

BIG DOS AMIGOS

Depth: 18 - 36m

Marine life: White tips, marble rays, hammerheads, turtles.

Description: Strong currents. The view through this underwater majestic arch is a wonderful spectacle.

PUNTA MARIA

Depth: 24 - 36m

Marine life: Hammerheads, white tips

Description: This seamount that rises from a deep sandy area provided an abundance of marine wildlife and a spectacular cleaning station for hammerheads.

DIRTY ROCK

Depth: 6 - 39m

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Marine life: Hammerheads, Whale Sharks, white tips, marble rays, eagle rays, mobula rays, jacks, turtles, dolphins.

Description: Dirty Rock was one of the expedition's most popular dive sites, with spectacular rock formations where vast amounts of wildlife congregated. Some of us were fortunate enough to get a glimpse of a Whale Shark.

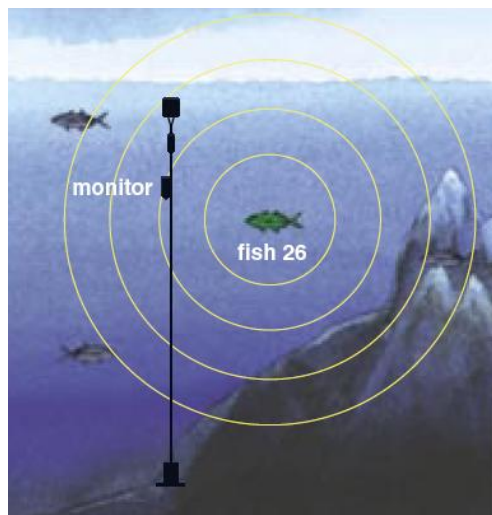


METHODOLOGY

7. The hammerheads will be tagged while they are free swimming. Cleaning stations occupied by small yellow Barber Fish (a type of Butterfly Fish) are the key to 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 hammerheads to swim into a cleaning station and then move in slowly to tag them using a spear gun. The 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).

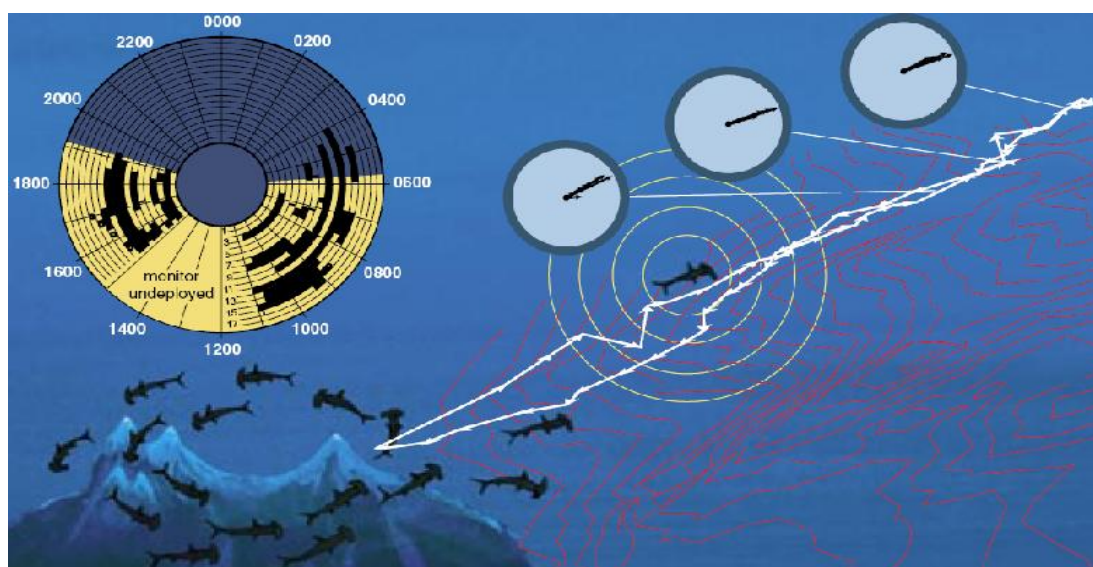
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Left: The radio tag transmits a unique electronic signature that is picked up and logged by the receiver as the shark swims past. Below: Hammerhead sharks at other sites have been found to depart at dusk and return before dawn. They return using the 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.

8. The team have already deployed radio receivers at different sites (Amigos and Isla Manuelita, Dirty Rock and Bajo Alcyone). These record the presence of a radio tag when the shark swims past; logging the comings and goings of a tagged shark as it moves around the island (see diagram below).



ELIGIBILITY

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

10. The minimum standard is British Sub-Aqua Club (BSAC) Dive Leader (or equivalent) by the start of the expedition; however, BSAC Sports Divers with sufficient experience and motivation will be allowed to complete their Dive Leader training on the expedition if necessary. All expedition members must be able to demonstrate progression in terms of qualifications and 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

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Divers, and re-breather users. All those selected must play an active part in the planning, administration and leadership of the expedition.

11. 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.

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

SELECTION

13. Participants have been selected on the basis of ability to contribute to the expedition whilst progressing personally as both divers and leaders. Preference was therefore given to junior or relatively inexperienced personnel in accordance with the criteria for sponsorship by the Joint Services Expeditions Trust (JSET: 2009DIN07-110). 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.

RISK ASSESSMENT

14. The primary risks on an expedition of this nature are:

a. **Decompression Sickness (DCS).** Any diver showing symptoms of DCS will need immediate evacuation to a recompression chamber. Cocos Island is an uninhabited island 530km out in the Eastern Pacific, which means that evacuation by ship to the mainland is required. This would take a minimum of 36 hours. For this reason all diving will be restricted to an Equivalent Air Depth of 30m (i.e. 30m if using air). In addition all divers will be using Oxygen enriched air containing 32% Oxygen (NITROX 32). Pure Oxygen as the primary treatment for DCS will be freely available on board and the team will include a diving doctor. Membership of the Divers Alert Network (DAN) is mandatory for all team members. This organisation specialises in the co-ordination of evacuation and treatment of divers.

b. **Lost Divers.** The expedition will be diving in an exceptionally remote location. Lost divers are a significant risk that is countered as follows:

- **Surface Marker Buoys (SMBs).** All divers will carry a SMB that can be deployed underwater (Delayed SMB).
- **Torches.** All divers will carry a torch on every diver.
- **Whistle.** All divers will carry a whistle on every dive.
- **Radio Emergency Positioning Radio Beacons (EPIRBs).** All divers will carry a radio EPIRB allowing a diver to be located up to 12km away.

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- **Satellite EPIRBs.** Each group of divers will carry a satellite EPIRB allowing those divers to be located anywhere on the planet.

c. **Spear Guns.** Sharks are tagged using spear guns. The risk associated with their use is mitigated by prior training and set rules for their arming and use.

d. **Sharks.** Sharks are not assessed to be a significant risk on this expedition. However, the expedition will take appropriate medical equipment for dealing with a significant trauma plus 2 doctors (including one surgeon) and a nurse.

15. The full risk assessment is available if required.



CASEVAC Options

OTHER SAFEGUARDS

16. The following other safeguards will be in place:

a. The expedition will be a fully sanctioned Level 3 Adventurous Training expedition under the Joint Services Adventurous Training (JSAT) scheme. All diving will take place under Joint Services Adventurous Training Regulations (JSSADRs). All civilian personnel will be required to be official team members under the scheme and accepted

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by 4 Division. As such they will abide by JSSADRs and will need to show evidence of 3rd Party Liability cover.

- b. The expedition leader has already given a high risk/remote presentation.
- c. All diving will be no decompression diving using at least NITROX 32 or a re-breather.
- d. The minimum diving qualification will be BSAC Dive Diver at the start of the expedition.
- e. All negotiations with civilian film producers will be carried out by Commercial Branch and Land Forces Media Ops. Safeguarding the reputation of the Armed Forces will be written into any contract.
- f. All team members will be required to be members of DAN.
- g. All military team members will be required to have valid membership of the British Sub-Aqua Club (BSAC - validates their qualifications and provides 3rd party insurance), a valid medical certificate and suitably serviced diving equipment.
- h. The expedition can expect to gain 'sponsored' status from the JSET committee.
- i. The expedition can expect to gain approval from the Royal Geographical Society.

COSTS

17. Broad order costs/expenses for this expedition (at current exchange rates) are summarised below:

EXPENDITURE		ANTICIPATED INCOME	
Item	£	Source	£
Boat Hire @ 1.6 US\$/£	39100	BSAC Expedition Scheme	1000
Flights	11200	BSAC Jubilee Trust	2000
Food	1447	JSET	12000
Land Transport	600	ATG(A)	5500
National Park Fees	2800	4 Div	1500
Land Accommodation	1050	BIBMTF	1000
Shipping & Excess Baggage	2000	CILOR	1447
Rebreather Support	544	RAF Central Funds	2000
DAN membership	756	RAF Unit Funds	1500
Expedition Clothing	1200	RN Funds	3000
Website	200	Army Sports Lottery	1400
Field Equipment	8000	RAF Sports Lottery	600
		RN Sports Lottery	600

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		RAF Flights	2400
		AGC	500
		ASADA	500
		RE	500
		Gibraltar Naval Trust	500
		Royal Signals	250
		AMD	200
		Personal Contributions	23000
		Gift Aid	6000
		QUARRNS Trust Fund	500
		2 Bde	500
		Other Unit Grants	500
TOTAL	68897	TOTAL	68897

Red = TBC, Green = Confirmed Funding

18. Personal contributions have been limited to a maximum of £2000 per person by the Joint Services Expedition Trust Committee (JSET).

THE TEAM

19. The team is shown below. Expedition appointments with the exception of Expedition Leader, Scientific Officers and Doctors have yet to be made. The film crew is still TBC. BSAC membership is mandatory. All personnel are required to be a minimum of BSAC Advanced Nitrox Diver/BSAC Dive Leaders by the start of the expedition.

Ser	Rank	DOB	1 st Name	Surname	Service	Diver Grade	Reb/ Nitrox?	No. of Dives
1			Andy	Reid		SADS	CCR	1386
2			Mark	Foster		SADS	CCR	1300
3			Tom	Wood		DL	TBC	180
4			Simon	Griffiths		PADI RD	Nitrox	73
5			Caroline	Zelaya		SD	No	39
6			Ian	MacFarlane		AD	Nitrox	?
7			Andrew	Jackson		DL	No	85
8			Stuart	Edmondson		DL	Nitrox	124
9	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC
10			Phil	Blake		AD	Nitrox	386
11			Aaron	Thomas		PADI DM	Nitrox	107
12			Joanne	Wheeler		SD	No	200
13			Gareth	Thomas		SADS	CCR	3000
14			Nick	Ward		SD	Nitrox	120
15			Alex	Antoniou		PADI OWSI	SCCR	TBC
16		TBC	Randall	Arauz		PADI Adv	Nitrox	TBC

POST EXERCISE REPORT

20. A full PXR will be published within 8 months of the end of the expedition.

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{Original Signed}

AJ REID



Expedition Leader

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