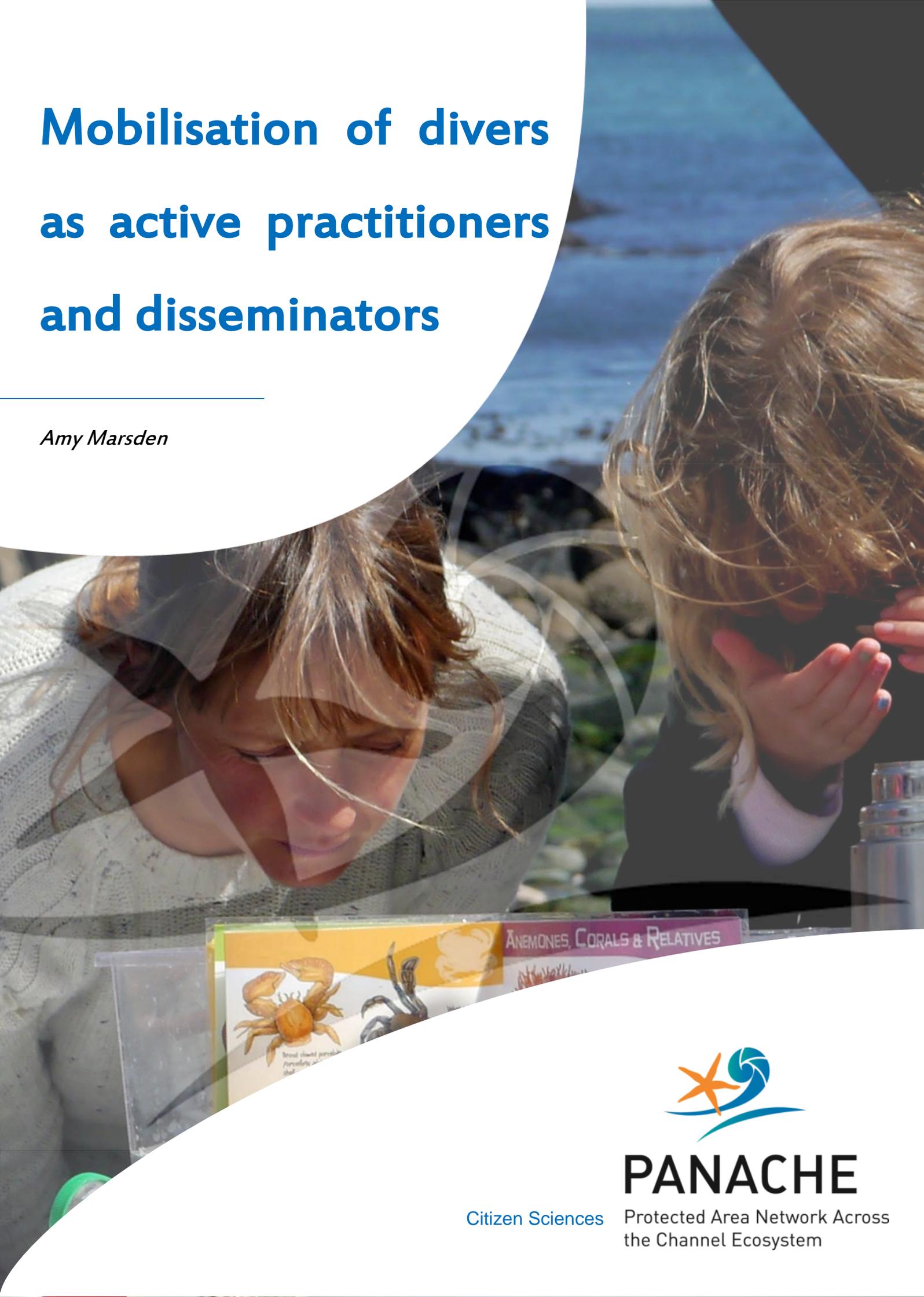


Mobilisation of divers as active practitioners and disseminators

Amy Marsden



PANACHE

Citizen Sciences

Protected Area Network Across
the Channel Ecosystem

Work Package 4.2:

Mobilisation of divers as active practitioners and disseminators

Citizen sciences / Sciences participatives

Prepared on behalf of / Etabli par



**Hampshire &
Isle of Wight
Wildlife Trust**



**Cornwall
Wildlife Trust**
*Protecting Cornwall's wildlife
and wild places*

by / par

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Work Package 4.2: Mobilisation of divers as active practitioners and disseminators

Axe de travail 4.2 : Mobilisation de plongeurs en tant qu'intervenants et vecteurs de communication impliqués activement

ABSTRACT

Work Package 4 of the PANACHE project aimed to develop and increase general awareness of Marine Protected Areas (MPAs) and build common ownership by actively engaging of local stakeholders and communities in joint citizen science programs and awareness events.

Work Package 4.2 successfully developed a common methodology that was suitable for involving scuba trained citizen scientists in providing useful subtidal marine data to support existing and potential MPAs. This methodology was then employed in a programme of training and survey events across the project region, gathering data into a central database.

The programme of work was developed and delivered collaboratively by four Wildlife Trusts along the Channel coast of England, and, indirectly, by Peau Bleue and non-government organisations (NGOs) in France, led and co-ordinated by Hampshire and Isle of Wight Wildlife Trust. Guidance and technical input from the Joint Nature Conservation Committee (JNCC), Natural England and Agence des Aires Marines Protégées (AAMP) helped to ensure collection of useful citizen science data, including selected key species that statutory bodies would accept as valid for monitoring.

Training and surveys delivered proved to be powerful tool in raising awareness of MPAs among divers and was successful in engaging the diving community in MPA protection by actively involving them in data gathering.

KEYWORDS: Marine Protected Areas, Citizen Science, Scuba, Diving, Subtidal, Marine Data

RÉSUMÉ

L'Axe de travail 4 du projet PANACHE a eu pour objectif de développer et d'accroître la sensibilisation générale aux Aires Marines Protégées (AMP) et d'instaurer un sentiment d'appartenance commune en incitant activement les parties prenantes et les communautés locales à s'engager dans des programmes communs de science participative et des journées de sensibilisation.

L'Axe de travail 4.2 a développé avec succès une méthodologie commune qui a permis à des scientifiques formés à la plongée autonome de fournir des données marines subtidales utiles dans le cadre de la protection des AMP existantes et potentielles. Cette méthodologie a été par la suite employée dans le cadre d'un programme de formation et de recensement dans toute la région concernée par le projet, en regroupant les données dans une base de données centralisée.

Le programme de travail a été développé et délivré de manière collaborative par quatre Wildlife Trusts le long des côtes britanniques de la Manche et, indirectement, par l'association Peau Bleue et des organisations non gouvernementales (ONG) en France, et il a été mené et coordonné par la Hampshire and Isle of Wight Wildlife Trust. Les conseils et les connaissances techniques fournis par le Joint Nature Conservation Committee (JNCC), Natural England et l'Agence des Aires Marines Protégées (AAMP) ont favorisé la collecte de données utiles en matière de science participative, notamment des espèces clés sélectionnées que les organes réglementaires accepteraient comme étant valables pour le suivi.

La formation et les études proposées se sont révélées être des outils particulièrement efficaces en matière de sensibilisation aux AMP parmi les plongeurs et ont permis d'engager la communauté des plongeurs dans la protection des AMP en les impliquant activement dans la collecte de données.

MOTS-CLÉS : liste de mots-clés, en français, séparés par des virgules



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I. Development of a Core List of Key Species of Interest (jointly with Work Package 4.3)

1.1 Development of the Core List

The core list of key species of interest was developed to help ensure data collected was comparable across the whole project area. Each partner involved in Work Package 4.2 and 4.3 agreed to use this core list as a standard around which to record presence/absence data during each survey, with the option for individual partners to add species of local importance to the core list for surveys in their area. It was agreed that additional species found during the surveys were also recorded where possible to ensure the data collected was as comprehensive as possible.

The core list was developed through consultation between the PANACHE partners involved in Work Package 4, and with collaboration from other organisations and statutory agencies responsible for Marine Protected Area (MPA) management to ensure data collected was valid for monitoring purposes. These included the Joint Nature Conservation Committee (JNCC), Natural England and Agence des Aires Marines Protégées (AAMP).

The core list is presented in Table 1. It comprises of 16 key species of interest and two key fish groups appropriate to contribute to monitoring the condition of MPAs, including:

- climate change indicator species
- invasive non-native species
- species relevant to Water Framework Directive¹ monitoring
- species which characterise the main biological zones down the shore
- features of conservation importance identified for protection in MPAs

¹ The EU Water Framework Directive (2000/60/EC) was adopted in October 2000. Its purpose is to establish a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. It will ensure that all aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands meet 'good status' by 2015 (JNCC, 2010)

Phylum	Scientific name	English name	French name	Monitoring relevance				
				A	B	C	D	E
Flowering plants	<i>Zostera marina</i>	Seagrass	Herbiers de Zostra			*	*	*
Seaweeds	<i>Asparagopsis armata</i>	Harpoon weed		*	*		*	
	<i>Sargassum muticum</i>	Japanese wireweed	Sargasse	*	*		*	
	<i>Undaria pinnatifida</i>	Wakame	Fougère des mers	*	*		*	
Worms	<i>Sabellaria alveolata</i>	Honeycomb worm	Les hermelles	*			*	*
	<i>Sabellaria spinulosa</i>	Ross worm	Les hermelles				*	*
Molluscs	<i>Calliostoma zizyphinum</i>	Painted topshell	Calliostome	*				
	<i>Gibbula umbilicalis</i>	Flat/purple topshell	Troque ombliqué/gibbule	*				
	<i>Ostrea edulis</i>	Native oyster	Huitre plate			*		*
	<i>Crassostrea gigas</i>	Pacific oyster	Huitre creuse japonaise	*	*	*		
	<i>Mytilus edulis</i>	Blue mussel	Moule commune			*	*	*
Tunicates	<i>Corella eumyota</i>	Orange-tipped seasquirt		*	*			
	<i>Haliclystus auricula</i>	Kaleidoscope jellyfish						*
Jellyfish (Cnidaria)	<i>Lucernariopsis campanulata</i>	Stalked jellyfish						*
	<i>Lucernariopsis cruxmelitensis</i>	Stalked jellyfish						*
Fish	<i>Balistes capriscus</i>	Grey triggerfish	Baliste	*				
		Rays and egg cases	Raies et les capsules d'oeufs			*		*
		Seahorses and pipefish	Hippocampe					*

A - climate change indicator species

B - invasive / non-native species

C - species relevant to Water Framework Directive monitoring

D - species which characterise the main biological zones down the shore

E - features of conservation importance identified for protection in MPAs

Table 1: The core list of key species selected to target during PANACHE survey

1.2 Key Species Identification Guide

A PANACHE key species identification guide (Figure 1) was created by the Work Package 4.3 lead partners to help volunteer surveyors to identify the PANACHE key species in the field. The identification guide included a description of each of the core species, as well as a photograph and further information such as where it is most likely to be found and its monitoring relevance (e.g. climate change or non-native species).

Copies were laminated to enable divers to take them with them on survey dives (Figure 2) and also available to download from Kent Wildlife Trust's website: <http://www.kentwildlifetrust.org.uk/node/3336>, and the PANACHE website: <http://www.panache.eu.com>.

Figure 1. PANACHE key species identification guide cover and example page.

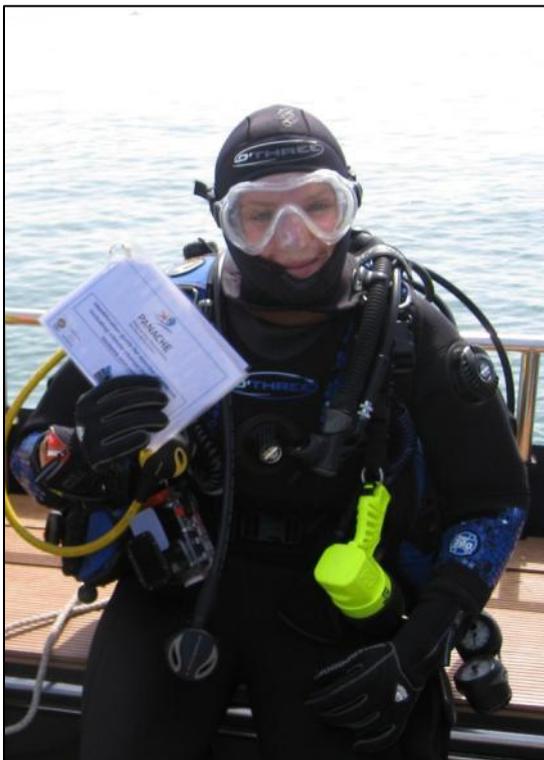
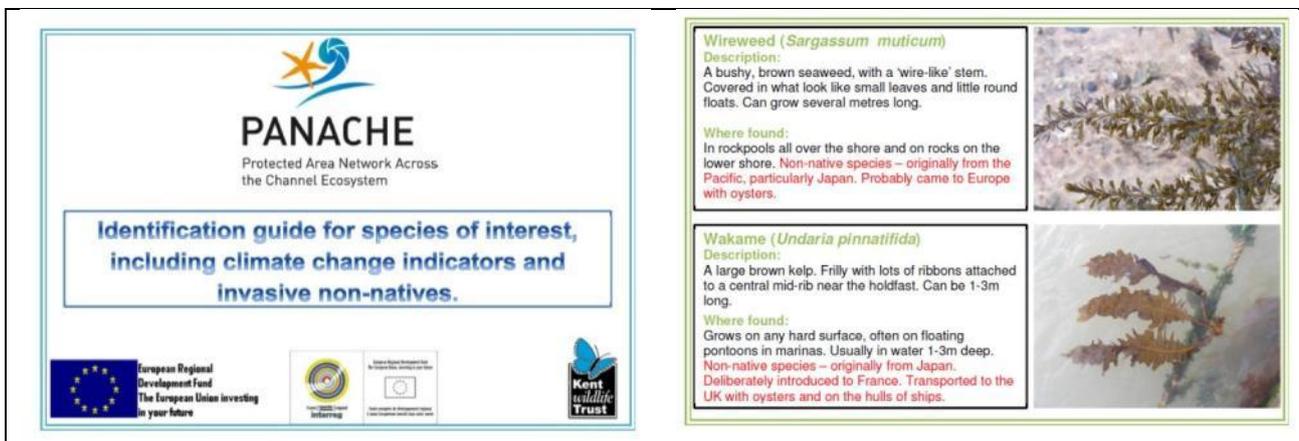


Figure 2. Citizen science survey diver Abbi Scott uses the identification guide during a survey at The Needles MPA (within the South Wight SAC and a recommended Marine Conservation Zone), West Isle of Wight. Photo © Hampshire and Isle of Wight Wildlife Trust.

II. Development of Standard Subtidal Survey Methodology

2.1 Linking to Existing Initiatives

A standard project methodology was discussed and agreed upon to ensure maximum compatibility with existing recording programmes and statutory MPA monitoring requirements. Work package partners were able to draw on knowledge gained from their contribution to the existing subtidal survey citizen science project *Seasearch* based in England to develop a standard methodology for the PANACHE project.

*Seasearch*² is a subtidal survey diver citizen science project that has been running since the 1980s. It is aimed at recreational divers who want to learn more about the wildlife they're seeing underwater and help protect the marine environment. The main aim of the project is to map out areas of sea bed seen while diving, and record species and habitats found in each. The project has a network of local co-ordinators who lead training and dives throughout the United Kingdom and Ireland. Several Wildlife Trusts are local co-ordinators for their area, including the four Wildlife Trust partners of the PANACHE project, Kent Wildlife Trust, Hampshire and Isle of Wight Wildlife Trust, Dorset Wildlife Trust and Cornwall Wildlife Trust.

Seasearch training uses a tiered approach so citizen scientists can develop their recording expertise as they gain experience surveying the marine environment. At the Observer level, divers are taught basic recording techniques and introduced to the main habitats and animal groups likely to be encountered on dives around the UK coast. They must complete several training dives before qualifying as an Observer to ensure they are able to accurately record their observations and data quality remains high. Once proficient at this, Observers have the option to progress to the more comprehensive Surveyor level. Surveyor training includes a two day course, several more training dives and a marine life identification test to ensure a high standard of data is maintained.

Seasearch-trained divers also have the option of taking specialist courses in subjects which are of particular interest to them, for example, seaweed identification and sea fan monitoring. The core list of key species of interest developed through the PANACHE project (see section I) links in well to the *Seasearch* project as it adds an extra dynamic, similar to a specialist course, that divers can engage with during their survey dives.

² *Seasearch* is a partnership between the Marine Conservation Society (MCS), The Wildlife Trusts, statutory nature conservation bodies and others, co-ordinated nationally by MCS and co-ordinated and delivered locally in England by Wildlife Trust and MCS local co-ordinators.

2.2 Manual for Photographic Monitoring

As species and habitat records collected by citizen scientists, such as Seasearch divers, are increasingly being used as evidence in support of MPA designation or management, the validity of these records is more likely to be challenged. The training provided by the Seasearch programme and the validation of records by local coordinators can offset this to some extent but the now widespread use of underwater photography among recreational divers provides an opportunity to increase the confidence in citizen science records. A training manual was produced (Figure 3; Tinsley, 2015) to help improve the quality and usefulness of species and habitat record photographs and to ensure the appropriate metadata, including geo-location data, are provided with the images.

Figure 3: Manual for photographic monitoring cover and sample page.

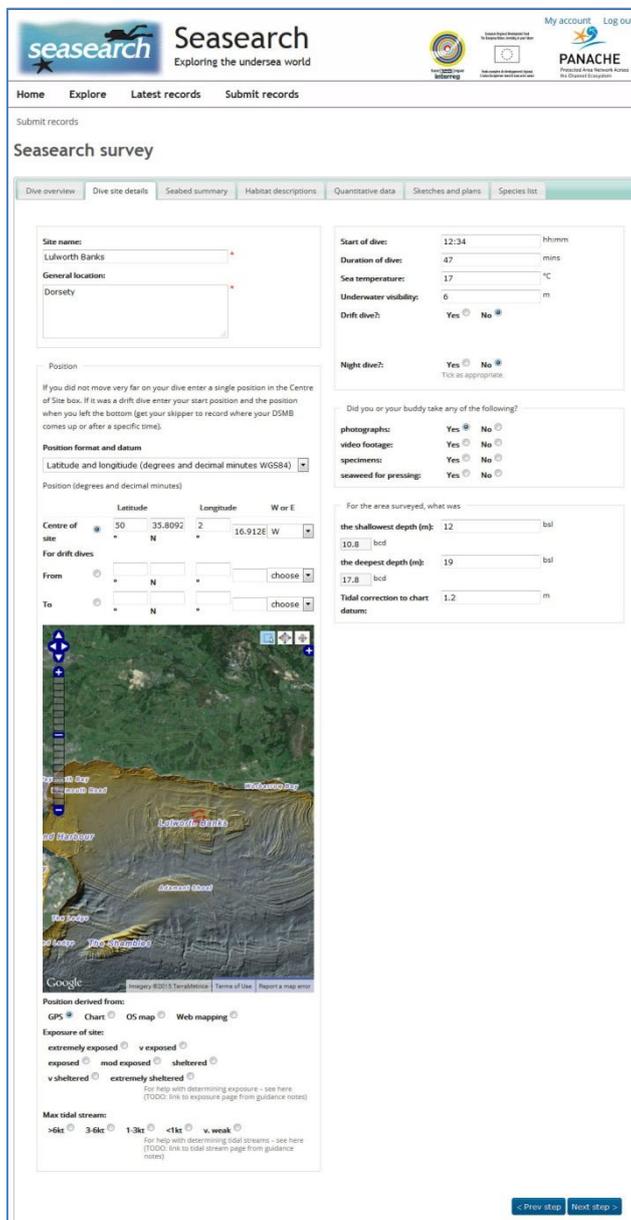
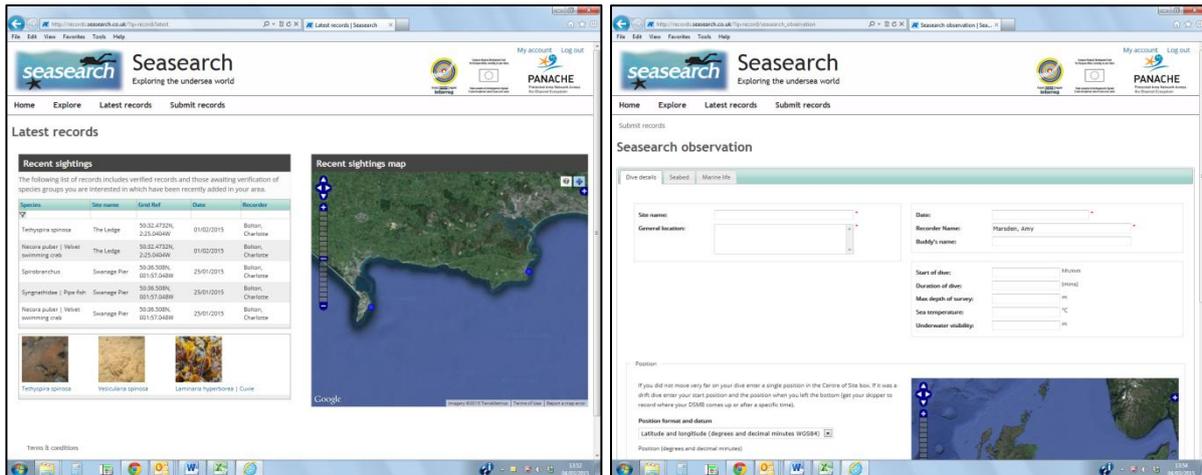


2.3 Online Reporting Toolkit

The standard underwater recording forms were also translated to online recording forms³, based on the open source biological recording toolkit, Indicia (indicia.org.uk) (Figure 4). This involved some custom code development to extend Indicia to cope with subtidal recording and the provision of training in the customisation of Indicia-based online recording forms and websites. Map layers showing available high definition bathymetry (English waters only) and a marine gazetteer were added to the recording website to help with planning survey dives. The online forms allow photographs to be linked to dive records, something which is difficult on the current system. The forms went through a long period of testing during the project and will increasingly replace the current system of paper records being subsequently entered onto a central database by local coordinators. The validation role of local coordinators will remain. The records are stored in a “warehouse” hosted by the National Biodiversity Network.

³ <http://records.seasearch.co.uk/>

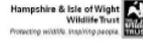
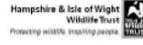
Figure 4: Sample pages from the online recording website.



III. Development of Standard Training Materials

Survey recording sheets and guidance notes (Figure 5, see also Appendix) were developed for use alongside the key species identification guide (Figure 1) to enable divers to carry out surveys looking for the key species of interest without having to engage in a full Seasearch survey.

Figure 5. Subtidal recording form and guide example pages developed to enable core key species to be recorded during dives where Seasearch survey forms were not being used.

<div style="display: flex; justify-content: space-between; align-items: center; font-size: 0.8em;"> <div style="text-align: center;">  <p>PANACHE Protected Area Network Across the Channel Estuaries</p> </div> <div style="text-align: center;">  <p>SUBTIDAL RECORDING FORM</p> </div> <div style="text-align: center;">  <p>Hampshire & Isle of Wight Wildlife Trust Protecting wildlife, inspiring people</p> </div> </div> <p>Recorder Details</p> <p>Name: _____ Address: _____ Telephone: _____ Email: _____ Name of buddy: _____</p> <p>Site Information</p> <p>Site name: _____ General location (incl. county/region): _____ Position at start of dive provided by (tick box, and provide co-ordinate below): <input type="checkbox"/> From GPS onboard vessel <input type="checkbox"/> From GPS mounted on SMB <input type="checkbox"/> From map Start GPS co-ordinate (WGS84): ° ' " N ° ' " W or E " (delete as appropriate) Estimated GPS accuracy (m): _____ Map series / type / reference: _____ Start Map co-ordinate: ° ' " N ° ' " W or E " (delete as appropriate) End GPS co-ordinate (WGS84): ° ' " N ° ' " W or E " (delete as appropriate) Estimated GPS accuracy (m): _____ Map series / type / reference: _____</p> <p>Dive Information</p> <p>Start of dive (24hr): : : (local) Dive Duration: : : minutes Photographs taken (tick box) <input type="checkbox"/> <input type="checkbox"/> Water visibility: : : m Water temp: : : °C Video footage taken (tick box) <input type="checkbox"/> <input type="checkbox"/> Photos/video (tick box): <input type="checkbox"/> Photographs <input type="checkbox"/> Video footage Maximum depth of survey: : : m Type of dive (tick box): <input type="checkbox"/> Slack water <input type="checkbox"/> Drift <input type="checkbox"/> Night <input type="checkbox"/> Wreck <input type="checkbox"/> Boat <input type="checkbox"/> Shore Survey carried out at part of more detailed biodiversity surveys? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Seabed Substrate</p> <p>Tick all & circle most abundant: <input type="checkbox"/> Rocky reef <input type="checkbox"/> Boulders <input type="checkbox"/> Cobbles <input type="checkbox"/> Pebbles <input type="checkbox"/> Gravel <input type="checkbox"/> Sand <input type="checkbox"/> Mud <input type="checkbox"/> Mixed Artificial (state material): _____ Other (state): _____</p> <p>Seabed Cover Types</p> <p>Tick all present & circle most abundant:</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Blue mussel beds</td> <td><input type="checkbox"/> Subtidal chalk</td> <td><input type="checkbox"/> Maerl beds</td> </tr> <tr> <td><input type="checkbox"/> Rossworm reefs</td> <td><input type="checkbox"/> Honeycomb worm reefs</td> <td><input type="checkbox"/> Peat and clay exposures</td> </tr> <tr> <td><input type="checkbox"/> Horse mussel beds</td> <td><input type="checkbox"/> Estuarine rocky habitats</td> <td><input type="checkbox"/> Seagrass beds</td> </tr> <tr> <td><input type="checkbox"/> Native oyster beds</td> <td><input type="checkbox"/> Tide swept channels</td> <td><input type="checkbox"/> Sheltered muddy gravels</td> </tr> <tr> <td><input type="checkbox"/> Fragile sponge and anthozoan communities</td> <td><input type="checkbox"/> Subtidal sands and gravels</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Sea pen & burrowing megafauna communities</td> <td><input type="checkbox"/> Other (state):</td> <td></td> </tr> </table> <p>Comments</p> <p>General description of dive: _____ _____ _____</p> <p>Direction travelled: _____ Distance / area covered: _____</p> <p style="font-size: 0.7em;">PANACHE Subtidal Recording Form: V2.</p>	<input type="checkbox"/> Blue mussel beds	<input type="checkbox"/> Subtidal chalk	<input type="checkbox"/> Maerl beds	<input type="checkbox"/> Rossworm reefs	<input type="checkbox"/> Honeycomb worm reefs	<input type="checkbox"/> Peat and clay exposures	<input type="checkbox"/> Horse mussel beds	<input type="checkbox"/> Estuarine rocky habitats	<input type="checkbox"/> Seagrass beds	<input type="checkbox"/> Native oyster beds	<input type="checkbox"/> Tide swept channels	<input type="checkbox"/> Sheltered muddy gravels	<input type="checkbox"/> Fragile sponge and anthozoan communities	<input type="checkbox"/> Subtidal sands and gravels		<input type="checkbox"/> Sea pen & burrowing megafauna communities	<input type="checkbox"/> Other (state):		<div style="display: flex; justify-content: space-between; align-items: center; font-size: 0.8em;"> <div style="text-align: center;">  <p>PANACHE Protected Area Network Across the Channel Estuaries</p> </div> <div style="text-align: center;">  <p>GUIDE TO USING THE SUBTIDAL RECORDING FORM</p> </div> <div style="text-align: center;">  <p>Hampshire & Isle of Wight Wildlife Trust Protecting wildlife, inspiring people</p> </div> </div> <ol style="list-style-type: none"> 1. Enter your details under Recorder details. 2. Enter details of the dive site under Site details. <ul style="list-style-type: none"> • Note where the GPS coordinate was derived from, this may be in a few different formats, the form has space for degrees and decimal minutes but coordinates can also be entered as decimal degrees, degrees minutes and seconds or a grid reference. 3. Enter more information about the dive under Dive information <ul style="list-style-type: none"> • It is important to note down whether you took any photos because these could be used as data or for identification purposes. • If your dive was part of a Seasearch survey, tick yes for the 'was this part of a more detailed biodiversity survey'. 4. Tick the all substrates seen on the dive under Seabed substrate <ul style="list-style-type: none"> • Circle the most abundant substrate type. • If there were substrates which aren't listed tick the 'other' box and write what these were. 5. Tick the all sea bed cover types seen on the dive under Seabed cover types <ul style="list-style-type: none"> • Circle the most abundant cover type. • If there were cover types which aren't listed tick the 'other' box and write what these were. 6. Write down more details about the dive under comments <ul style="list-style-type: none"> • Make sure the direction and distance of dive are filled in. • Note a brief general description of the habitat on the dive and animals seen. • Include any unusual observations from the dive and human impacts such as litter or fishing gear. 7. Note abundance of PANACHE species seen in the Core species table. <ul style="list-style-type: none"> • Refer to the 'identification guide for species of interest, including climate change indicators and invasive non-natives' for ID help.
<input type="checkbox"/> Blue mussel beds	<input type="checkbox"/> Subtidal chalk	<input type="checkbox"/> Maerl beds																	
<input type="checkbox"/> Rossworm reefs	<input type="checkbox"/> Honeycomb worm reefs	<input type="checkbox"/> Peat and clay exposures																	
<input type="checkbox"/> Horse mussel beds	<input type="checkbox"/> Estuarine rocky habitats	<input type="checkbox"/> Seagrass beds																	
<input type="checkbox"/> Native oyster beds	<input type="checkbox"/> Tide swept channels	<input type="checkbox"/> Sheltered muddy gravels																	
<input type="checkbox"/> Fragile sponge and anthozoan communities	<input type="checkbox"/> Subtidal sands and gravels																		
<input type="checkbox"/> Sea pen & burrowing megafauna communities	<input type="checkbox"/> Other (state):																		

IV. Engagement of Volunteers as Subtidal Survey Citizen Scientists

Wildlife Trust partners on the English Channel coast used their networks of members and supporters and existing marine volunteers to engage as PANACHE citizen scientists. Ongoing publicity for the project and the opportunities for volunteer involvement were promoted through partners' magazines, e-news, websites, blogs, Facebook and Twitter.

A broad spectrum of citizen scientists engaged in the project, from divers new to biological surveying to amateur underwater photographers and professional marine ecologists. This has raised awareness of MPAs and the value of citizen science while ensuring high quality data is collected.

Recruiting new citizen scientists with no prior underwater surveying experience was difficult due to the pre-requisite scuba diving skills required before volunteers could take part. However, the project was promoted through presentations given to local interest groups and at public events in addition to the methods noted above to reach as many people as possible.

4.1 Positive feedback from citizen scientists

Citizen scientists have enjoyed participating in the project as it has allowed them to use their diving skills in marine conservation work.

Polly Whyte, experienced diving surveyor and award winning amateur photographer:

"The dive day was a very enjoyable day. It was rewarding to be able to get to survey sites where more data collection is needed and help with conservation of the marine environment."

Dr Matt Doggett, experience diving surveyor, marine ecological consultant and award winning photographer:

"Surveys like this, focused on bringing together local experts have huge value both in terms of delivering quality data from important sites and providing a platform for knowledge transfer between individuals and organisations. HIWWT did a great job of organising the day - we were able to revise the species and habitats before the dive and on the day we were put into exactly the right places to get the data required. As a self-employed biologist, having the funding to attend makes a big difference in the costs incurred when giving up a day's work to participate."

Dr Charlotte Bolton, experienced surveyor:

"Visiting new, undived and unsurveyed sites and gathering data to help with the all-important designation process are my two big motivations for taking part in Seasearch diving as a volunteer, and this additional day certainly gave us that opportunity."

Bryony Chapman, experienced surveyor:

"The dive survey day with Hampshire & Isle of Wight WT was really well organised making it enjoyable for the divers, and rewarding to know that we were collecting data specifically to support the designation and protection of two important and beautiful marine areas around the Isle of Wight".

4.2 Engaging divers on the French Channel coast

Creating links between the English and French channel coast proved to be challenging and beyond capacity of the PANACHE project. The main reason for this is that citizen science among recreational scuba divers in France is far less structured and common than in England and so there was local no established project or structure around which to construct a viable citizen science project. Creating a successful network of citizen scientists for marine surveys in France is a viable aspiration, but will likely require several years of engagement before it becomes well established.

4.3 The Fish Watch Forum

One new initiative currently under development in France which links in well to the PANACHE project citizen science goals and showing promise in achieving this is the Fish Watch Forum. The French marine protected area Agency, partner of the project, supported the development of this joint project of the Peau-Bleue Association and Ecomers laboratory. It is also funded by several other partners, as well as individual donations received by the Peau-Bleue Association.

The Fish Watch Forum is a participatory tool able to fill the gaps in the scientific knowledge of marine ichthyodiversity. It will allow citizen scientists to collect data when diving which can be used to monitor species of concern, assess fish diversity, develop local or regional census programmes, and build up a community of scientists, and biodiversity managers and amateur fish enthusiasts. Successful fundraising allowed work to begin on the project in early 2013, and the website was officially launched in France in October 2014. The project is currently gaining momentum with 15 volunteer validators and several expert scientists currently involved. Uploads of photographs onto the website is also increasing with over 100 validated records received by March 2015. More information on this project can be found on The Fish Watch Forum website <http://www.fish-watch.org/index.php?lang=en> (english) and <http://www.fish-watch.org/index.php?lang=fr> (french).

The Peau-Bleue Association contributed to discussions throughout the development and delivery of subtidal surveys during the PANACHE project, creating an valuable cross-channel link which can be developed in the future. The Fish Watch Forum is an important addition to citizen science initiatives in the project area and has great value in engaging citizen scientists in marine recording. Furthermore, there is potential for the Fish Watch Forum to expand for use by England-based citizen scientists, particularly those who have a particular interest in fish, or who do not wish to undertake the more comprehensive training Seasearch requires, but want to contribute to monitoring and marine conservation by submitting their observations.

V. Delivery of Training in PANACHE Subtidal Survey Techniques

During the PANACHE project, a total of 35 subtidal survey training event days were delivered across the Channel area, engaging more than 371 volunteers. Details of these training events can be found in Appendix II.

Training was provided during standard Seasearch courses to introduce divers to subtidal surveying and recording techniques to ensure data was collected consistently as well as provide an introduction to the PANACHE project and core list of key species being targeted. Additional courses were also delivered which focused on difficult to identify groups, providing divers with the opportunity to study species close up to gain a better understanding of features that aid identification (Figure 6).

Informal training was also carried out during the dive survey days, with pre-dive briefs to refresh divers knowledge of the core list of key species and diver discussions after the dives to ensure recording forms were completed accurately and in full (Figure 7).

Figure 6. Classroom sessions trained divers in Seasearch surveying, recording techniques and introduced the PANACHE core key species list (Photos © Hampshire and Isle of Wight Wildlife Trust & Cornwall Wildlife Trust).





Figure 7. During the dive days, the core species list and recording form are revisited during the pre-dive brief and diver discussion (Photos © Hampshire and Isle of Wight Wildlife Trust).



VI. Delivery of a Programme of Subtidal Surveys

A programme of subtidal surveys was promoted through partner publicity networks and the PANACHE website. Volunteer citizen scientists were engaged in surveys at sites across the project area, focusing on existing and recommended MPAs.

A total of 470 subtidal surveys were undertaken at 158 sites (94% within MPAs or proposed MPAs) during the project, involving a total of 993 divers. A full list of the surveys undertaken can be found in the Appendix, with locations illustrated in Figure 9.

A variety of techniques were used to collect data; records were taken by noting information on slates as well as taking photographs (and in some cases video). Some surveys also included a GPS unit being towed on a buoy during the dive to allow an accurate location for the data to be recorded. Discussions between surveyors immediately after the dives and by analysing photographs often yielded more data (Figures 10-12).

Figure 8. Twelve citizen scientists survey MPAs off the Isle of Wight in 2014 (Photo © Hampshire and Isle of Wight Wildlife Trust).



Figure 9: Location of subtidal surveys undertaken during the PANACHE project

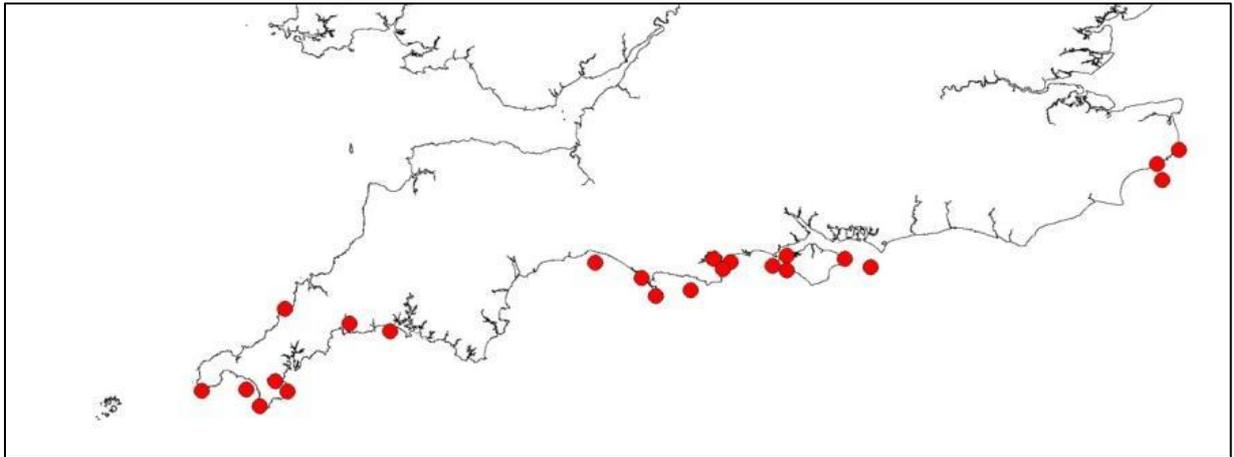


Figure 10: A dive slate is used to record observations during the survey dive (Photos © & Cornwall Wildlife Trust (left) & Hampshire and Isle of Wight Wildlife Trust (right)).



Figure 11: Taking photographs is a common method of enhancing notes taken on a survey (left). Some survey divers use a camcorder to record video footage and/or carry small bags to take specimens to identify later using identification books or a microscope (Photos © Hampshire and Isle of Wight Wildlife Trust).



Figure 12: When possible, divers towed a GPS unit attached to a surface marker buoy to allow an accurate location for the data to be recorded (Photos © Hampshire and Isle of Wight Wildlife Trust).



VII. Data Collected During Subtidal Surveys

Data collected during surveys was comprehensive with information on a wide range of habitats and species encountered during dives as well as the core list of key species recorded. The habitat and species data collected during the surveys was entered into the national Marine Recorder database which is used by conservation, academic and government organisations. Examples of some of the species recorded during surveys are presented in Figures 13 – 23.



Figure 13. A spider crab (Maja squinado) forages in a common eelgrass bed (Zostera marina). Eelgrass is a type of seagrass - a PANACHE core key species, and Feature of Conservation Importance in England's Marine Conservation Zones. Photo © Polly Whyte.



Figure 14. Native oyster (Ostrea edulis) a PANACHE core key species, and Feature of Conservation Importance in England's Marine Conservation Zones. Photo © Roland Brookes.



Figure 15. Candy-striped flatworms (Prostheceraeus vittatus) are a small but beautiful member of England's marine life. Photo © Justin Evans.



Figure 16. European conger eels (*Conger conger*) typically grow to 1.5m and can be found hiding in crevices in rocky habitats and wrecks Photo © Justin Evans.



Lucernariopsis campanulata
© Lin Baldock

Figure 17. Stalked jellyfish (*Lucernariopsis campanulata*), a PANACHE core key species, and Feature of Conservation Importance in England's Marine Conservation Zones. Photo © Lin Baldock.



Figure 18. Spotted cowrie (*Trivia monacha*), seen here on star ascidians (*Botryllus* sp.) are not uncommon, but a rare addition to the data set as they are small and well camouflaged Photo © Justin Evans.



Figure 19. Greater pipfish (*Syngnathus acus*) on exposed clay. Peat and clay exposures are a vulnerable habitat and Feature of Conservation Importance in England's Marine Conservation Zones. Photo © Kerry Evans.



Figure 20. Tompot blennies (*Parablennius gattorugine*) favour rocky habitats. They are a favourite of divers due to their photogenic and often 'friendly' nature. Photo © Roland Brookes.



Figure 21. This photograph of a sand smelt egg (*Atherina presbyter*) was taken under a microscope. It was accidentally collected in a sample of seaweed. Photo © Lin Baldock.



Figure 22. Pink sea fan (*Eunicella verrucosa*), Feature of Conservation Importance in England's Marine Conservation Zones. This soft coral is extremely slow growing and vulnerable to damage. Photo © Cat Wilding.



Figure 23. Scarlet-and-gold cup corals (*Balanophyllia regia*) are confined to the extreme south and west of the British Isles. Photo © Cat Wilding.

VIII. Analysis of Methods Used

Having Seasearch, a current, well developed citizen science project, already running in England was hugely beneficial as it enabled PANACHE to be linked to a citizen science marine conservation work already taking place. It also enabled citizen scientists who are relatively new to surveying to work with more experienced surveyors to enhance their learning.

Although recording forms and guidance was produced to enable citizen scientists to take part in the PANACHE project by collecting information on the core key species during their recreational dives, it was extremely hard to recruit new participants who were not either already involved in Seasearch or who wanted to take part in this more comprehensive programme.

During 2013 divers were given the option to search specifically for core key species over a larger area while others in the group carried out a standard Seasearch survey with a core key species list focus. However, diving conditions in England are rarely perfect and so health and safety issues (poor visibility, increasing the area within which surface cover must monitor during dives as survey teams spread out) made this impractical. It was also found that divers preferred to carry out surveys using the standard Seasearch methodology with a core key species list focus as this yielded more interesting data and photo opportunities.

The failure to engage citizen scientists in carrying our surveys to record core key species exclusively is not considered a failing of this work. On the contrary, ultimately participants enthusiasm to engage in the more comprehensive surveys has still resulted in a raised awareness of MPAs among the diving community and also a more detailed data collection than could otherwise have been achieved. Furthermore, the citizen scientists have learned new skills and knowledge which holds them in good stead to continue their citizen science work beyond the life of the PANACHE project.

IX. Lessons Learned

9.1 What worked well

There were several elements of the project which worked well. Key components of the project that worked well were:

- a) Engaging a pool of citizen scientists from a range of backgrounds and survey expertise was advantageous in creating a coherent group of enthusiastic volunteers.
- b) Linking the PANACHE project to Seasearch enabled us to utilise tried and tested survey methods to ensure data collected was of consistently high quality.
- c) Promotion of findings and key messages on social media and blogs enabled us to reach a wider audience.
- d) The core list of key species facilitated communication of the importance of cross-border conservation to protect dynamic ecosystems.
- e) The project has promoted MPAs, their management and the invaluable role which may be played by citizen scientists.
- f) Using snorkelling (Cornwall Wildlife Trust) proved to be good way to engage citizen scientists who are not yet scuba divers, and to survey very shallow areas often overlooked by divers.
- g) Specialist Identification courses were a powerful tool to engage citizen scientists in local marine life and introduce them to specialist groups.
- h) Combining subtidal, intertidal and outreach events (Cornwall Wildlife Trust) generated interest and publicity outside the target audience for individual events.
- i) The events had a strong social element, providing an additional incentive to continue participation.

9.2 What worked less well

As with all projects, some areas were problematic. Examples include:

- a) Communication with statutory bodies resulted in some high demands being placed on data collection for it to have greatest value for management. This included the request for geo-referenced photos which are hard to obtain.
- b) It was essential the core key species list contained species that were relevant to all parties involved in the project. However, this resulted in only some of the species list being relevant to any one site and made it more challenging for citizen scientists to be able to engage with the list. A more comprehensive list would be harder to manage but agreeing on a secondary list of locally relevant species for each area would have been an advantage.
- c) Scuba diving is a challenging activity to organise. Logistical arrangements take time and are often confounded by poor weather conditions at short notice.
- d) Scuba diving conditions are often not perfect in England. Citizen scientists must be skilled scuba divers to be able to overcome these challenges before they can take part in surveys.

Furthermore, diving conditions, although divable are sometime adverse enough to impact data collection and quality e.g. Summer 2014 had particularly poor visibility due to severe winter storms earlier in the year.

- e) There was always a drop-off between course and survey attendance. This is a common problem with diving activities and not a reflection of the PANACHE project. It is likely due to be in part to the expense of taking part in diving (despite subsidisation), and poor diving conditions of 2014.
- f) Filling dive boats for the surveys was a challenge and required a lot of time investment to carry out the necessary promotion. Again this is a common problem with diving activities and not a reflections of the PANACHE project.

X. Dissemination of Knowledge

Knowledge gained from the project has been shared by all partners through their networks. Joint workshops held in Boulogne-sur-Mer, Plymouth and Dover throughout the project has enabled Work Package 4.2 partners to discuss subtidal survey techniques and training with other PANACHE partner organisations as well as challenges that have arisen and possible solutions.

Regular reporting on the PANACHE programme by partners at regional meetings such as the South East Living Seas Team meetings has ensured additional regional practitioners have been involved throughout the project. Discussion at other forums, such as the North East Kent Scientific Advisory Group has ensured government agencies and academic institutions have been kept informed. All data collected has been supplied to the English statutory body Natural England⁴ to help inform marine conservation and management decisions.

⁴ Natural England is the UK government's adviser on the natural environment, providing practical scientific advice on how to look after England's landscapes and wildlife (Natural England, 2015).

XI. Conclusions

Work Package 4.2 has delivered a training and survey programme engaging and citizen scientists in across the PANACHE project area. The project has been successful in mobilising recreational scuba divers to survey areas within both designated and proposed MPAs and collect data that has contributed to evidence for their protection.

Divers from a broad range of backgrounds and levels of prior engagement in marine conservation have benefited from an increased level of awareness of MPAs and importance of particular species and habitats through their involvement in the project and their engagement with the core key species list as well as other locally important species and habitats. The programme of training ensured data was collected consistently and resulting data was robust.

Challenges and obstacles encountered and overcome during the project have resulted in an increased knowledge and awareness of the difficulties in engaging citizen scientists in subtidal marine conservation work, with lessons learnt disseminated to all partners to inform future initiatives.

At present citizen science on subtidal habitats is more developed in England than in France. However, during the course of the PANACHE project, ongoing discussions between partners have provided an exchange of information which could benefit the development of citizen science initiatives on both sides of the Channel.

References

JNCC, 2010. *Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy (Water Framework Directive)* [Online]. Available from: <http://jncc.defra.gov.uk/page-1375> [accessed 27th February 2015].

Natural England, 2015. *About Us* [Online]. Available from: <https://www.gov.uk/government/organisations/natural-england/about> [assessed 3rd March 2015].

Tinsley, T. 2015. *Use of digital imagery by non-specialists (citizen scientists) for marine species and habitats recording and monitoring in Marine Protected Areas*, PANACHE, Dorset, United Kingdom.

Appendix

Subtidal Recording Form – page 1



SUBTIDAL RECORDING FORM



Recorder Details

Name :	
Address :	
Telephone :	Email :
Name of buddy :	

Site Information

Site name :	
General location (incl. county/region) :	
Position at start of dive provided by (tick box, and provide co-ordinate below) :	
<input type="checkbox"/> From GPS onboard vessel	<input type="checkbox"/> From GPS mounted on SMB <input type="checkbox"/> From map
Start GPS co-ordinate (WGS84) : ____° ____' ____" N, ____° ____' ____" W or E * (*delete as appropriate)	
Estimated GPS accuracy (m) :	
Start Map co-ordinate :	Map series / type / reference :
End GPS co-ordinate (WGS84) : ____° ____' ____" N, ____° ____' ____" W or E * (*delete as appropriate)	
Estimated GPS accuracy (m) :	
End Map co-ordinate :	Map series / type / reference :

Dive Information

Start of dive (24hr) : ____ : ____ (local)	Dive Duration : ____ mins	Photographs taken (tick box)	<input type="checkbox"/>
Water visibility : ____ m	Water temp : ____ °C	Video footage taken (tick box)	<input type="checkbox"/>
Photos/video (tick box):	<input type="checkbox"/> Photographs	<input type="checkbox"/> Video footage	Maximum depth of survey: ____ m
Type of dive (tick box):	<input type="checkbox"/> Slack water	<input type="checkbox"/> Drift	<input type="checkbox"/> Night
	<input type="checkbox"/> Wreck	<input type="checkbox"/> Boat	<input type="checkbox"/> Shore
Survey carried out at part of more detailed biodiversity surveys ?		<input type="checkbox"/> Yes	<input type="checkbox"/> No

Seabed Substrate

Tick all & circle most abundant:	<input type="checkbox"/> Rocky reef	<input type="checkbox"/> Boulders	<input type="checkbox"/> Cobbles	<input type="checkbox"/> Pebbles	<input type="checkbox"/> Gravel
<input type="checkbox"/> Sand	<input type="checkbox"/> Mud	<input type="checkbox"/> Mixed	Artificial (state material):	Other (state):	

Seabed Cover Types

Tick all present & circle most abundant:		
<input type="checkbox"/> Blue mussel beds	<input type="checkbox"/> Subtidal chalk	<input type="checkbox"/> Maerl beds
<input type="checkbox"/> Rossworm reefs	<input type="checkbox"/> Honeycomb worm reefs	<input type="checkbox"/> Peat and clay exposures
<input type="checkbox"/> Horse mussel beds	<input type="checkbox"/> Estuarine rocky habitats	<input type="checkbox"/> Seagrass beds
<input type="checkbox"/> Native oyster beds	<input type="checkbox"/> Tide swept channels	<input type="checkbox"/> Sheltered muddy gravels
<input type="checkbox"/> Fragile sponge and anthozoan communities		<input type="checkbox"/> Subtidal sands and gravels
<input type="checkbox"/> Sea pen & burrowing megafauna communities	<input type="checkbox"/> Other (state):	

Comments

General description of dive:	
Direction travelled:	Distance / area covered:

Guide to using the Subtidal Recording Form – page 1



GUIDE TO USING THE SUBTIDAL RECORDING FORM

Hampshire & Isle of Wight
Wildlife Trust
Protecting wildlife. Inspiring people.



1. Enter your details under **Recorder details**.
2. Enter details of the dive site under **Site details**.
 - Note where the GPS coordinate was derived from, this may be in a few different formats, the form has space for degrees and decimal minutes but coordinates can also be entered as decimal degrees, degrees minutes and seconds or a grid reference.
3. Enter more information about the dive under **Dive information**
 - It is important to note down whether you took any photos because these could be used as data or for identification purposes.
 - If your dive was part of a Seasearch survey, tick yes for the 'was this part of a more detailed biodiversity survey'.
4. Tick the all substrates seen on the dive under **Seabed substrate**
 - Circle the most abundant substrate type.
 - If there were substrates which aren't listed tick the 'other' box and write what these were.
5. Tick the all sea bed cover types seen on the dive under **Seabed cover types**
 - Circle the most abundant cover type.
 - If there were cover types which aren't listed tick the 'other' box and write what these were.
6. Write down more details about the dive under **comments**
 - Make sure the direction and distance of dive are filled in.
 - Note a brief general description of the habitat on the dive and animals seen.
 - Include any unusual observations from the dive and human impacts such as litter or fishing gear.
7. Note abundance of PANACHE species seen in the **Core species table**.
 - Refer to the 'Identification guide for species of interest, including climate change indicators and invasive non-natives' for ID help.

Guide to using the Subtidal Recording Form – page 2

- Use the guide at the bottom of the page to determine abundance and if you are confident using the scale you can use the full SACFORN scale, if not use the reduced CORN scale.
 - Remember to indicate if a photo was taken of the species and if possible include a reference to the photo (name or number).
8. Record all other species and habitats seen on the dive using the same scale as the PANACHE key species above.
- Again remember to indicate if a photo was taken and include a reference to it if possible and see the guide at the bottom to help with abundances.
 - Please use latin names where possible as common names can be very variable and are often ambiguous.

When you have completed the form please send it to your local PANACHE partner for entry to the database.

Training Events – Hampshire and Isle of Wight Wildlife Trust

PARTNER	DATE [ddmmyyyy]	LOCATION [county/area]	VENUE [venue name]	TITLE [name of course]	NO. PARTICIPANTS
HIWWT	20.04.2013	Hampshire	Beechcroft House	Seasearch Observer	9
HIWWT	07.09.2013	Hampshire	Beechcroft House	Seasearch Observer	9
HIWWT	12.04.2014	Hampshire	Beechcroft House	Seasearch Observer	7
HIWWT	05.07.2014	Hampshire	Beechcroft House	Seasearch Observer	8
TOTAL: 4					TOTAL: 33

Training Events – Cornwall Wildlife Trust

PARTNER	DATE [ddmmyyyy]	LOCATION [county/area]	VENUE [venue name]	TITLE [name of course]	NO. PARTICIPANTS
CWT	03.03.2013	Falmouth	Tremough Campus	Seasearch Observer	15
CWT	06.04.2013	Central Cornwall	CWT Five Acres	Seasearch Observer	11
CWT	06.07.2013	Falmouth	Falmouth Marine School	Hydroids and their Predators I.D (day 1)	24
CWT	07.07.2013	Falmouth	Falmouth Marine School	Hydroids and their Predators I.D (day 2)	24
CWT	12.04.2014	Central Cornwall	CWT Five Acres	Seasearch Observer	9
CWT	23.04.2014	Newquay	Dive Newquay	Seasearch Observer part 1	12
CWT	30.04.2014	Newquay	Dive Newquay	Seasearch Observer part 2	17
CWT	03.05.2014	Lizard	Porthkerris	Seasearch Surveyor (dry day)	10
CWT	14.06.2014	Newquay	Cornwall Collage	Seasearch Fish ID (day 1)	15
CWT	15.06.2014	Newquay	Cornwall Collage/Fistral beach	Seasearch Fish ID (day 2)	14
CWT	07.07.2014	Newquay	Dive Newquay	Seasearch Observer Snorkeller part 1	22
CWT	10.07.2014	Newquay	Dive Newquay	Seasearch Observer Snorkeller part 2	20
TOTAL: 12					TOTAL: 193

Training Events – Kent Wildlife Trust

PARTNER	DATE [ddmmyyyy]	LOCATION [county/area]	VENUE [venue name]	TITLE [name of course]	NO. PARTICIPANTS
KWT	27.04.2013	Kent	Reculver Visitor Centre	Seasearch Observer Course including Panache Species identification	10
KWT	16.06.2013	Kent	Dover	Panache species identification training	9
KWT	17.11.2013	Essex	Basildon	Seasearch Observer Course including Panache Species identification	8
KWT	12.04.2014	Kent	Reculver Visitor Centre	Seasearch Observer Course including Panache Species identification	6
TOTAL: 4					TOTAL: 33

Training Events – Dorset Wildlife Trust

PARTNER	DATE [ddmmyyyy]	LOCATION [county/area]	VENUE [venue name]	TITLE [name of course]	NO. PARTICIPANTS
DWT	20.04.2013	Dorset/Portland	Scimitar Diving, Portland Marina	Seasearch Observer	10
DWT	27.04.2013	Dorset/Portland	Scimitar Diving, Portland Marina	Bryozoan & Hydroid ID	6
DWT	28.04.2014	Dorset/Portland	Scimitar Diving, Portland Marina	Bryozoan & Hydroid ID	8
DWT	25.05.2013	Dorset	Broadmayne	Algae ID	2
DWT	26.05.2013	Dorset	Broadmayne	Algae ID	2
DWT	29.06.2013	Dorset	Beacon Hill	Seasearch Surveyor	8
DWT	30.06.2013	Dorset	Beacon Hill	Seasearch Surveyor	8
DWT	13.7.2013	Dorset/Portland	Scimitar Diving, Portland Marina	Seasearch Observer	10
DWT	17.05.2014	Dorset/Portland	Hotel Aqua, Castletown	Seasearch Observer	7
DWT	31.05.2014	Dorset/Portland	Scimitar Diving, Portland Marina	Seasearch Observer	6
DWT	12.07.2014	Dorset/Portland	Royal Breakwater Hotel, Castletown	Ascidian ID	10
DWT	13.07.2014	Dorset/Portland	Royal Breakwater Hotel, Castletown	Ascidian ID	10
DWT	09.08.2014	Dorset/Portland	Royal Breakwater Hotel, Castletown	Sponge ID	7
DWT	10.08.2014	Dorset/Portland	Royal Breakwater Hotel, Castletown	Sponge ID	7
DWT	29.08.2014	Dorset/Portland	Hotel Aqua, Castletown	Seasearch Observer	11
TOTAL: 15					TOTAL: 112

Training Events – Hampshire and Isle of Wight Wildlife Trust

Subtidal Survey Events – Hampshire and Isle of Wight Wildlife Trust

PARTNER	DATE [ddmmyyyy]	LOCATION [county/area]	SITE [dive site name]	NO. PARTICIPANTS [total no. divers participating in dive]	NO.SURVEYS [1 buddy pair/group = 1 survey]	CONSERVATION DESIGNATION [e.g. Marine Conservation Zone (MCZ) or Special Area of Conservation (SAC) name]
HIWWT	21.04.2013	Eastern Solent	South Utopia	5	2	rMCZ Utopia
HIWWT	21.04.2013	East Isle of Wight	North of Bembridge Lifeboat station	2	1	rMCZ Bembridge
HIWWT	21.06.2013	West Isle of Wight	Outer Brook Ledges	7	3	South Wight Maritime SAC
HIWWT	21.06.2013	West Isle of Wight	Totland Bay	7	3	rMCZ Needles
HIWWT	21.06.2013	Western Solent	Hurst Spit	4	2	n/a - but close to Hurst Castle And Lymington River Estuary SSSI.
HIWWT	29.06.2013	West Isle of Wight	Alum Bay	4	2	rMCZ Needles
HIWWT	29.06.2013	West Isle of Wight	The Fenna'	4	2	n/a
HIWWT	27.09.2013	West Isle of Wight	Bouldnor cliff	3	1	rMCZ Yarmouth to Cowes
HIWWT	27.09.2013	West Isle of Wight	Bouldnor cliff	3	1	rMCZ Yarmouth to Cowes
HIWWT	27.09.2013	West Isle of Wight	Totland Bay	3	1	rMCZ Needles
HIWWT	27.09.2013	West Isle of Wight	Totland Bay	3	1	rMCZ Needles
HIWWT	12.10.2013	West Isle of Wight	Alum Bay	11	5	rMCZ Needles
HIWWT	12.10.2013	West Isle of Wight	Colwell Bay	11	5	rMCZ Needles
HIWWT	13.04.2014	Eastern Solent	South Utopia	2	1	rMCZ Utopia
HIWWT	13.04.2014	East Isle of Wight	Sandown Bay	7	3	rMCZ Bembridge
HIWWT	04.05.2014	West Isle of Wight	Totland Bay	6	3	rMCZ Needles
HIWWT	04.05.2014	West Isle of Wight	Scratchell's Bay	4	2	rMCZ Needles
HIWWT	13.06.2014	West Isle of Wight	Scratchell's Bay	7	3	rMCZ Needles
HIWWT	13.06.2014	West Isle of Wight	Kampen Wreck	3	1	rMCZ Needles
HIWWT	13.06.2014	West Isle of Wight	Alum Bay	7	3	rMCZ Needles
HIWWT	16.08.2014	West Isle of Wight	Alum Bay	8	4	rMCZ Needles
HIWWT	16.08.2014	West Isle of Wight	Bouldnor cliff	6	3	rMCZ Yarmouth to Cowes
HIWWT	22.08.2014	West Isle of Wight	Bouldnor cliff	12	6	rMCZ Yarmouth to Cowes
HIWWT	22.08.2014	West Isle of Wight	Wight Spirit Patch	12	6	rMCZ Needles
HIWWT	03.10.2014	West Isle of Wight	Tinker Rock	12	6	rMCZ Needles
HIWWT	03.10.2014	West Isle of Wight	Bouldnor cliff	12	6	rMCZ Yarmouth to Cowes
			TOTAL: 26	TOTAL: 165	TOTAL: 76	

Subtidal Survey Events – Cornwall Wildlife Trust

PARTNER	DATE [ddmmyyyy]	LOCATION [county/area]	SITE [dive site name]	NO. PARTICIPANTS [total no. divers participating in dive]	NO.SURVEYS [1 buddy pair/group = 1 survey]	CONSERVATION DESIGNATION [e.g. Marine Conservation Zone (MCZ) or Special Area of Conservation (SAC) name]
CWT	24.10.2012	Upper Fal	Ruan Pontoon	2	1	Falmouth and Helford SAC
CWT	24.10.2012	Upper Fal	Trelissick Pontoon	2	1	Falmouth and Helford SAC
CWT	25.10.2012	Falmouth	Mylor Fishing Storage Barge	2	1	Falmouth and Helford SAC
CWT	25.10.2012	Falmouth	Mylor Breakwater (North End)	2	1	Falmouth and Helford SAC
CWT	04.11.2012	Falmouth	Carrick Roads pReference Area	4	2	Falmouth and Helford SAC and pReference Area
CWT	07.11.2012	Falmouth	Black Rock Bouy	2	1	Falmouth and Helford SAC
CWT	07.11.2012	Falmouth	Falmouth Yacht Haven	2	1	Falmouth and Helford SAC
CWT	08.11.2012	Falmouth	Grove Pontoon	4	2	Falmouth and Helford SAC
CWT	08.11.2012	Falmouth	Port of Pendennis Marina	4	2	Falmouth and Helford SAC
CWT	21.04.2013	Lizard	Vase Reef	10	5	Manacles pMCZ
CWT	21.04.2013	Lizard	Mohegan	10	5	Manacles pMCZ
CWT	02.05.2013	Cornwall	Trevaunance cove	6	3	None. Observer training dive
CWT	16.05.2013	Falmouth	Silver Steps	6	3	Falmouth and Helford SAC
CWT	28.05.2013	Penwith	Lamorna Cove	5	3	near Lands End pMCZ
CWT	23.06.2013	Looe	Baset's Rock	6	3	Looe and Whitsand pMCZ
CWT	03.07.2013	Falmouth	Silver Steps	6	3	Falmouth and Helford SAC
CWT	06.07.2013	Falmouth	Outer Bizzies	18	9	Falmouth and Helford SAC
CWT	07.07.2013	Falmouth	The Bizzies	24	12	Falmouth and Helford SAC
CWT	17.07.2013	Lizard	Porthoustock	5	2	Manacles pMCZ
CWT	06.08.2013	Falmouth	Maenporth	9	4	Falmouth and Helford SAC
CWT	22.08.2013	Lizard	Vase Reef	3	2	Manacles pMCZ
CWT	22.08.2013	Lizard	Dwana Rocks	5	3	Manacles pMCZ
CWT	27.08.2013	Falmouth	Castle Beach	6	3	Falmouth and Helford SAC
CWT	03.09.2013	Penwith	Mounts Bay Causway	4	2	Mount's Bay pMCZ
CWT	10.09.2013	Falmouth	Gylly Beach	5	2	Falmouth and Helford SAC
CWT	14.10.2013	Fowey	Pont Pill Pontoon	6	3	adjacent to Fowey and Pont Pil pMCZ
CWT	14.10.2013	Fowey	Grid Irons Pontoon	2	1	adjacent to Fowey and Pont Pil pMCZ
CWT	14.10.2013	Fowey	Polruan Pontoon	4	2	adjacent to Fowey and Pont Pil pMCZ
CWT	09.11.2013	Falmouth	Flushing channel	3	1	Falmouth and Helford SAC
CWT	09.11.2013	Falmouth	Flushing South	2	1	Falmouth and Helford SAC
CWT	09.11.2013	Falmouth	Flushing North	2	1	Falmouth and Helford SAC
CWT	13.04.2014	Falmouth	Silver Steps	8	4	Falmouth and Helford SAC - Observer training dive
CWT	24.04.2014	Falmouth	Fraggle Rock	4	2	Falmouth and Helford SAC
CWT	04.05.2014	Lizard	Pancra Head	11	5	Manacles MCZ
CWT	04.05.2014	Lizard	Penwin	11	5	Manacles MCZ
CWT	24.05.2014	Penwith	Runnel Reef	6	3	Lands End pMCZ
CWT	24.05.2014	Penwith	Seggy Rock	6	3	Lands End pMCZ
CWT	28.05.2014	Falmouth	Shaws Rock	3	1	Falmouth and Helford SAC
CWT	07.06.2014	Penwith	Alice Marie	11	5	Mount's Bay pMCZ
CWT	15.06.2014	Newquay	Gazzele	7	3	Newquay pMCZ - Fish ID course training dive

PARTNER	DATE [ddmmyyyy]	LOCATION [county/area]	SITE [dive site name]	NO. PARTICIPANTS [total no. divers participating in dive]	NO.SURVEYS [1 buddy pair/group = 1 survey]	CONSERVATION DESIGNATION [e.g. Marine Conservation Zone (MCZ) or Special Area of Conservation (SAC) name]
CWT	06.07.2014	Penwith	Runnel Reef	6	3	Lands End pMCZ
CWT	06.07.2014	Penwith	Seggy Rock	6	3	Lands End pMCZ
CWT	06.07.2014	Penwith	Horrace	2	1	Lands End pMCZ
CWT	06.07.2014	Penwith	Logans Channel	2	1	Lands End pMCZ
CWT	06.07.2014	Penwith	Logans Point	2	1	Lands End pMCZ
CWT	06.07.2014	Penwith	Pen-men-an-mere	2	1	Lands End pMCZ
CWT	11.07.2014	Newquay	Chick Rock	9	4	Newquay pMCZ - Observer Snorkeller training
CWT	12.07.2014	Penwith	Marazion beach	6	3	Mount's Bay pMCZ
CWT	30.07.2014	Falmouth	Durgan beach	7	3	Falmouth and Helford SAC
CWT	05.08.2014	Newquay	Gazze	8	4	Newquay pMCZ - Observer Snorkeller training
CWT	13.08.2014	Penwith	Prussia cove	13	6	None, on boundary of Mounts Bay pMCZ - Observer Snorkeller training
CWT	19.08.2014	Lizard	Kennack Sands	2	1	Lizard SAC
CWT	21.08.2014	Falmouth	Trefusis	3	1	Falmouth and Helford SAC
CWT	23.08.2014	South East Cornwall	Lansallos bay	6	3	None, on boundary of Whitsand and Looe MCZ
CWT	10.09.2014	Penwith	Guthen Rock	2	1	Mount's Bay pMCZ
CWT	10.09.2014	Penwith	Warspite	2	1	Mount's Bay pMCZ
CWT	10.09.2014	Penwith	West of St Micheals Mount	2	1	Mount's Bay pMCZ
CWT	20.09.2014	Falmouth	Durgan Beach	12	5	Falmouth and Helford SAC - Observer Snorkeller training
CWT	25.09.2014	Penwith	Alice Marie	4	2	Mount's Bay pMCZ
CWT	02.10.2014	Fowey	Grid Irons Pontoon	4	2	adjacent to Fowey and Pont Pii pMCZ
CWT	02.10.2014	Fowey	Berrils Yard Pontoon	4	2	adjacent to Fowey and Pont Pii pMCZ
CWT	02.10.2014	Fowey	Rubbish Barge Pontoon	2	1	adjacent to Fowey and Pont Pii pMCZ
CWT	02.10.2014	Fowey	Pont Pill Pontoon	2	1	adjacent to Fowey and Pont Pii pMCZ
CWT	16.10.2014	Upper Fal	Trelissick Pontoon	2	1	Falmouth and Helford SAC
CWT	16.10.2014	Falmouth	Turnaware Pontoon	2	1	Falmouth and Helford SAC
CWT	16.10.2014	Falmouth	Mylor Pontoon, South end of breakwater	2	1	Falmouth and Helford SAC
			TOTAL: 66	TOTAL: 352	TOTAL: 170	

Subtidal Survey events – Kent Wildlife Trust

PARTNER	DATE [ddmm/yyyy]	LOCATION [county/area]	SITE [dive site name]	NO. PARTICIPANTS [total no. divers participating in dive]	NO.SURVEYS [1 buddy pair/group = 1 survey]	CONSERVATION DESIGNATION [e.g. Marine Conservation Zone (MCZ) or Special Area of Conservation (SAC) name]
KWT	04/05/2013	Dover, Kent	Langdon Bay	6	3	(Dover to Deal rMCZ)
KWT	04/05/2013	Dover, Kent	S Foreland Lighthouse	4	2	(Dover to Deal rMCZ)
KWT	02/06/2013	Dover, Kent	West Bank Saucer	7	3	(Dover to Folkestone rMCZ)
KWT	02/06/2013	Dover, Kent	Abbots Reef	5	2	(Dover to Folkestone rMCZ)
KWT	16/06/2013	Dover, Kent	St Margarets	9	4	(Dover to Deal rMCZ)
KWT	16/06/2013	Dover, Kent	Shakespeare Cliff Reef	6	3	(Dover to Folkestone rMCZ)
KWT	07/07/2013	Dover, Kent	Luke's Molehill	8	4	(Dover to Folkestone rMCZ)
KWT	07/07/2013	Dover, Kent	Murray's Ledge	6	3	(Dover to Folkestone rMCZ)
KWT	14/09/2013	Dover, Kent	NW Angelus Ridge	6	3	(Dover to Folkestone rMCZ)
KWT	14/09/2013	Dover, Kent	Empire Lump	5	2	(Dover to Folkestone rMCZ)
KWT	28/09/2013	Dover, Kent	Echinoidea	3	1	(Folkestone Pomerania rMCZ)
KWT	28/09/2013	Dover, Kent	Horsehead Reef	2	1	(Dover to Folkestone rMCZ)
KWT	13/04/2014	Dover, Kent	Dover Admiralty Arm	5	2	Dover Harbour
KWT	07/06/2014	Dover, Kent	Shakespeare Ridge Inshore	5	2	(Dover to Folkestone rMCZ)
KWT	07/06/2014	Dover, Kent	Horsehead East	5	2	(Dover to Folkestone rMCZ)
KWT	08/06/2014	Dover, Kent	Anchor Escarpment	6	3	(Dover to Deal rMCZ)
KWT	08/06/2014	Dover, Kent	Horsehead Outcrops	6	3	(Dover to Deal rMCZ)
KWT	21/06/2014	Dover, Kent	Ross North	5	2	(Folkestone Pomerania MCZ)
KWT	21/06/2014	Dover, Kent	West Bank Cable	3	1	(Dover to Folkestone rMCZ)
KWT	28/06/2014	Dover, Kent	West Bank North	4	2	(Dover to Folkestone rMCZ)
KWT	28/06/2014	Dover, Kent	Shakespeare Circles	4	2	(Dover to Folkestone rMCZ)
KWT	20/07/2014	Dover, Kent	Samphire Hoe SW	5	2	(Dover to Folkestone rMCZ)
KWT	20/07/2014	Dover, Kent	South Foreland Reef	4	2	(Dover to Deal rMCZ)
			TOTAL: 23	TOTAL: 119	TOTAL: 54	

Subtidal Survey events – Dorset Wildlife Trust

PARTNER	DATE [ddmm/yyyy]	LOCATION [county/area]	SITE [dive site name]	NO. PARTICIPANTS [total no. divers participating in dive]	NO.SURVEYS [1 buddy pair/group = 1 survey]	CONSERVATION DESIGNATION [e.g. Marine Conservation Zone (MCZ) or Special Area of Conservation (SAC) name]
DWT	18.05.2013	South Purbeck	Dancing Ledge	8	4	Studland to Portland SCI
DWT	18.05.2013	Poole Bay	Un-named Patch Reef	8	4	Poole Rocks MCZ
DWT	19.05.2013	South Purbeck	Anvil Point	6	3	Studland to Portland SCI
DWT	19.05.2013	Poole Bay	EA21 Patch Reef	6	3	Poole Rocks MCZ
DWT	01.06.2013	Poole Bay	Peveril Sabellaria	10	5	
DWT	01.06.2013	Poole Bay	EA18 Patch Reef	10	5	Poole Rocks MCZ
DWT	02.06.2013	South Purbeck	Blackers Bump	10	5	Studland to Portland SCI
DWT	02.06.2013	South Purbeck	Winspit	10	5	Studland to Portland SCI
DWT	08.06.2013	Lyme Bay	Peter1, Sawtooth Ledges	9	4	Lyme Bay and Torbay SAC
DWT	08.06.2013	Lyme Bay	Peter4, Sawtooth Ledges	9	4	Lyme Bay and Torbay SAC
DWT	09.06.2013	Lyme Bay	Stennis Ledges	10	5	Chesil Beach & Stennis Ledges MCZ
DWT	09.06.2013	Lyme Bay	Lyme Rough	10	5	Lyme Bay and Torbay SAC
DWT	04.09.2013	Portland	Balaclava Bay	4	2	
DWT	05.09.2013	South Purbeck	Lulworth Banks	6	3	Studland to Portland SCI
DWT	06.09.2013	Portland	Grove Point (North)	5	2	
DWT	14.09.2013	Poole Harbour	Brownsea Island North Shore	5	2	Poole Harbour SPA
DWT	15.09.2013	Poole Harbour	Brownsea Island Jetties	5	2	Poole Harbour SPA
DWT	16.09.2013	Poole Harbour	Brownsea Island Jetties	6	3	Poole Harbour SPA
DWT	05.10.2013	Lyme Bay	Lanes Ground	9	4	Lyme Bay and Torbay SAC
DWT	05.10.2013	Lyme Bay	Try Reef (North)	9	4	Lyme Bay and Torbay SAC
DWT	06.10.2013	Lyme Bay	Try Reef (South)	8	4	Lyme Bay and Torbay SAC
DWT	06.10.2013	Lyme Bay	Cod Ledge	8	4	Lyme Bay and Torbay SAC
DWT	04.05.2014	Lyme Bay	Try Reef	9	4	Lyme Bay and Torbay SAC
DWT	04.05.2014	Lyme Bay	Slim's Ledge	9	4	Chesil Beach & Stennis Ledges MCZ
DWT	07.06.2014	Lyme Bay	Shotgun Reef	9	4	Lyme Bay and Torbay SAC
DWT	07.06.2014	Lyme Bay	Peter4, Sawtooth Ledges	9	4	Lyme Bay and Torbay SAC
DWT	08.06.2014	Lyme Bay	Sawtooth Ledges	9	4	Lyme Bay and Torbay SAC
DWT	08.06.2014	Lyme Bay	UNI041	9	4	Lyme Bay and Torbay SAC
DWT	21.06.2014	Poole Bay	The Trough, Outer Whitehouse Grounds	7	3	
DWT	21.06.2014	Poole Bay	Wrasse Reef	7	3	Poole Rocks MCZ
DWT	22.06.2014	Poole Bay	Southbourne Rough	7	3	
DWT	22.06.2014	Poole Bay	Mark's Reef	7	3	
DWT	02.08.2014	Studland Bay	Outer Studland Seagrass	10	5	Studland Bay rMCZ
DWT	02.08.2014	Poole Bay	Lobster Rock	10	5	Poole Rocks MCZ
DWT	03.08.2014	Poole Bay	Southbourne Rough	10	5	
DWT	03.08.2014	Poole Bay	Long Reef	8	4	Poole Rocks MCZ
DWT	20.09.2014	South Purbeck	Domed Reef, Redcliff Point	12	6	
DWT	20.09.2014	South Purbeck	Railway Line Wreck Reef	12	6	Studland to Portland SCI
DWT	21.09.2014	Lyme Bay	Outer Stennis Ledges	12	6	Chesil Beach & Stennis Ledges MCZ
DWT	21.09.2014	West Portland	Hallelujah Boulders	6	3	Chesil Beach & Stennis Ledges MCZ
DWT	21.09.2014	East Portland	The Ledge	12	6	Studland to Portland SCI
DWT	28.09.2014	Lyme Bay	Slim's Rough	6	3	Lyme Bay and Torbay SAC
DWT	28.09.2014	Lyme Bay	Charlotte's Clay	6	3	Chesil Beach & Stennis Ledges MCZ
			TOTAL: 43	TOTAL: 357	TOTAL: 170	



PANACHE

Protected Area Network Across
the Channel Ecosystem

PANACHE is a project in collaboration between France and Britain. It aims at a **better protection** of the Channel marine environment through the **networking** of existing marine protected areas.

The project's five objectives:

- **Assess** the existing marine protected areas network for its ecological coherence.
- **Mutualise** knowledge on monitoring techniques, share positive experiences.
- **Build** greater coherence and foster dialogue for a better management of marine protected areas.
- **Increase** general awareness of marine protected areas: build common ownership and stewardship, through engagement in joint citizen science programmes.
- **Develop** a public GIS database.

France and Great Britain are facing similar challenges to protect the marine biodiversity in their shared marine territory: PANACHE aims at providing a **common, coherent and efficient reaction**.

PANACHE est un projet franco-britannique, visant à une **meilleure protection** de l'environnement marin de la Manche par la **mise en réseau** des aires marines protégées existantes.

Les cinq objectifs du projet :

- **Étudier** la cohérence écologique du réseau des aires marines protégées.
- **Mutualiser** les acquis en matière de suivi de ces espaces, partager les expériences positives.
- **Consolider** la cohérence et encourager la concertation pour une meilleure gestion des aires marines protégées.
- **Accroître** la sensibilisation générale aux aires marines protégées : instaurer un sentiment d'appartenance et des attentes communes en développant des programmes de sciences participatives.
- **Instaurer** une base de données SIG publique.

France et Royaume-Uni sont confrontés à des défis analogues pour protéger la biodiversité marine de l'espace marin qu'ils partagent : PANACHE vise à apporter une **réponse commune, cohérente et efficace**.

- www.panache.eu.com -

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