



MarineTT

European Marine Research Knowledge Transfer and Uptake of Results

Project number: 244164

Supporting Action
Seventh Framework Programme
Environment (Including Climate Change)

Deliverable D5.2

Knowledge delivery plans

Due date of deliverable: M18

Actual submission date: M30

Start date of the project: February 1st, 2010 **Duration:** 30 months

Organisation name of lead contractor: AquaTT

Revision: V1

Project co-funded by the European Commission within the Seventh Framework Programme (2007-2013)	
Dissemination Level	
PU Public	X
PP Restricted to other programme participants (including the Commission Services)	
RE Restricted to a group specified by the consortium (including the Commission Services)	
CO Confidential, only for members of the consortium (including the Commission Services)	

INTRODUCTION

Deliverable 5.2 “Knowledge Delivery Plans” provides a documented and detailed record of the case studies which successfully came through the rigorous Due Diligence stage to undergo customised transfer as determined by MarineTT¹. There is no “one size fits all” option for knowledge transfer and as such each tailor-made transfer was based on the specifics of each case study. All details of the project learned throughout the MarineTT process informed the essential requirements for high impact tailored transfer.

Deliverable 5.2 records the barriers to transfer experienced by coordinators and outline the different MarineTT approaches to overcome them. It also measures the short term impact of the knowledge transfer activities and gives a projected long term impact per case study².

There were nine projects with knowledge outputs of high potential that succeeded in becoming Case Studies for the MarineTT tailored knowledge transfer. There were four from Fisheries which went forward as a cluster case study to inform fisheries policy. Three high potential projects from Environmental monitoring together with one from Aquaculture formed the second cluster case study on Harmful Algae Bloom (HAB) Research. One of these high potential projects, Midtal, was also considered as an individual case study as its outputs had high potential for Impact. The ninth case study project came from Aquaculture.

Deliverable 5.2 provides the specific Knowledge Delivery Plans of each case study.

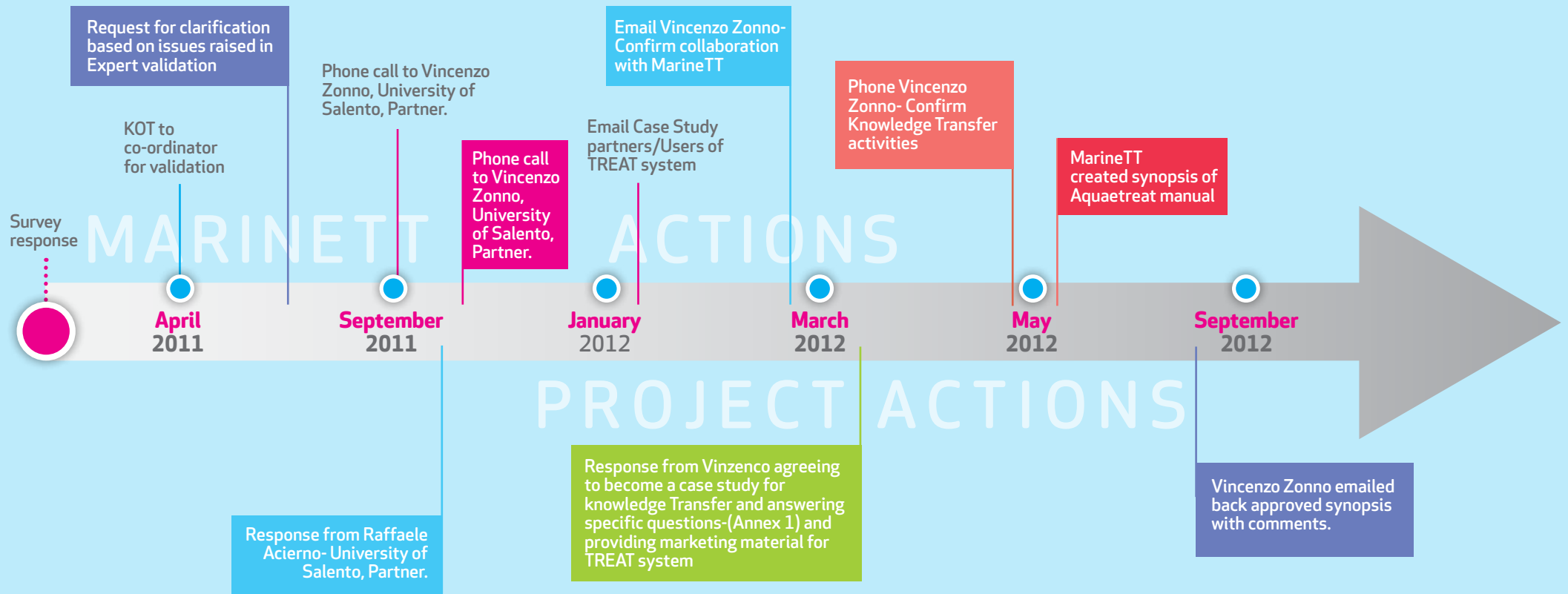
¹ Refer to Deliverable 3.3 Recommendations for Consideration and Deliverable 4.6 Action Items for Transfer for more details on the knowledge collection phase and knowledge analysis phases of MarineTT which determined the Case Studies for Transfer.

² Refer to Deliverable 5.3 Impact Measurement for more details on the MarineTT approach to measuring impact.

PROJECT PROFILE

Project Title:	Improvement and innovation of aquaculture effluent treatment technology
Acronym:	AQUAETREAT
Contract Type:	FP6: Specific Research Activities for Small and Medium-sized Enterprises (SMEs)
Funding: Amount (Total/EU)	Total cost: EUR 1 761 931 EU contribution: EUR 1 382 541
Timeline:	2004 – 2007
Project Coordinator:	Sebastiano Vilella, University of Lecce
Primary Case Study Contact:	Vincenzo Zonno [vincenzo.zonno@unisalento.it]
Short Description:	The AQUAETREAT project examined the feasibility of developing and implementing cost-effective systems for the treatment of aquaculture farm effluent and the valorisation and reuse of the products and by-products
Knowledge Outputs:	<ul style="list-style-type: none"> • T.R.E.A.T. Effluent Treatment System which not only treats waste waters to a high standard but also recycles the by-product to create a possible added value resource • AQUAETREAT Manual comparing four different types of Effluent treatment systems including cost analyses and suitability to different environments

TIMELINE



STEPS IN THE RESEARCH VALUE CHAIN – FROM GENERATION TO IMPACT

STEP 1 CONFIRM ACCURACY OF KOT

STEP 2 CO-ORDINATOR WILLING TO COLLABORATE

STEP 3 CLARIFY IP

STEP 4 SEEK EXTERNAL ADVICE/FEEDBACK

STEP 5 CONFIRM END USER (S)

STEP 6 ASSESS MARKET

STEP 7 UNDERSTAND END USER CAPACITY AND MOTIVATION FOR UPTAKE

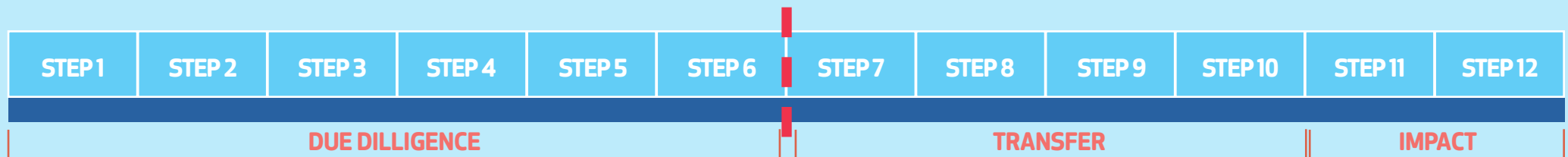
STEP 8 CONFIRM MEDIUM FOR END-USER UPTAKE

STEP 9 CONFIRM METHOD FOR END-USER UPTAKE

STEP 10 TAILORED KNOWLEDGE TRANSFER

STEP 11 MEASURE SHORT TERM IMPACT

STEP 12 LONG TERM IMPACT



Beginning again from the start, the additional steps in the Research Value Chain that MarineTT was able to achieve using its methodology

Barrier to Innovation

Stages in the MarineTT methodology:

1. Due Diligence (Steps 1-6)
2. Transfer (Steps 7-10)
3. Impact (Steps 11-12)

KNOWLEDGE OUTPUT 1:

T.R.E.A.T. EFFLUENT TREATMENT SYSTEM

Novel system for the treatment, recycling and re-use of aquaculture effluent

Innovative aspect: It not only treats waste waters to a high standard but also recycles the by-product to create a possible added value resource.

End-User: 1) Aquaculture farmers that use recirculation systems and/or flow

through systems. 2) Research Institutes

Application: 1) Upgrading to the T.R.E.A.T. system could allow for better value and the possibility for sludge recycling to create an added value resource.

2) Institutes involved in marine research using RAS or flow through systems would benefit from better environmental control of the effluent

POTENTIAL BARRIERS TO UPTAKE BY END USER AS IDENTIFIED BY MARINETT:

MarineTT has identified step 7 as being the main barrier affecting the uptake of the AQUAETREAT

KO 1: 7. *Understand End User capacity and motivation for uptake*

This may have lead to the following issues affecting the success of the T.R.E.A.T. system.

- Lack of awareness of the availability of the AQUAETREAT water effluent treatment systems
- No easily accessible test site
- Lack of awareness of the novel aspects of the T.R.E.A.T. system, specifically its ability to recycle the by-products/sludge and create a possible added value resource

I. END USERS IDENTIFIED BY MARINETT:

- FEAP members that use recirculation systems or flow through systems
- Multipliers:
 - a) The Nordic Network on Recirculation Aquaculture systems
 - b) Aquacircle – Association for companies, knowledge institutions and private persons with an interest in RAS
 - c) EAS RAS working group

MARINETT RECOMMENDED TAILORED TRANSFER

During due diligence and taking into account feedback received from external experts, MarineTT gained an understanding of the capacity and motivation of the identified End Users for Aquaetreat. As a result, it was decided that the best medium for transfer would be to create a synopsis of the Aquaetreat manual and the best method for transfer would be to communicate through Aquaculture Producers organisations, Technology Platforms as well as contacts from the combined MarineTT network in order to facilitate a strong connection with the End Users.

The Synopsis paper included the benefits and positive attributes of the water effluent treatment systems developed by Aquaetreat including the novel aspect of recycling the by-products of the treatment to create a value added product. The synopsis paper was sent to 119 End Users that included 26 National Aquaculture Producers Associations.

EXPECTED IMPACT

In the short term, MarineTT will be able to measure impact by assessing the level of interest shown in the T.R.E.A.T. systems after the Synopsis paper has been distributed and also by the level of interest in visiting the demonstration site, which should be developed by 2013.

- Targeted audiences will be contacted after the release of the AQUAETREAT synopsis and their responses will be noted. In particular those who had previously been sent information on the AQUAETREAT results will be approached to gauge whether the synopsis has increased their interest

Long term Impact measurement would be the increase in sales of the T.R.E.A.T. systems and its adoption into land based aquaculture farming.

- MarineTT will also monitor the number of interested parties approaching the AQUAETREAT project to request a visit to the Demonstration site, as indicated on the synopsis.nd based Aquaculture producers.

KNOWLEDGE OUTPUT 2:

AQUAETREAT MANUAL

Technical manual detailing the processes that will improve the management of wastewater and solids to minimise pollution and optimise the recovery, disposal and re-use of solid waste including case study examples, cost analyses and legislation requirements.

Innovative aspect: Comparing four different types of Effluent treatment

systems including cost analyses and suitability to different environments.

End-User: 1) Aquaculture farmers that use recirculation systems and/or flow through systems. **2)** Entrepreneurs setting up a new facility using either RAS or Flow through systems

Application: 1+2) Understanding the novel aspects, the comparison of costs depending on factors including species type, environment, production type, as well as the specifics of the sludge recycling to provide a possible added resource would allow for an informed decision making process.

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KEY OBSERVATIONS FROM THE AQUAETREAT PROJECT

Supporting information that validates the effort put into the project:

The prototype systems – developed under the project – are still working at the three fish farms (SMEs) which participated to the project itself. The know-how acquired with the project has been exploited by the spin-off SME Tecnosea srl, whose feasibility study was realised under the project, which was created after the end of the Aquaetreat project and which operates today in the field of aquaculture. The spin-off realised also the translation of the handbook in Italian and its distribution to Italian stakeholders of the sector.

Transfer within the project:

The knowledge achieved through the project activities was thoroughly disseminated during the project life to the different stakeholders of the aquaculture sector (including managers, technicians, scientists, students, policy makers, etc.) as well as to the general public. As reported in the PUDK document, many communication means have been used, including seminars, workshops, congresses, newspapers, journals, a specific publication (handbook) and, of course, the website.

Annex 1 List of Questions:

1. Would you be interested in working with MarineTT and making AQUAETREAT a case study for Knowledge transfer?
2. What is the current status of AQUAETREAT? Is it being carried forward in a new project?
3. Do you know if the prototype is still in use by your partner SME?
4. Are there any IP or confidentiality issues with the outputs?
5. Can you give details of past dissemination in AQUAETREAT?
6. Who would you consider to be the Next/End user of the outputs generated by AQUAETREAT?
7. Can you identify any barriers in your dissemination plan?
8. Finally, Can you identify any area or method that MarineTT could aid the AQUAETREAT project in transferring its outputs?

List of Identified End-Users:

- Federation of European Aquaculture Producers (FEAP): 26 National organisations
- Nordic Network of Recirculatory Aquaculture Systems (RAS): Total 95
 - Steering committee :5 countries represented
 - Universities and research institutes: 36 represented
 - Consultancies: 4 represented
 - Governmental organisations: 5 represented
 - Industry: 28 represented
 - NGO and others: 17 represented

CLUSTER PROJECT: Harmful Algae Bloom (HAB) Research

There were four HABs related projects highlighted as having High potential outputs by the expert groups: SPIES-DETOX, MIDTAL, HABIT and SEED. For Maximum impact it was decided to cluster these projects with other medium potential projects with outputs affecting HABs: DETECTOX, BIOTOX, BIOTOXMARIN, ALGADEC, ESTTAL and SENSBIO SYN.

PROJECT PROFILE

Project Title:	Active biological monitoring and removal of toxins in aquaculture ecosystems and shellfish – including the development of a Solid-Phase In-situ Ecosystem Sampler and detoxification of shellfish
Acronym:	SPIES-DETOX
Contract Type:	FP6 – SMEs-Collective research project
Funding: Amount (Total/EU)	Total cost: EUR 2,965 575 EU contribution: EUR 2,066 704
Timeline:	2006 – 2008
Project Coordinator:	Denis Gowland (dennis@researchrelay.com)
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	Active biological monitoring and removal of toxins in aquaculture ecosystems and shellfish - including the development of a Solid-Phase In-situ Ecosystem Sampler (SPIES) and detoxification of shellfish (DETOX).
Knowledge Outputs:	<ul style="list-style-type: none"> • Easy use early warning samplers for use in shellfish production areas • Screened and selected marine bacteria capable of reducing shellfish toxicity within a reasonably short time-frame. • Developed new techniques to combine SPATT detection methods for rapid detection of toxic algae • Review of different protocols to wash algal toxins from contaminated shellfish during processing

PROJECT PROFILE

Project Title:	Microarrays for the detection of Toxic Algae
Acronym:	MIDTAL
Contract Type:	FP7: Coordination action
Funding: Amount (Total/EU)	Total cost: EUR 3, 310 000 EU contribution: EUR 2, 230 000
Timeline:	2008 – 2012
Project Coordinator:	Linda Medlin (lkm@mba.co.uk)
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	Microalgae in marine and brackish waters of Europe regularly cause harmful effects, considered from a human health perspective, in that they threaten public health and cause economic damage to fisheries and tourism. These episodes encompass a broad range of phenomena collectively referred to as Harmful Algae Blooms (HABs). The objective of Midtal was to design microarrays for the detection of Toxic Algae as well as the toxins produced.
Knowledge Outputs:	<ul style="list-style-type: none">• Microarray for the detection of toxic algae species• Manual for the use of the Microarray for the detection of species including best practice RNA extraction techniques• Microarray for the detection of algae toxins• Biosensor for the analysis of the microarray for the detection of algae toxins

PROJECT PROFILE

Project Title:	Harmful Algal Bloom Species in thin layers
Acronym:	HABIT
Contract Type:	FP6 Integrated project
Funding: Amount (Total/EU)	Total cost: EUR 1,759 344 EU contribution: EUR 949 932
Timeline:	2005 – 2008
Project Coordinator:	Robin Raine (robin.raine@nuigalway.ie)
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	The project HABIT researches the development and dispersion of HAB populations in sub-surface micro-layers. It focuses on a genus of phytoplankton that has a serious impact on the economic development of the European coastal zone and which frequently occurs in sub-surface, thin micro-layers. The overall objectives of HABIT are to resolve fundamental patterns in the occurrences of Dinophysis and quantify the processes that are important in governing their distribution.
Knowledge Outputs:	<ul style="list-style-type: none"> • Harmful Algal bloom prediction models • Network of active Harmful Algal Bloom (HAB) scientists in Europe • Knowledge on the Dinophysis genus acquired during the project • Two new species discovered: Fragilidium and Chrysochromulina • 5 day prediction model on habs in the south coast of Ireland (occur with particular sequence of wind direction)

PROJECT PROFILE

Project Title:	Life Cycle Transformations among HAB species and the environmental and physiological factors that regulate them
Acronym:	SEED
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 2,006 215 EU contribution: EUR 1,499 994
Timeline:	2005 – 2008
Project Coordinator:	Esther Garces
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	Harmful Algal Blooms (HABs) are recurrent events in European coastal waters and can affect large or local areas. They may harm human health, marine ecosystems with economic impacts on tourism, fisheries and aquaculture. SEED aims to understand how and to what extent anthropogenic forces influence the non-vegetative stages of the life cycles of harmful algal species thereby contributing to the increase in harmful algal blooms in European marine, brackish and fresh waters.
Knowledge Outputs:	<ul style="list-style-type: none"> • Special Issue combining key publications from the project (17 scientific publications on Elsevier under Deep Sea Research – All aimed at the scientific Community) • Case Studies of lifecycle of various HAB species in various locations across Europe (This is in the form of 4 scientific publications published by Elsevier) • Real Time PCR Molecular Tools for identification of HAB species (Handbook – Microscopic and Molecular Methods for Quantitative Phytoplankton Analysis)

PROJECT PROFILE

Project Title:	Development of an SPR-based biosensor for the detection of lipophilic phycotoxins in shellfish residues
Acronym:	DETECTOX
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 1,759 344 EU contribution: EUR 949 932
Timeline:	2005 – 2008
Project Coordinator:	Luis Botana
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	The overall objective of this project is to develop a multi-channel, high-throughput biosensor for the detection of diarrhetic shellfish toxins, yessotoxins, pectenotoxins, azaspiracids and gymnodimine
Knowledge Outputs:	<ul style="list-style-type: none"> • Multi-channel high throughput biosensor for the detection of shellfish toxins

PROJECT PROFILE

Project Title:	Development of an SPR-based biosensor for the detection of lipophilic phycotoxins in shellfish residues
Acronym:	BIOTOX
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 5,317 496 EU contribution: EUR 3,008 477
Timeline:	2005 – 2008
Project Coordinator:	Michael Kotterman
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	This project aims to develop and validate reliable and cost-effective methods for the control of lipophilic toxins that can replace the animal tests.
Knowledge Outputs:	<ul style="list-style-type: none"> • Developed a reference multi-toxin identification method based on liquid chromatography and mass spectrometry (LC-MS) for shellfish toxins • Developed and validated alternative methods (based on various assays, sensors, or dipstick tests) used to identify all lipophilic shellfish toxins mentioned in the EU legislation. • A feasibility study was carried out on the preparation and certification of reference materials for the specific shellfish toxins. • Improved the depuration process to ensure the rapid removal of toxins accumulated by shellfish. • An early warning system was developed based on identifying the toxin production genes in the algae using cDNA microarray technology • Recommendations for the risk management practices of European Member States and how they can be harmonised were produced

PROJECT PROFILE

Project Title:	Development of novel analytic tools for the detection of marine biotoxins
Acronym:	BIOTOXMARIN
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 2,023 500 EU contribution: EUR 1,325 500
Timeline:	2005 – 2007
Project Coordinator:	Heinz Shroder, JOHANNES GUTENBERG-UNIVERSITÄT
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	Fast, simple and cost-effective detection methods for marine bio toxins in seafood as well as patient sera will be developed, based on the application of high-affinity capture antibodies and novel artificial receptor mimics against the toxins.
Knowledge Outputs:	<ul style="list-style-type: none"> • Fast, simple and cost-effective marine biotoxin detection methods for seafood and patient sera. • Successfully raised antibodies against okadaic acid- a diarrhetic shellfish poisoning (DSP) toxin. • Prototype biotoxin detection kits

PROJECT PROFILE

Project Title:	Development of a rRNA-Biosensor for the Detection of Toxic Algae
Acronym:	ALGADEC
Contract Type:	FP6 Specific Research Activities for Small and Medium-sized Enterprises (SMEs)
Funding: Amount (Total/EU)	Total cost: EUR 1,022 802 EU contribution: EUR 43,452
Timeline:	2004 – 2006
Project Coordinator:	Heiko Lilienthal
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	Project aims at developing a biological sensor capable of detecting rapidly and specifically the presence of harmful algal blooms. The in-situ specific recognition of algae's ribosomal RNA will be possible by means of a Sandwich-Hybridisation on an electrochemical sensor. A multi-probe chip will be designed to obtain tailor made sensors containing the most relevant species for a determined area.
Knowledge Outputs:	<ul style="list-style-type: none">• An automated biological sensor for a rapid detection of toxic algae

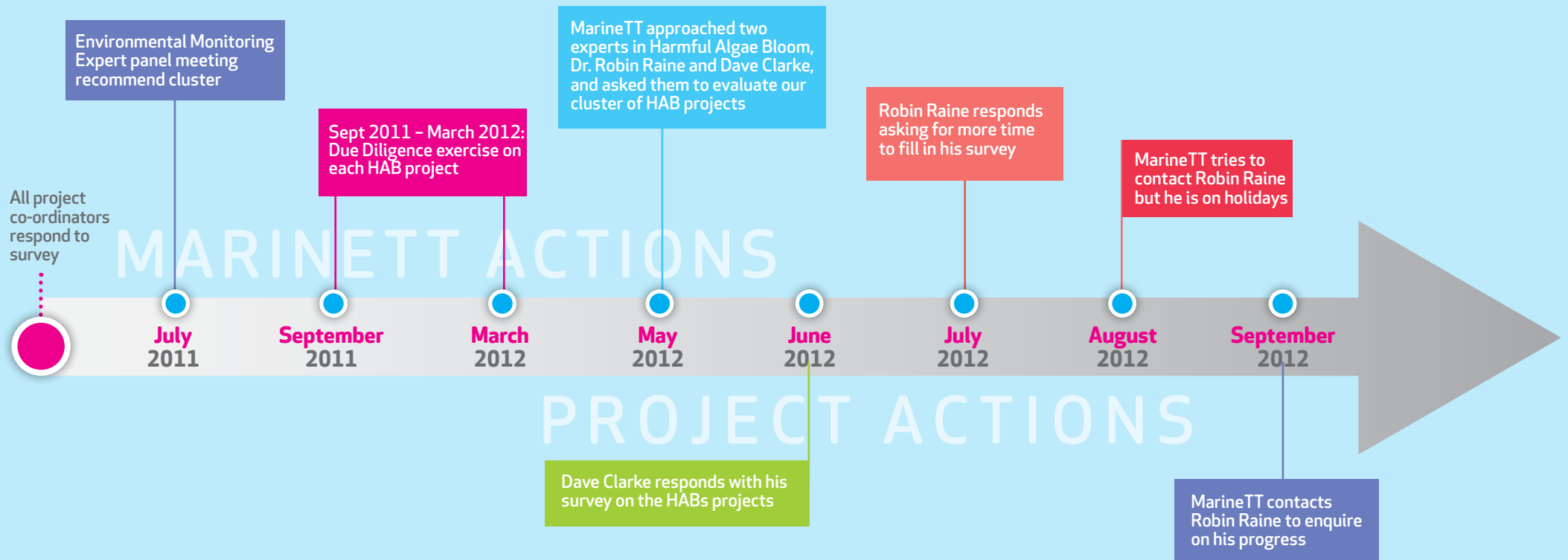
PROJECT PROFILE

Project Title:	Expressed Sequence Tag (EST) Analysis of Toxic Algae
Acronym:	ESTTAL
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 1,022 802 EU contribution: EUR 43,452
Timeline:	2004 – 2008
Project Coordinator:	Allen Cembella
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	ESTTAL project will yield new information on microalgal and cyanobacterial genomic sequences for a diversity of taxa and will assist in the diagnosis of genes related to toxin biosynthesis and the formation of toxic blooms.
Knowledge Outputs:	<ul style="list-style-type: none"> • New information on toxic genes in algae • New understanding of Algal bloom formation • New developments in Bloom prediction • Standardisation of approach to sequence data-base analysis of Harmful Algal Blooms

PROJECT PROFILE

Project Title:	Biosensors and Sensors for the industrial biosynthesis process of widely used commercial antioxidants: nutraceuticals as additives for food and aquaculture promoting public health and safety
Acronym:	SENSBIOSYN
Contract Type:	FP7 Research for SME's
Funding: Amount (Total/EU)	Total cost: EUR 1,305 760 EU contribution: EUR 945,860
Timeline:	2010 – 2012
Project Coordinator:	Basile Giovanni
Primary Case Study Contact:	Robin Raine, National University of Ireland, Galway
Short Description:	The purpose is to develop sensors and biosensors for on-line monitoring growth parameters of industrial bioprocesses for the production of algal biomass and antioxidant compounds such as Xanthophylls. This is a major challenge faced by microalgae companies today, especially in the production of natural carotenoids in comparison with the relatively cheap synthetic analogues. SENSBIOSYN intends to offer a solution to the lack of existing devices able to provide online rapid automatic and reliable information on active compounds accumulation profile and efficacy during their biosynthesis.
Knowledge Outputs:	<ul style="list-style-type: none"> • Develop sensors and biosensors for on-line monitoring growth parameters of algal biomass and their bioactive compounds produced by large scale systems, with a particular focus on the natural synthesis of antioxidant xanthophylls. • Develop an optical sensor to measure the fluorescence emitted by chlorophyll inside the Haematococcus pluvialis cells in culture medium. • Develop an optical sensor to measure the density of the Haematococcus pluvialis cells culture medium through a light transmission measurement. • Develop an electrochemical biosensor to measure the antioxidant potential of astaxanthin by measuring the amperometric current generated by stabilised Phosphatidylcholine derivatives bound to magnetic nano-particles. • Develop an electrochemical biosensor to measure the astaxanthin concentration by measuring the output current of a NanowireFET. • Use as sensing mediator engineered Photosystem II complex extracted from the algae Chlamydomonas reinhardtii.

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Barrier to Innovation

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KNOWLEDGE OUTPUT 1:

EXPERT EVALUATION OF HABs RELATED PROJECTS

Expert evaluation of a combination of HABs related projects highlighting innovative aspects, overlaps and best practice efforts

Innovative aspect: :Expert review of current efforts into the HABs community

End-User: HABs Community

Application: Inform state of the art and provide transparency and access to past research results within the Harmful Algae Bloom sector.

POTENTIAL BARRIERS TO UPTAKE BY END USER AS IDENTIFIED BY MARINETT:

MarineTT has identified step 4 as being the main barrier affecting the uptake of the CLUSTER KO 1:4 for Harmful Algae Bloom (HAB) projects seek external advice/feedback. This could affect the individual and combined impact of the HAB projects by:

- Lack of awareness of the novel aspects of the most current HABs projects or of how potentially the combination of efforts could bring the HABs research further

I. END USERS IDENTIFIED BY MARINETT

- National Reference Laboratories
- IOC
- AlgaeL Networks
- DiatomL Networks

MARINETT RECOMMENDED TAILORED TRANSFER

During due diligence and taking into account feedback received from external experts, MarineTT decided to combine the four high potential HABs related projects with other similar projects for maximum impact. After investigating the value chain surrounding HAB research, MarineTT realised that there was a lack of awareness of the overall picture regarding the results of HAB research. MarineTT decided to Cluster HAB related projects and survey well known HAB experts to gain an in depth and comprehensive overview of the different project results.

At the time of writing, MarineTT are awaiting the finalised survey to be returned by one of the experts. When MarineTT has collated all the results we will inform the identified End-Users as to the availability of this new knowledge.

- MarineTT identified 79 End-Users

EXPECTED IMPACT

- Short-term impact will be measured by the number of interested responses and by the number of downloads when MarineTT makes the information available.
- The predicted long term Impact of raising awareness of the availability of this overview on current and past efforts in Harmful Algae Bloom research should allow for greater transparency and accessibility of results for the HABs community. It should influence future HAB-related research by providing knowledge of possible gaps in the current research agenda, as well as of the availability of prior knowledge that could inform the start of new research.

KEY OBSERVATIONS FROM THE HABs CLUSTER

Supporting information that validates the effort put into the project:

The MarineTT Collection phase identified 11 projects within the field of Harmful Algae Bloom research. Three of these projects were identified as high potential by the Environmental Monitoring expert panel – Midtal, Seed and Habit. It was recommended by the experts to transfer the related outputs of these projects together with other similar research results for maximum impact and to highlight any overlaps or duplication of efforts.

Transfer within each project:

Each project disseminated their own findings within the timeframes of their research lifecycle.

Annex 1 List of Questions:

- a) In your opinion, is the above list of outputs representative of the project? If you believe there are other outputs, please give details.
- b) In your opinion, are the project outputs functional and operational? Please explain.
- c) In your opinion, do the project outputs address a need? Please explain.
- d) In your opinion, are the project outputs novel (progress beyond state of the art)? Please explain.
- e) Do you think the project outputs are still relevant / up to date? Please explain.
- f) Do you think the outputs are ready for use, or are more steps needed before the outputs can be taken up, utilised and/or exploited? Please explain (e.g. Where more steps are needed for example; need to upgrade/replace equipment, need specific training to use, need to commercialise first, etc)
- g) Where you think the project outputs are of good quality, relevant and address a need, who do you think could use them (end-user(s)) and how (what could be their application(s))? Try to be as specific as possible, more answers/options are possible. Examples could be Regulatory Authorities (which ones?), Monitoring agencies (which ones?), Environmental managers (which ones?), Industry (which ones?), Policy makers (which ones?), Scientific Community (which ones?), other (which ones?).
- h) In your opinion, do you think the Knowledge Transfer strategies used within the project have been the correct method for reaching the end-users? Could you identify other mediums/channels that would be more effective?
- i) Do you think the Project Outcome(s) would be useful for certain EU policy recommendations or implementations? Please give a short explanation beside any applicable policy. If different outputs apply to different policies then please indicate.
- j) In your opinion, where the project outputs are similar to the outputs produced by other HABs projects, what are the advantages/benefits of Midtal's results? What is its "unique selling point"?

CLUSTER PROJECT: FISHERIES PROJECTS

Four of the eight high potential fisheries projects, EMPAFISH, SAFMAMS, MARIFISH, and UNCOVER had outputs that could directly affect policy, however MarineTT decided to cluster them with projects whose research related to fisheries management tools and methodologies for maximum impact, DEEPFISHMAN, AFAME, COMMIT, CEVIS, FISHPOTRACE, ICES-FISHMAP, IMAGE, JAKFISH, MADE, GAP1, IBEFISH, DEGREE, NECESSITY, PROFET POLICY and PROTECT.

PROJECT PROFILE

Project Title:	European Marine Protected Areas as tools for fisheries management and conservation
Acronym:	EMPAFISH
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 3,056 808 EU contribution: EUR 2,399 965
Timeline:	2005 – 2008
Project Coordinator:	Angel Pérez-Ruzafa
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	This project aims at investigating the effectiveness of different schemes of Marine Protected Areas (MPAs) in preserving species, habitats and ecosystems from the effects of fishing, at developing quantitative methods to assess the effects of MPAs and at providing EU with a set of integrated measures and policy proposals for the implementation of MPAs as tools for the management of fisheries.
Knowledge Outputs:	<ul style="list-style-type: none"> • Economic Analysis of Marine Protected Areas (MPAs) Booklet • MPAs Effects Indicators and Experimental Designs • MPAs for Fisheries Management and Conservation Policy Guidelines • Ecological Effects of Marine Protected Areas (MPAs) Booklet • Fishery Regimes in Atlanto-Mediterranean European Marine Protected Areas (MPAs) Booklet • Marine reserves: fish life history and ecological traits matter • Effectiveness of European Atlanto-Mediterranean MPAs: Do they accomplish the expected effects on populations, communities and ecosystems? • Modelling spatial and temporal scales for spill-over and biomass exportation from MPAs and their potential for fisheries enhancement • Priorities for fisheries in marine protected area design and management: Implications for artisanal-type fisheries as found in southern Europe • Uses of ecosystem services provided by MPAs: How much do they impact the local economy? A southern Europe perspective • Bio-Economic Analysis of Marine Protected Areas (BEAMPA) Simulation Model • Marine reserves: size and age do matter

PROJECT PROFILE

Project Title:	Scientific Advice for Fisheries Management on Multiple Scales
Acronym:	SAFMAMS
Contract Type:	FP6 Specific Support Action
Funding: Amount (Total/EU)	Total cost: EUR 795,383 EU contribution: EUR 648,390
Timeline:	2005 – 2008
Project Coordinator:	Doug Wilson
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	SAFMAMS draws insights from existing research projects and management processes on the most useful forms of scientific advice for marine environmental management and then communicates those insights to scientists and decision makers. The product will be an outline of the various forms that such advice can take and a description of the circumstances under which these various forms are the most useful and cost effective.
Knowledge Outputs:	<p>Report on the Roles of Science in Co-operative Fisheries Management</p> <p>Report on Science and Stakeholder Involvement in Production of Management Advice</p> <p>Report on Scientific Advice and International Management Regimes</p> <p>Best practices for Provision of Scientific Advice at the Shared Sea Level</p> <p>Catalogue of Marine Environmental Management Efforts in Northern Europe</p> <p>Book on the Paradoxes of Transparency: Scientific Institutions and the Ecosystem Approach to Fisheries Management in Europe</p> <p>Best Practice for Provision of Scientific Advice to Sub-national Fisheries</p> <p>Participatory modelling: Developing a long term management plan for Western Horse Mackerel within the Pelagic Regional Advisory Councils</p> <p>Best Practices for Provision of Scientific Advice at the European Community Level</p> <p>Policy Brief on Forms of Fisheries Management Advice</p> <p>Policy Brief on Forms of Practical Scientific Advice for Marine Environmental Management</p>

PROJECT PROFILE

Project Title:	Coordination of European Marine Fisheries Research Programmes
Acronym:	MARIFISH
Contract Type:	FP6 Coordination Action
Funding: Amount (Total/EU)	Total cost: EUR 2,977 069 EU contribution: EUR 2,977 069
Timeline:	2006 – 2011
Project Coordinator:	John Lock, Defra, UK.
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	The objectives of MariFISH are to develop a network of major European funding organisations for fisheries research in order to exchange information on national research programs (content, management, funding, evaluation), to link and influence existing coordination and collaborative systems, to encourage coordination of research activities, and to identify and facilitate joint funding of strategic long term research programs.
Knowledge Outputs:	<ul style="list-style-type: none"> • Communication between research managers and scientists • Knowledge management in fisheries science and policy • Data-base on socio-economic research papers related to fisheries • Research projects and programmes databases • Collaborative programmes on planned or existing national research projects to achieve broader and more significant results • Joint call and funding: Operational Fisheries management indicators

PROJECT PROFILE

Project Title:	Understanding the Mechanisms of Stock Recovery
Acronym:	UNCOVER
Contract Type:	FP6: Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 5,738 371 EU contribution: EUR 3,699 225
Timeline:	2006 – 2010
Project Coordinator:	Cornelius Hammer
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	The purpose of UNCOVER is to develop recovery strategies for EU fish stocks which are outside of safe biological limits.
Knowledge Outputs:	<ul style="list-style-type: none">• Policy Implementation Plan (PIP) for the recovery of EU fish Stocks which are outside of safe biological limits• State of the Art of the mechanisms of fish stock recovery• Database of reports/documents which deal with the biological, environmental, technical and socio-economic factors of stock recovery• Peer reviewed scientific papers (138 published and 34 in Press)



CLUSTER PROJECT: FISHERIES PROJECTS

Four of the eight high potential fisheries projects, EMPAFISH, SAFMAMS, MARIFISH, and UNCOVER had outputs that could directly affect policy, however MarineTT decided to cluster them with projects whose research related to fisheries management tools and methodologies for maximum impact, DEEPFISHMAN, AFRAME, COMMIT, CEVIS, FISHPOPTRECE, ICES-FISHMAP, IMAGE, GAP1 and IBEFISH.

PROJECT PROFILE

Project Title:	Management and monitoring of deep-sea fisheries and stocks
Acronym:	DEEPFISHMAN
Contract Type:	FP7 – KBBE
Funding: Amount (Total/EU)	Total cost: EUR 3,765 139 EU contribution: EUR 2,924 156
Timeline:	2009 – 2012
Project Coordinator:	Pascal Lorance (pascal.lorance@ifremer.fr)
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	DEEPFISHMAN will develop a range of strategy options for the management of deepwater fisheries in the NE Atlantic that will take account of these factors. Firstly, the aim will be to identify new and more effective assessment methods, reference points, control rules and management strategies to be used in the short term, making better use of available data. Secondly, a reliable long-term framework will be developed for which additional data needs will be specified in order to fill current information gaps to achieve reliable long-term management requirements. This work will be developed by examining a range of case studies selected to reflect the different types of deepwater fishery found in the NE Atlantic.
Knowledge Outputs:	<ul style="list-style-type: none"> • Standardising Blue ling landings per unit effort from industry haul-by-haul data using Generalised Additive Models (GAM) • History of the Red sea bream stock depletion in the Bay of Biscay • Case study report of the history, fishery, biology, biodiversity, stock assessment and management • Report on the management and monitoring of deep water fisheries in different parts of the world • Socio-economics of deep water fisheries: case studies • Review of stock assessment methods, reference points and Harvest Control Rules • Analyses of Biodiversity of deep water fish and invertebrates • Guidelines for the management and monitoring framework for deep sea fisheries • Using qualitative and quantitative stakeholder knowledge: examples from European deep-water fisheries • Effect of discards on roundnose grenadier stock assessment in the Northeast Atlantic

PROJECT PROFILE

Project Title:	A framework for Fleet and Area Based Fisheries Management
Acronym:	AFRAME
Contract Type:	FP6: Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 2,327 018 EU contribution: EUR 1,315 285
Timeline:	2007 – 2009
Project Coordinator:	Marina Santurtún Mazquiarán
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	The chief objective of AFRAME is to develop a framework for fleet and area-based fisheries management. The project has three research themes: 1, the development and testing of a framework for describing fleet activity in terms of the fisheries in which the fleet participates, and how it allocates its effort across these fisheries; 2, the development of indicator approaches to summarising information and presenting advice in relation to multi-fleet, multi-species fisheries; and 3, stakeholder perceptions and institutional implications of a shift to fleet and area based management.
Knowledge Outputs:	<ul style="list-style-type: none"> • Fcube: an integrated framework for reconciling single species management objectives and avoiding over quota catches. The objective is to give a management advice for mix fisheries. • Application of the Fcube Framework for fleet and fisheries management in the Mediterranean Sea, the North sea, and the western waters • AFRAME Policy Implementation Plan

PROJECT PROFILE

Project Title:	Creation of multi-annual management plans for commitment
Acronym:	COMMIT
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 2,421 185 EU contribution: EUR 1,407 498
Timeline:	2004 – 2007
Project Coordinator:	Laurence Kell
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	COMMIT aims to improve the scientific basis for the long-term sustainable planning of fishery management, while identifying any short-term biological and socio-economic consequences.
Knowledge Outputs:	<ul style="list-style-type: none"> • Implications of biological, economic and social policy drivers in management for fish and fisheries • Presentation on the FLR framework (Fisheries Library for R statistical language) as a development effort directed towards the evaluation of fisheries management strategies. • Non-compliance and fisheries policy formulation -the knowledge base for fisheries management • Negotiation framework for Baltic fisheries management: striking the balance of interest

PROJECT PROFILE

Project Title:	Comparative Evaluations and Innovative Solutions in European Fisheries Management
Acronym:	CEVIS
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 5,317 496 EU contribution: EUR 3,008 477
Timeline:	2005 – 2008
Project Coordinator:	Michael Kotterman
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	This project aims to develop and validate reliable and cost-effective methods for the control of lipophilic toxins that can replace the animal tests.
Knowledge Outputs:	<ul style="list-style-type: none">• Development of an Innovation Evaluation Framework with the aim of determining how science can help evaluate fisheries policy changes• Case study review of Innovative Fishing Management• Policy implementation plan

PROJECT PROFILE

Project Title:	Fish Population Structure and Traceability
Acronym:	FISHPOPTTRACE
Contract Type:	FP7 Small or Medium scale focused research project
Funding: Amount (Total/EU)	Total cost: EUR 3,897 418 EU contribution: EUR 2,949 984
Timeline:	2008 – 2011
Project Coordinator:	Gary R. Carvalho, Bangor University, UK.
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	<p>FishPopTrace brings together expertise in fish traceability projects (Fish and Chips, FishTrace, FISH-BOL) to:</p> <ul style="list-style-type: none"> - Integrate data from European fish species traceability projects, and to generate a single compatible database and tissue archive managed by the Joint Research Centre of the European Commission. - Examine single nucleotide polymorphisms (SNPs) and otolith microchemistry and morphometrics in widely distributed populations of cod, hake, herring and sole. Outputs will comprise population-level signatures associated with fish origins in early life and representative spawning groups. - Undertake validation of traceability tools in relation to end-user technology. - Develop a population monitoring system based on genetic and otolith data that will assess population stability in a temporal and spatial framework
Knowledge Outputs:	<ul style="list-style-type: none"> • Development of tools for tracing fish stocks from “fish to fork” • Integration of new and existing technologies to assist in fisheries management and conservation • Policy recommendations on the traceability and management of fish stocks

PROJECT PROFILE

Project Title:	Update and revision of the ICES Atlas of North Sea fishes: a web-based application
Acronym:	ICES-FISHMAP
Contract Type:	FP6 Specific Support Action
Funding: Amount (Total/EU)	Total cost: EUR 167,632 EU contribution: EUR 99,968
Timeline:	2004 – 2005
Project Coordinator:	Henk J.L. Heessen, RIVO, The Netherlands
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	ICES-FishMap is the first phase of a potential two-phase programme. This first phase will update and publish on-line the existing Atlas of North Sea Fishes: maps showing (seasonal) distributions, changes in abundance over the past decades, etc.
Knowledge Outputs:	<ul style="list-style-type: none">• Web based interactive atlas of the North Sea fishes

PROJECT PROFILE

Project Title:	Indicators for Fisheries Management in Europe
Acronym:	IMAGE
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 1,745 400 EU contribution: EUR 1,000 000
Timeline:	2006 – 2009
Project Coordinator:	Piet Gerjan
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	The project 'Indicators for fisheries MAnaGement in Europe' (IMAGE) seeks to develop an operational framework of candidate indicators to support ecosystem-based fisheries management, to elaborate these indicators into comprehensive dashboards to support management decision making, to develop methodology to integrate this information into tools supporting the decision making process, to develop a framework that can evaluate management strategies based on indicators, and to test their applicability in regional case studies, taking into account the diversity of the fishery systems in Europe.
Knowledge Outputs:	<ul style="list-style-type: none">• An operational framework of candidate indicators to support ecosystem based fisheries management.• Publications on the operational framework of candidate indicators

PROJECT PROFILE

Project Title:	Judgement and knowledge in fisheries involving stakeholders
Acronym:	JAKFISH
Contract Type:	FP7 KBBE small or medium scale focused research project
Funding: Amount (Total/EU)	Total cost: EUR 3,645 771 EU contribution: EUR 2,775 876
Timeline:	2008 –2011
Project Coordinator:	Martin Pastoors, DLO, The Netherlands.
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	The project will investigate how different actors in the marine sector, including fisheries, make use of scientific knowledge, how the roles that scientists play help formulate policies and how governance approaches can be developed which enable policy decisions to address uncertainty and complexity based on research and with the participation of stakeholders. The project will collect and build on experiences from a diverse range of EU policy areas which address interactions between human activities and nature.
Knowledge Outputs:	<ul style="list-style-type: none"> • Conceptual reflections on participation in the governance of fisheries and recent EU level reforms for strengthened stakeholder involvement • Literature review of recent studies of participation modelling in fisheries management. Examples used can motivate policy makers to involves stakeholders in management decisions in a transparent way • Literature review of recent studies of participation modelling in natural resource management - forestry management and water resources/river basin management. • Alternative tools to address uncertainty in science for fisheries • Assessment of handling of uncertainty from a quantitative and qualitative perspective • Workshop reports and evaluation of case studies management strategy evaluation • Report on Baltic study on the use of scientific information in the past

PROJECT PROFILE

Project Title:	Mitigating adverse ecological impacts of open ocean fisheries
Acronym:	MADE
Contract Type:	FP7 KBBE small or medium scale focused research project
Funding: Amount (Total/EU)	Total cost: EUR 4,703 742 EU contribution: EUR 2,978 200
Timeline:	2008 – 2012
Project Coordinator:	Laurent Dagorn
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	The European open ocean tropical and Mediterranean pelagic fishery (Spain, France, Portugal, Italy, Greece) is one of the main sources of catch, income and employment for the European fishery, with interactions with many developing countries. The main objective of the project is to develop measures to mitigate adverse impacts of fisheries targeting large pelagic fish in the open ocean: purse seiners using FADs and longliners.
Knowledge Outputs:	<ul style="list-style-type: none"> • Methods to reduce by catch of pelagic sharks and juvenile swordfish by pelagic longliners • Guide for best fishing practices in purse seine fisheries Methods to reduce by catch of using fish aggregating devices (FADs). Research will pelagic sharks and turtles by purse also gather improved information on the behavioural seiners ecology of pelagic sharks in purse seine fisheries • Impacts of Fish Aggregating Devices (FADs) on the biology and ecology of pelagic fish

PROJECT PROFILE

Project Title:	Bridging the gap between science and stakeholders: phase I common ground
Acronym:	GAP1
Contract Type:	FP7 Support Action
Funding: Amount (Total/EU)	Total cost: EUR 795,383 EU contribution: EUR 648,390
Timeline:	2008 – 2009
Project Coordinator:	Sue Bramford, CEFAS, UK.
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	By encouraging cooperative research on challenges of human impact on the marine environment, GAP1 supports the development of innovative fisheries management in Europe. Both science and industry partners of GAP1 are committed to building the capacity to collaborate in participatory research. They will share their experiences and work together to develop fisheries research case studies. GAP1 case studies will form the basis of plans for future participatory research activities. GAP1 will explore how the knowledge and skills of science and industry partners can be combined to enhance the understanding and management of fisheries. GAP1 is the first of a planned 3-phase programme.
Knowledge Outputs:	<ul style="list-style-type: none"> • Good Practice Guide to Participatory Research between fisheries stakeholders and scientists • Portfolio of participatory research case study proposals • Code of conduct for initiating participatory research in fisheries science

PROJECT PROFILE

Project Title:	Interaction between Environment and Fisheries – a Challenge to Management
Acronym:	IBEFISH
Contract Type:	FP6 Specific Support Action
Funding: Amount (Total/EU)	Total cost: EUR 197,106 EU contribution: EUR 167,991
Timeline:	2006 – 2007
Project Coordinator:	Riku Varjopuro
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	The IBEFish has two objectives: 1) to share the results and theoretical understandings gained in past projects with regard to the ecosystem approach in fisheries management with a special focus on the role of participation in integrated management of the interaction between environment and fisheries; and 2) to make practical recommendations for improving fisheries management towards an ecosystem-based approach especially emphasising the need for an enhanced knowledge-base, legitimacy and trust-building in the management.
Knowledge Outputs:	<ul style="list-style-type: none"> • A review of past ecosystem fisheries management projects and stakeholder participation in the process • A policy brief on stakeholder participation in ecosystem based approaches to fisheries management



PROJECT PROFILE

Project Title:	Development of fishing gears with reduced effects on the environment
Acronym:	DEGREE
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 197,106 EU contribution: EUR 167,991
Timeline:	2006 – 2007
Project Coordinator:	Bob Van Marlen, RIVO, The Netherlands
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	Degree aims: to develop new gears/fishing techniques that have a lower impact on benthic habitats; to quantify the potential reduction of the physical impact as well as the negative effects on benthic communities; to weigh the socio-economic consequences of these changes.
Knowledge Outputs:	<ul style="list-style-type: none"> • MAFCONS model -Physical mathematical model to calculate effect of gear components on a sediment • Model to calculate effect of gear and gear components on benthic invertebrates • New otter trawl design with less impact on sea bed • New design of beam trawl with less impact on sea bed e.g. pulse trawl • Improved oyster dredge design with improved selectivity and reduced impact on sea bed • Ecosystem effects of new gear designs • Economy of new gear designs • Definition of selective beam trawl with tested potential to reduce environmental impact and to improve public image of the fishery • Jumper door concept • Optimised door

PROJECT PROFILE

Project Title:	Nephrops and Cetacean species selection information and technology
Acronym:	NECESSITY
Contract Type:	FP6 Specific Targeted Research Project
Funding: Amount (Total/EU)	Total cost: EUR 2,977 069 EU contribution: EUR 2,977 069
Timeline:	2004 – 2007
Project Coordinator:	Dr. Bob van Marlen, RIVO, The Netherlands
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	Twenty-three institutes propose to work together in two Task Groups, i.e. Nephrops and cetaceans to develop alternative gear modifications and fishing tactics in collaboration with the fishing industry to reduce by-catches in the relevant Nephrops and pelagic fisheries, without reducing the catch of target species significantly
Knowledge Outputs:	<ul style="list-style-type: none"> • Technical bottom trawl drawings developed and catch comparison data of square-mesh codend and larger codends, Codend Technical specifications: drawings and technical plans (dimension, joining ratio, netting materials). • Evaluation of the differential impacts of the otter-trawling fishery and the trap fishery on the population of Norway lobster, <i>Nephrops norvegicus</i>, in the Adriatic Sea.

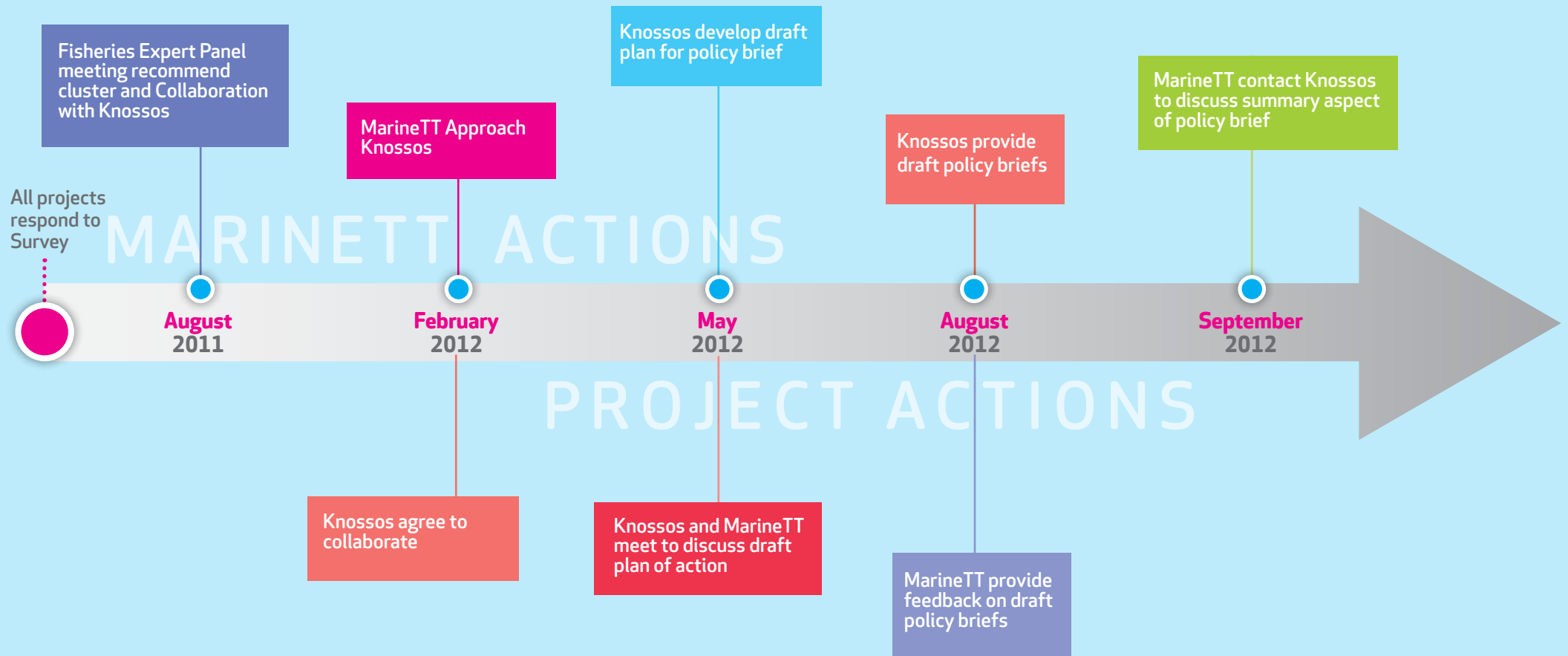
PROJECT PROFILE

Project Title:	A European Platform for the Communication of European RTD results to Stakeholders in Fisheries and Aquaculture
Acronym:	PROFET POLICY
Contract Type:	FP6 Specific Support Action
Funding: Amount (Total/EU)	Total cost: EUR 855,966 EU contribution: EUR 764,144
Timeline:	2005 – 2008
Project Coordinator:	Courtney Hough
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	PROFET Policy proposes to build a platform for the communication and dissemination of the results of EU-funded research projects, in fisheries and aquaculture, of the 5th and 6th Framework Research Programmes. Use of modern communication tools will be used to facilitate the flow of information of policy-relevant results to a wide-range of stakeholders, using primarily a web-based structure for the publishing of Technical Leaflets. Seminars will be organised on a thematic and regional basis, covering fisheries and aquaculture, which will focus on promoting an exchange of views between aquaculture producers, fishers, scientists, National and European policy-makers and other stakeholders. Core elements of the seminars will be the presentation of results and discussion of the RTD needs of each sector so as to recommend clear guidelines and topics for future European Union Research Programmes.
Knowledge Outputs:	<ul style="list-style-type: none"> • Technical Leaflet Summary- from FP6 and FP7 fisheries and aquaculture projects • Regional Workshops held in Vigo, Treviso, Copenhagen, Marseille, Warsaw, Athens, Dublin, Vilnius, Bergen to inform Industry of aquaculture research • Project Website

PROJECT PROFILE

Project Title:	Marine protected areas as a tool for ecosystem conservation and fisheries management
Acronym:	PROTECT
Contract Type:	FP6 Specific Targeted Innovation Project
Funding: Amount (Total/EU)	Total cost: EUR 3 0 EU62,329 contribution: EUR 2,000 000
Timeline:	2005 – 2008
Project Coordinator:	Erik Hoffman Denmark
Primary Case Study Contact:	Stephanie Newman, Policy Analyst, Knossos
Short Description:	PROTECT seeks to provide European policy-makers with improved tools for the identification, design and management of Marine Protected Areas.
Knowledge Outputs:	<ul style="list-style-type: none">• Marine Protected Areas (MPAs) Review and Gap Analysis• MPAs Development Tools

TIMELINE



STEPS IN THE RESEARCH VALUE CHAIN – FROM GENERATION TO IMPACT

STEP 1 CONFIRM ACCURACY OF KOT

STEP 2 CO-ORDINATOR WILLING TO COLLABORATE

STEP 3 CLARIFY IP

STEP 4 SEEK EXTERNAL ADVICE/FEEDBACK

STEP 5 CONFIRM END USER (S)

STEP 6 ASSESS MARKET

STEP 7 UNDERSTAND END USER CAPACITY AND MOTIVATION FOR UPTAKE

STEP 8 CONFIRM MEDIUM FOR END-USER UPTAKE

STEP 9 CONFIRM METHOD FOR END-USER UPTAKE

STEP 10 TAILORED KNOWLEDGE TRANSFER

STEP 11 MEASURE SHORT TERM IMPACT

STEP 12 LONG TERM IMPACT



Beginning again from the start, the additional steps in the Research Value Chain that MarineTT was able to achieve using its methodology

Barrier to Innovation

Stages in the MarineTT methodology:

1. Due Diligence (Steps 1-6)
2. Transfer (Steps 7-10)
3. Impact (Steps 11-12)

KNOWLEDGE OUTPUT 1:

POLICY BRIEFS TO INFORM FISHERIES POLICY MAKERS

Policy Briefs to inform Fisheries policy makers

Main Briefing Advancing Ecosystem based fisheries management, supporting briefing 1 Stakeholder participation and Supporting briefing 2 Developing sustainable fishing gears and practice.

Innovative aspect: Policy brief based on the results of current efforts into Fisheries

End-User: Policy makers involved in fisheries and the Marine

Application: Inform state of the art and provide transparency and access to past research results within the Fisheries and Marine sector.

POTENTIAL BARRIERS TO UPTAKE BY END USER AS IDENTIFIED BY MARINETT:

MarineTT has identified step 4 as being the main barrier affecting the uptake of the CLUSTER for Fisheries Projects: Seek external advice/feedback. This could affect the individual and combined impact on policy within the fisheries sector by:

- Lack of awareness of the novel aspects of the most current Fisheries projects in relation to each other or of how potentially the combination of efforts could inform policy makers and enable them to make informed decisions

I. END USERS IDENTIFIED BY MARINETT

- Policy Makers in the Fisheries sector

MARINETT RECOMMENDED TAILORED TRANSFER:

During due diligence and taking into account feedback received from external experts, MarineTT decided to combine the four high potential fisheries related projects with other similar projects for maximum impact. The high potential projects, GAP1, SAFMAMS, MARIFISH and UNCOVER had outputs that could inform policy makers while the other similar projects included research in fisheries management methodologies and tools. MarineTT investigated the Policy value chain associated with Fisheries and gained an understanding of their capacity as well as their motivation. As a result, it was decided that the best medium for transfer would be to create a Policy brief based on the results of the Clustered fisheries projects. To this end, MarineTT approached KNOSSOS, Knowledge from Science to Societies (an FP7 Support Action), who agreed to co-produce a policy brief for Fisheries Management.

MarineTT and KNOSSOS worked together to produce one main policy brief document, "Advancing the Ecosystem Approach in Fisheries Management". In addition, two supporting briefs, "Stakeholder participation" and "Developing sustainable gears and practices" were produced.

These policy briefs will be sent to the European Commission for validation, KNOSSOS will print 500 copies for distribution at events and conferences, and the brief will be launched at the European Parliament and made available for download on the MarineTT websites. KNOSSOS will make use of Twitter online social media to inform their followers of the policy briefs.

EXPECTED IMPACT

In the short term, Impact measurement will be based on the number of downloads of the policy briefs from each website as well as the number of Policy makers who require more information.

- * MarineTT identified a series of multiplier organisations including Regional Advisory Councils (7) and Regional Fisheries Management Organisations (11) for transfer

In the long term, the intended impact will be that current and future policy needs will be developed based on accurate and available relevant knowledge.

The goal is to make European research results in the Fisheries sector not only understandable, but also easier to implement and a preferred reference point for all policy makers looking to make informed decisions.

KEY OBSERVATIONS FROM THE KNOSSOS FISHERIES CLUSTER PROJECT

Supporting information that validates the effort put into the project:

This briefing presents the main findings from selected research projects funded through the EC Research Framework Programmes related to advancing the Ecosystem Approach in fisheries management. The Ecosystem Approach focuses on understanding the relationship between human society and the ecosystems and ecosystem services that support it, and how this can inform management decisions at policy level.

Further Transfer

Once the policy briefs are finalised they will be sent to the European Commission for validation. Once validated, MarineTT in collaboration with Knossos, will arrange a launch date where all identified end-users will be specifically targeted to inform them of the knowledge available. It is planned to print 500 copies to be distributed at conferences as well as providing a link from both the MarineTT and the Knossos websites.

Understanding the need for Clustered Fisheries Policy Briefs:

The Ecosystem Approach has been a theme of research funded through the EU Research Framework Programmes for many years. Although it is infrequently the primary focus of research projects, it is a major theme running through the body of research in the marine and fisheries policy areas. As the new paradigm for marine resource management, it could be argued that almost all projects which aim to increase the sustainability of marine and fisheries activities, whether on a governance or technical level, fall with the Ecosystem Approach umbrella.

INDICATORS TO SUPPORT THE ECOSYSTEM APPROACH

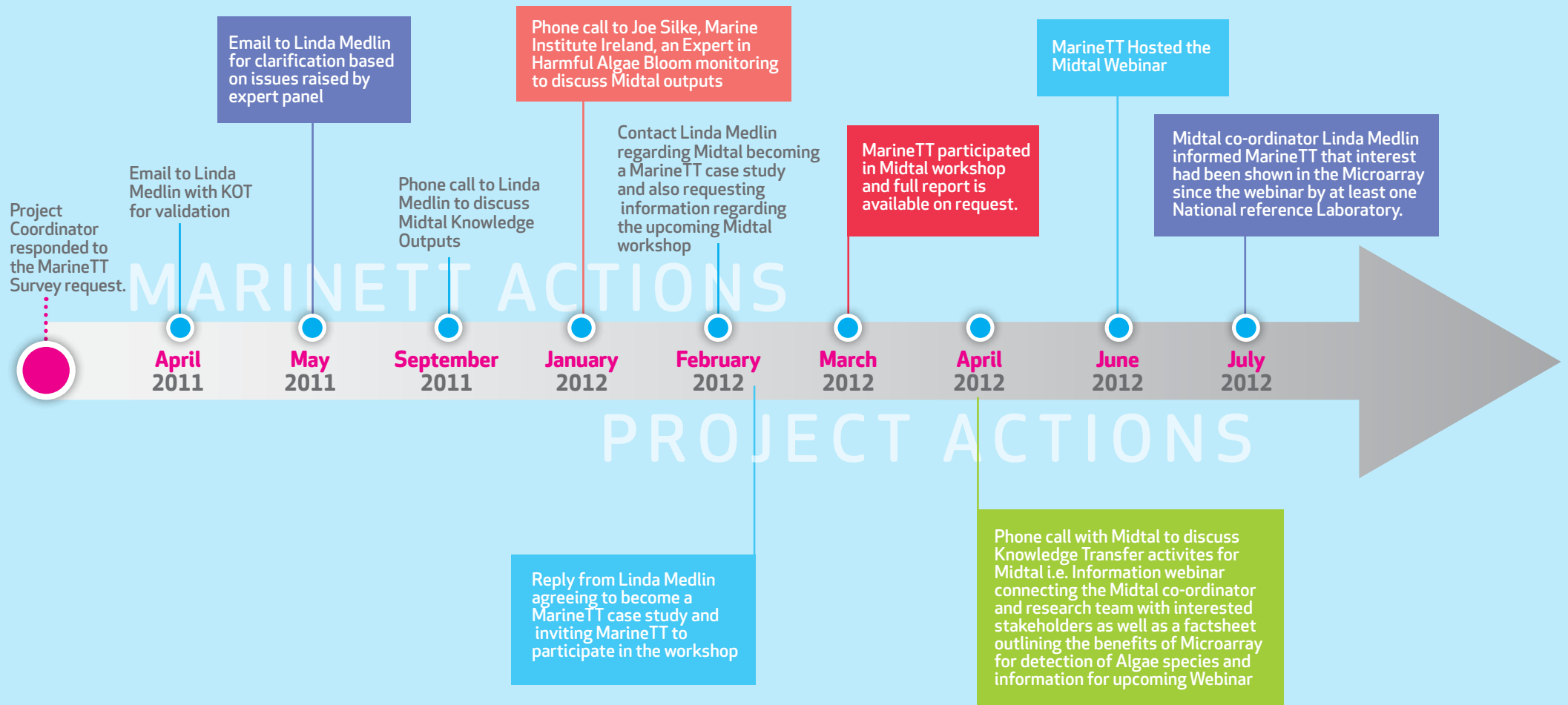
The Ecosystem Approach to fisheries requires that managers take into consideration a wide range of fisheries impacts when setting objectives. Attempts to meet these objectives will need to be supported by reliable scientific advice and effective management decision making. Because of the many dimensions and complexities of ecosystems and of human impacts it is impossible for all environmental and socio-economic variables to be monitored and assimilated, thus indicators are required to summarise the information of interest. Indeed, even if it were possible to monitor all variables, it would hardly be cost effective. Indicators can support the decision making process by:

1. Describing the state of the ecosystem, the pressures affecting the ecosystem, and the response of managers;
2. Tracking the progress towards meeting management objectives;
3. Communicating trends in complex impacts and management processes to a diverse audience of non-specialist stakeholders.

PROJECT PROFILE

Project Title:	Microarrays for the Detection of Toxic Algae
Acronym:	MIDTAL
Contract Type:	FP7: Coordination action
Funding: Amount (Total/EU)	Total cost: EUR 3,310 000 EU contribution: EUR 2,230 000
Timeline:	2009 - 2012
Project Coordinator:	Linda Medlin, Marine Biological Association
Primary Case Study Contact:	Linda Medlin (lkm@mba.co.uk)
Short Description:	Microalgae in marine and brackish waters of Europe regularly cause harmful effects, considered from the human perspective, in that they threaten public health and cause economic damage to fisheries and tourism. Cyanobacteria cause similar problems in freshwaters. These episodes encompass a broad range of phenomena collectively referred to as «harmful algal blooms» (HABs). They include discoloration of waters by mass occurrences of microalgae (true algal blooms that may or may not be «harmful») to toxin-producing species that may be harmful even in low cell concentrations. The objective of MIDTAL is to design microarrays for the detection of toxic algae and their toxins.
Knowledge Outputs:	<ul style="list-style-type: none"> • Microarray for the detection of toxic algae species • Manual for the use of Microarray for the detection of Toxic Algae including best practice RNA extraction technique • Microarray for the detection of Algae toxins • Biosensor for the analysis of the Microarray for detection of Algae toxins

TIMELINE



STEPS IN THE RESEARCH VALUE CHAIN – FROM GENERATION TO IMPACT

STEP 1 CONFIRM ACCURACY OF KOT

STEP 2 CO-ORDINATOR WILLING TO COLLABORATE

STEP 3 CLARIFY IP

STEP 4 SEEK EXTERNAL ADVICE/FEEDBACK

STEP 5 CONFIRM END USER (S)

STEP 6 ASSESS MARKET

STEP 7 UNDERSTAND END USER CAPACITY AND MOTIVATION FOR UPTAKE

STEP 8 CONFIRM MEDIUM FOR END-USER UPTAKE

STEP 9 CONFIRM METHOD FOR END-USER UPTAKE

STEP 10 TAILORED KNOWLEDGE TRANSFER

STEP 11 MEASURE SHORT TERM IMPACT

STEP 12 LONG TERM IMPACT



Beginning again from the start, the additional steps in the Research Value Chain that MarineTT was able to achieve using its methodology

Barrier to Innovation

Stages in the MarineTT methodology:

1. Due Diligence (Steps 1-6)
2. Transfer (Steps 7-10)
3. Impact (Steps 11-12)

KNOWLEDGE OUTPUT 1:

MICROARRAY FOR THE DETECTION OF ALGAE SPECIES

Slide contains two microarrays with 160 probes each. Each probe is made up of at most 25 nucleotides corresponding to the rRNA of specific HAB producing organisms (Family, Genus, Species).

Innovative aspect: : It can test for multiple species faster, cheaper and with less likelihood of false positives than current methods of testing.

End-User: National Reference Laboratories

Application: Upgrading to the Midtal Microarray for better value and quicker results.

POTENTIAL BARRIERS TO UPTAKE BY END USER AS IDENTIFIED BY MARINETT:

MarineTT has identified step 5 as being the main barrier affecting the uptake of the Codlight-tech

KO 1: 5. Confirm End User. This may have lead to the following issues affecting the success of the Microarray for detection of Algae species.

- Lack of awareness of the availability of the Microarray for detection of Hab species
- Lack of awareness of the novel aspects of the Microarray, specifically its ability to test for multiple species including Genus and family traits within a shorter period than current testing methods

I. END USERS IDENTIFIED BY MARINETT

- National reference Laboratories across Europe
- Multipliers:
 - a) IOC
 - b) AlgaeL
 - c) DiatomL

MARINETT RECOMMENDED TAILORED TRANSFER:

During due diligence and taking into account feedback received from external experts, MarineTT gained an understanding of the capacity and motivation of the identified End Users for Midtal. As a result, it was decided that the best medium for transfer would be to create a Factsheet of the Midtal results and to host an information webinar. The factsheet outlined the major benefits of the main Midtal output, the Microarray for detection of HABs species, as well as details of the upcoming webinar which was hosted by MarineTT.

By developing the informative factsheet and hosting the webinar, MarineTT were able to provide End Users with information on Midtal. The Webinar was interactive and was accessible by End Users across Europe in a cost effective way. The Webinar was also chosen as it could be recorded live and this link was distributed to all end users and placed on the MarineTT website.

The Factsheet was sent to the 79 identified End Users, and the Webinar invitation sent to an additional 31 potential users, giving a total of 110 invitations.

There were 9 participants involved in the Webinar and there have been 64 downloads of the Webinar recording.

EXPECTED IMPACT

- In the short term, MarineTT was able to measure impact by assessing the level of interest shown in the Microarray after the factsheet had been distributed and also by the level of interest in both the webinar and its recording.
 - There were 110 identified end-users invited to participate in the webinar.
 - Surprisingly there were only 9 attendees for the webinar, however after checking it was discovered that the email invitation was not received by the majority of the invited participants. The opportunity to download the webinar was then offered with 64 views so far.
- Long term Impact measurement would be the increase in interest in the Microarray and its adoption as a validated method for monitoring toxins. It is envisaged that National and Regional monitoring agencies would incorporate the Microarray and the Molecular

KEY OBSERVATIONS FROM THE MIDTAL PROJECT

Supporting information that validates the effort put into the project:

Midtal provided new rapid tools for the identification of toxic algae and their toxins so that monitoring protocols can comply with ECC directive 91/1491/CEE and reduce the need for the mouse bioassay. Microarrays are the state of the art technology in molecular biology for the processing of bulk samples for detection of target RNA/DNA sequences in toxic Algae.

Transfer within the project:

Midtal held a participatory final workshop showcasing the results of the Midtal project, specifically the microarray for detection of species of toxic algae and the microarray for the detection of toxins as well as the best practice techniques for RNA extraction that is recommended and detailed within the participants handbook. This workshop however was aimed at students and researchers in toxic Algae and only two national monitoring agencies were represented.

Annex 1:

- Link to Midtal Webinar: <http://www.marinett.eu/workplan/wp5/midtal/>

List of Identified End-Users:

National Monitoring agencies: 18 countries

IOC- Intergovernmental Oceanographic Commission of UNESCO- Harmful Algae Bloom Programme: 7 experts within steering group and scientific working groups

AOAC- Association of Analytical Chemists- Toxic Algae Group: 35 contacts

Conclusion

Knowledge Transfer is not a 'one size fits all' process and transfer plans must be individual to each Knowledge Output. In order to ensure that the maximum benefit (societal, environmental and economic) is derived from research investment, Best Practice on Knowledge Transfer must be undertaken. Knowledge Transfer should not be seen as the end/closing out practice of a project. If Knowledge Transfer is to be effective it must be considered from the beginning of the research and adapted as the research progresses.

External Experts with an understanding of state-of-the-art were an important element of the MarineTT methodology. Their review of Knowledge Outputs was essential in broadened the scope of the transfer potential of the knowledge to include other users and in addressing the specific end user and their capacity and motivation to receive the knowledge and utilise it.

The execution and completion of the MarineTT project has provided considerable insights in the way knowledge is currently managed and transferred. Issues of quantity and quality of Knowledge Outputs recorded significantly affected the direction of project time and resources. A formal EU wide Knowledge Output capture initiative would greatly increase the accessibility to Knowledge with a likely increase in the uptake of Knowledge. Tools developed during MarineTT including the Knowledge Output Table could assist in harmonising the collection of Knowledge. This would allow for additional time to be devoted to the more complex Knowledge Analysis and Knowledge Transfer aspects of the MarineTT methodology.

Targeted Knowledge Transfer is a complex process and requires considerable investment of resources to ensure the correct message and medium for transfer is chosen. During the course of the knowledge collection and knowledge analysis phase of MarineTT it became apparent that further investigation of the knowledge outputs was required before transfer could be conducted. This investigation became a critical Due Diligence phase which assessed the outputs of the high-potential knowledge outputs. The Key Elements in the Due Diligence phase include:

1. Verify all final "**Knowledge Output**" details
2. Determine **willingness** of KO owner & other beneficiaries to help in Knowledge Transfer
3. Clarify **Intellectual Property** rights (IP)
4. Confirm "**Primary End User(s)**" and assess capacity for uptake
5. Identify suitable **Transfer Methodology**; technical level, medium, channel
6. Classify if knowledge can be **clustered** or is stand-alone for transfer

Considerable effort and time was needed to complete Due Diligence for all 47 projects with high-potential to impact end users. Once Due Diligence was complete a decision to proceed to Case Study was taken by the MarineTT team. As a result the time devoted to conduct Due Diligence there was insufficient time to carry out more tailor-made transfer.

MarineTT highlights the need for specific researcher guidance on best practice of knowledge transfer.