Seafish Industry Authority

Two signed hard copies of this Final Report Form should be returned to: Lesley Allan, Seafish, 18 Logie Mill, Logie Green Road, Edinburgh, EH7 4HG.
An electronic version of this Final Report Form should be emailed to: researchadmin@seafish.co.uk

Technology and Innovation Primers Project Final Report Form

Section 1: Project details

1.	(a)	**Seafish Project Code**	10617
	(b)	**Project Title**	A SCALLOP CULTCH COCOON SYSTEM, in Raasay Sound, Isle of Skye
	(c)	**Project start date**	August 2006 **(d) Project end date** January 2007
	(e)	**Seafish Project Manager**	Sue Utting
	(f)	**Name and address of contractor**	Oakes Marine Old Mission House Sconser Isle of Skye IV48 8TD
	(g)	**Name of contractor's Project Leader (if appropriate)**	David Oakes

Section 2: Project Summary

2. Please provide a brief (no more than 1 side of A4) summary of the project and its results

PROJECT
To develop a system of fishery enhancement for king scallops (Pecten Maximus) by producing a biodegradable cultch habitat.

OUTLINE
King scallop cultivation depends upon two years of long-line culture to produce a 50mm shell height animal, large and robust enough to be re-laid in a fishery with a relatively high survival rate of 50-90% dependant on depth of seawater. I propose to develop and deploy a number of cultch filled habitats (six) in an area of Loch Sligachan in 18m of seawater then monitor for spat and predator settlement and survival.

TECHNIQUE
I have observed when monitoring previous research projects (part-funded by Seafish) that the main consumer of scallop settlement in the deeper seawater range is the brown swimming crab (Macropipus Depurator) which habitually gleans the seabed. My project will collect scallop spat settlement, protect from external predators, and because the habitat is tightly packed obstruct scallop predators that will inevitably settle alongside their prey from free movement within the envelope.

CONSTRUCTION
Using 6mm aviary mesh construct a drum sized habitat packed tightly with clean oyster shell as cultch (my own observations have suggested an affinity of scallop spat settlement to mussel shells and I have been informed that chitin in the hinge is the mechanism) ballasted with 6kilos + of freestone, with a larch log timber cap (untreated) as buoyancy to ensure correct orientation when deployed from the sea surface.

REPORT
The sourcing of mussels or oyster shells was a problem for this trial as mussels and oyster growers tend to dump their waste shells as they are going along. Processing of mussels tend to be done in England, so it would have been cost prohibitive to import processed shells. In the end I managed to gather shells an oyster farmer had disposed of. The cultch habitats were constructed as described, however, it was more time-consuming than anticipated.

Habitats were deployed on Tuesday 1st August 2006, a dive was made and all the habitats were in the correct orientation, depth 19 metres.
On the following day, Wednesday 2nd august, my traditional spat collectors were deployed, for commercial and control reasons.

On November 22nd my observations are noted in my diary that both brown swimming crab (Macropipus Depurator) and the velvet crab (Macropipus puber) showed signs of being very hungry, they were trying mature scallops looking for weakness, an observation I have not made before on such a scale. This I believe was the first sign of a major spat failure.

January 10th – failed to find habitats, marker mooring had been dragged. It should be noted that the autumn and early winter of last year saw the worst sustained sea conditions experienced for two decades or more, as was reported in the press by the skippers of the Calmac ferries.

January 26th – found the cultch habitats and inspected with the aid of a torch. I was not surprised that they had failed to collect any spat – king or queen as the other scallop farmers in my vicinity had also failed to collect spat. My own observations of seaweeds and seabed substrates failed to find any scallop spat settlement. The only creature inside any of the habitats that could be seen was a tiny squat lobster that could easily have gone through the mesh. Five of the six habitats were in the correct orientation, scouring by tidal flow was evident, no signs of corrosion yet, all completely intact, and showed no signs of moving whatsoever.

Has the project achieved what was originally proposed and if not, why not?

It was a disappointing result, but no significant spat was collected by any of the three remaining scallop farms in the Skye area. (Kings or Queens). From my own control collectors I examined 40 in detail, and only found two kings and no queens, which is significant as on most years it is a ratio of three queens to one king.

It is Seafish's intention to publish the Project Summary.
Do you agree to Seafish being the co-ordinator of such publication? NO

If the answer is NO, please explain why the Final Report should not be released into the public domain.

The techniques have yet to be perfected for use on a larger scale. When this has been achieved I plan to promote myself as a consultant and I also wish to retain intellectual property rights. (Possible patenting for which I would like SEAFISH's advice)

Section 3: Project costs and staffing input – complete relevant boxes

4. In this project, what was the:

(a)	**grant awarded?**	£1400
(b)	**actual expenditure?**	£1400
(c)	**approved staff input?**	
(d)	**actual staff input?**	
(e)	**projected industry contribution in cash**	
(f)	**actual industry contribution in cash**	
(g)	**projected industry contribution in-kind**	£1400
(h)	**actual industry contribution in-kind**	£1400

Section 4: Publications and other outputs

4. (a) Please give details of any outputs, e.g. published papers, articles, presentations, physical outputs

(b) Have opportunities for exploiting Intellectual Property arising out of this work been identified? If you have answered YES, please give details. YES

The potential of a cultch cocoon for reseeding of scallop beds is of international significance.

(c) Has any action been taken to initiate Technology Transfer? If you have answered YES, please give details. NO

Section 5: Future work

5. Please comment briefly on any new opportunities which may arise from the project.

The six habitats deployed will be observed to ascertain degeneration times. And whether or not they catch spat in summer 2007.

Weather patterns are becoming more unsettled. I believe it is not going to be possible to deploy my traditional spat collectors then harvest and process in the autumn winter period, so I believe it is vital that sea bed cultch systems are developed.

Due to the difficulty of obtaining cultch shells I have designed a more simple to construct artificially filled habitat that I would like to trial in 2007.

Section 6: Declaration

6. I declare that the information I have given is correct to the best of my knowledge and belief.
I understand that the information contained in this form may be held on a computer system.

Signature		**Name**	David Oakes
Date	1 March 2007	**Position in Organisation**	Proprietor