Noosa Estuary Scoping Study Phase II proposal

Project #1 – Oyster settlement study

Project Aim

The proposed project will investigate oyster settlement and recruitment rates and patterns within Noosa Estuary. The knowledge gained from this study will allow The Thomas Foundation, Noosa Shire Council, and The Nature Conservancy to make an informed decision about proceeding with an oyster reef pilot project in Noosa Estuary. More specifically, the project will determine whether natural oyster recruitment in Noosa Estuary is sufficient such that a reef restoration project could be developed without supplemental oyster larvae from a hatchery (as is required in the Port Phillip Bay shellfish reef restoration project). Additionally, by providing information on the rates of oyster settlement and survival at different depths, on different orientations, and at different locations around Noosa Estuary, the project will deliver information crucial for the design of a pilot oyster reef restoration project.

Background

Phase I of the Noosa Estuary Scoping Study involved an expert based assessment of restoration options for Noosa Estuary. This assessment revealed that oyster reefs were the most promising candidate for restoration works aiming to increase fish abundance and biodiversity in the Noosa Estuary. To better understand the potential of oyster reef restoration and to inform the design of a possible reef restoration project, it was proposed that a second phase ("Phase II") of the scoping study be undertaken.

Scope

Phase II of the scoping study will involve constructing a series of "settlement structures" that can be placed in key locations around Noosa Estuary to investigate oyster settlement rates. These structures will consist of a series of tiles or plates made from concrete sheeting, a medium that mimics the surface on which we know oysters settle in Noosa Estuary, e.g., bridge pylons. Replicate tiles will be anchored at different orientations and depths. These structures will be deployed at various locations around the estuary and are then visually inspected after a period of time and the number and size of juvenile oysters are recorded. In order to investigate possible changes in settlement rates across the summer spawning season, the settlement tiles will involve three different deployment periods beginning in December 2014: one deployment for the total period of 5-6 months; one deployment for the first 2-3 months of this period; and a redeployment of a second set during the final 2-3 months of this period. Deployment will focus on sites considered the most likely candidates for oyster reef restoration and to allow us to learn about the distribution of oyster recruitment around the lower Noosa Estuary. Figure 1 illustrates the proposed deployment locations.

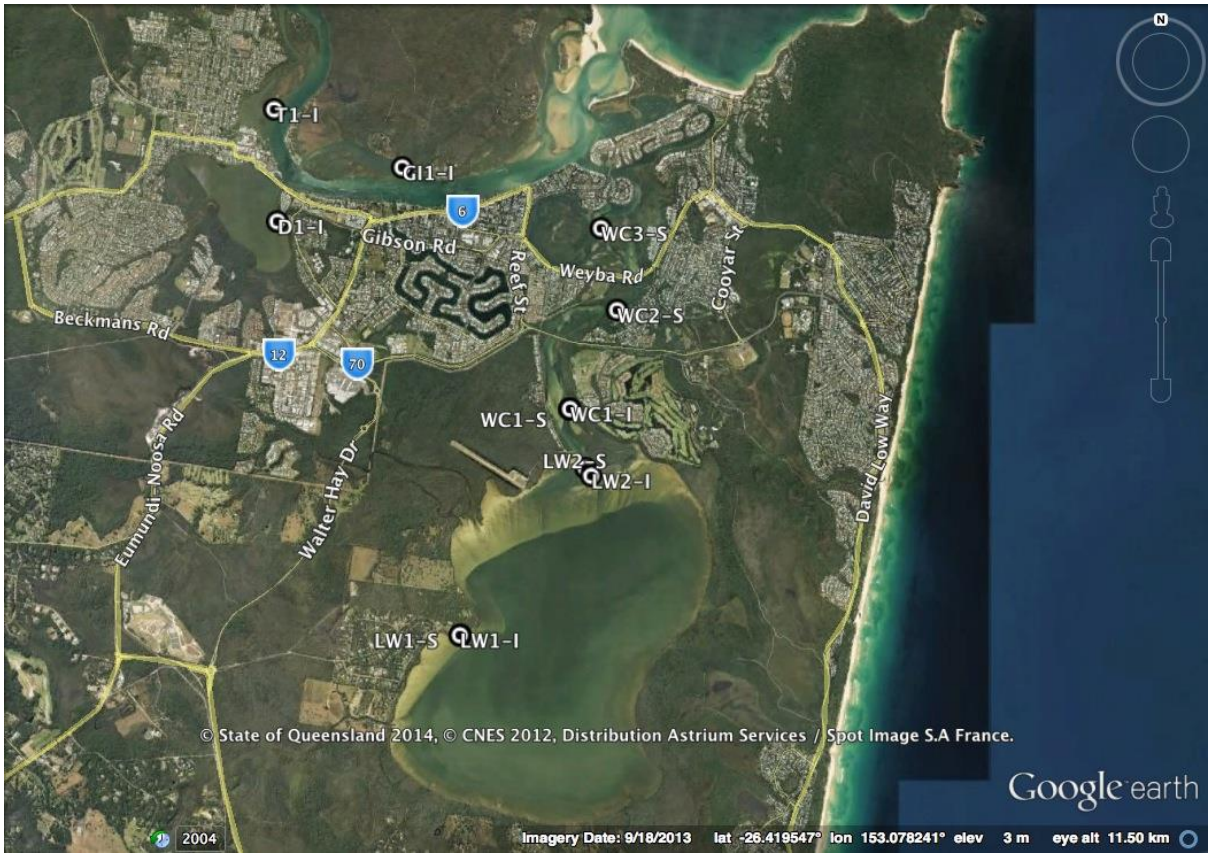

Figure 1 Distribution of oyster settlement study sites around Noosa Estuary. Legend: LW = Lake Weyba, WC = Weyba Creek, D = Lake Donella, T = Tewantin, GI = Goat Island; S = Subtidal deployment, I = Intertidal deployment.

Project #1 Timing and Deliverables

- Oyster recruitment is most likely to occur over the warmer months, so to maximise the information gained from the study the settlement **structures were deployed on December 18** (with approval from The Thomas Foundation and the Noosa Shire Council).
- The condition of the structures will be checked in early February 2015 and depending on what is observed, **half of the settlement tiles will be collected and analysed in February or early March 2015**. These tiles will be replaced with new tiles.
- An **update will be provided by email to The Thomas Foundation and the Noosa Shire Council in early March 2015**.
- The **remaining tiles will be collected and analysed in May 2015**.
- A **final written report with the findings of the study will be provided to The Thomas Foundation and the Noosa Shire Council by July 17, 2015**.

Project #2 - Historical ecology of Noosa Estuary fisheries

Project Aim

The proposed project will use historical records combined with in-person interviews to develop estimates of past abundance and catch rates for key species in the Noosa Estuary. Depending on available information, focal species will include fin-fish, prawns and oysters. The knowledge gained from this study will provide important support for proposed restoration and management activities in Noosa Estuary, such as the recreation of oyster reefs.

Background

Phase I of the Noosa Estuary Scoping Study conducted by The Nature Conservancy and supported by The Thomas Foundation, involved an expert based assessment of restoration options for Noosa Estuary with the objective of increasing fish abundance. This assessment indicated that oyster reefs were a promising candidate for restoration works aiming to increase fish abundance in the Noosa Estuary. Although there is general recognition that fish abundance in Noosa Estuary has declined over the past 50 years, there is a distinct paucity of knowledge concerning historical fisheries productivity in Noosa Estuary. Knowledge of historical fish abundance in Noosa is important context for the restoration works being investigated; awareness of declines in fish abundance provide motivation for restoration activities as well as an indication of what full recovery may look like. Similarly, although there are indications that oysters were once a significant habitat in Noosa Estuary and were harvested commercially, there is currently little knowledge or awareness of the historical extent of oyster reefs or their harvest. To deliver this project, The Nature Conservancy will work with Dr Ruth Thurstan and Prof John Pandolfi at the University of Queensland. Both are experts in historical analysis of fisheries, including the fisheries of South-East Queensland.

Scope

This study will involve using both archival material and interviews to develop an understanding of historical fisheries productivity in Noosa Estuary. This is inclusive of fin-fish, prawns, and oysters. Archival research will be undertaken in the Noosa local archives and Sunshine Coast library, and fisheries data and digitised archival material will also be searched from Brisbane-based libraries (e.g., DAFF and QLD State Library). To collate additional archival material and oral accounts of historical ecology and fisheries activities, in-person interviews will be conducted with local community representatives including fishing families and Traditional Owners. Data from the archival collation and interviews will then be analysed. Where possible, the analysis will include quantitative estimates of historical productivity for certain species. The findings from this research will be presented in a written report and also in a public lecture in Noosa. Because this project will be partly supported through a Barbara Thomas Fellowship from The Nature Conservancy, the final report will also include a section outlining some key “lessons” relevant for considering similar analyses of historical fisheries productivity for other estuaries in Australia (e.g., the most useful sources of data, important historical periods to focus on, etc.).

Project #2 Timing and Deliverables

- March 2015. Work with Noosa Shire Council and Noosa Parks Association to identify local archival material and possible interview candidates. Begin searching principal QLD archival sources.
- April-May 2015. Conduct interviews, finish local archival research, and begin analysis of archival material.
- **May 29th 2015. Deliver short (1 page) interim report outlining data uncovered to date, interviewees, focal species, and what sort of analyses are likely to be possible.**
- June-July 2015. Analysis of archival material and report preparation.
- **August 14th 2015. Deliver final report.**
- **August 2015. Deliver public lecture in Noosa** (date and venue TBC).

Overall budget for Phase II proposal

Total budget to be split 1:1 between The Thomas Foundation and Noosa Shire Council.

Item	**Cost**
Project #1	
Materials for settlement structures	$800
Contract (to assist with settlement structure development, deployment and analysis)	$6,700
Travel	$1,500
TNC staff time & administration	$9,372
Subtotal	**$18,372**
Project #2	
Salary for Ruth Thurstan at University of Queensland for 6 months	$45,750
Field costs for archival research, interviews, and public meetings/lectures	$8,000
TNC staff time & administration	$15,145
Subtotal	**$68,895**
Contribution from Barbara Thomas Fellowship Fund (administered by TNC)	-$38,895
Total	**$48,372**

Possible project variation

Because the exact timing of oyster spawning in the Noosa Estuary is unknown, there is a possibility that the peak spawning may have happened in November, just prior to this study beginning. This means that there is a small but real chance that the results obtained by May could be inconclusive as to oyster settlement rates in Noosa Estuary. Although we see this as unlikely, in the event it occurs it will necessitate redeployment of the settlement structures for an additional period (October – December 2015) and subsequent reanalysis. This will require additional funds not exceeding $4,000.