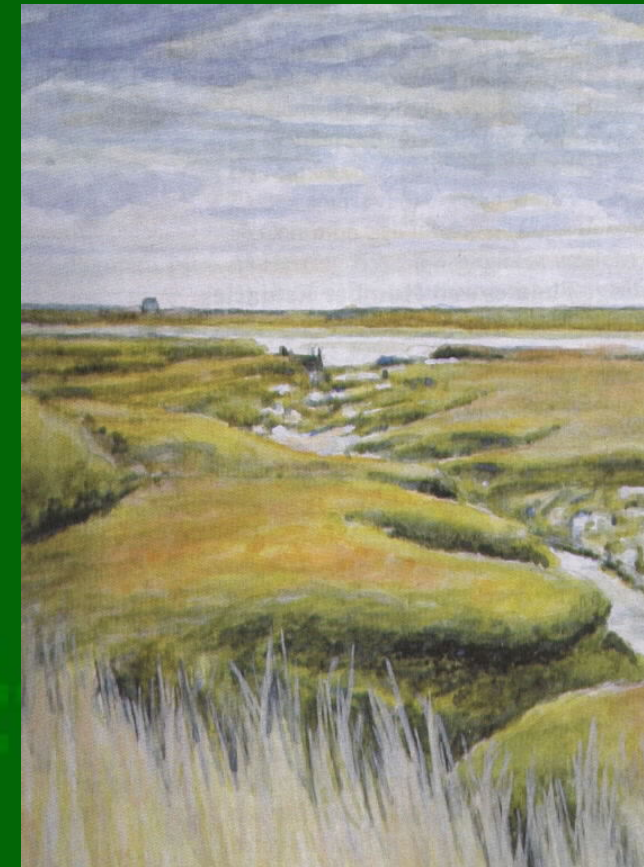


Fish Utilisation of Saltmarshes and Managed Realignments

Steve Colclough
National Marine Fisheries Policy
Advisor

Bill Watts
Senior Economist
Flood Risk Management

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Original watercolour by Simon Reid

Saltmarshes - Some Critical Facts

Valuable

Breeding & feeding ground for birds, insects etc

Dissipates tidal wave energy

Nutrient storage

Refugia, food & nursery grounds for fish?

Diminishing

SE isostatic rebound + hard defenses = coastal squeeze

Encroachment pressures (historic Humber situation)

2% English saltmarsh is lost per year

UK Saltmarsh Habitat Action Plan

Ensure no net loss- create 100ha/yr

Managed realignment - ecological pressure has only come via Natura 2000

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Fish and Saltmarsh - US “quotes”

Reise 1985 “ inter-tidal feeding can be crucial to survival and abundance of estuarine fish, particularly nursery stock.”

Boesch & Turner 1984 “ Key to successful management of estuary dependant fish species is coastal habitat protection and enhancement”.

Mc Hugh 1966 “2/3 of the catch of commercially important fish is dependant on the inter-tidal estuarine habitat for the growth of young fish”.

Shenker 1979 “Saltmarsh provides important refuge habitat for fish larvae and early fry”.

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Striped Bass Fishery ASFC & saltmarsh

European Experiences

Elliott & Taylor 1989 “Food availability in inter-tidal areas exceeds that in sub-tidal areas”.

McLusky 1990 “ Much of the historic fish production in the Forth Estuary has been lost over the past two hundred years as a result of land claim”.

Lafaille et al., 2001,2002“In Europe, it has been assumed that the major nursery grounds are subtidal, this evidence suggests that they may be in the intertidal and saltmarsh areas.”

Background to Environment Agency Studies (2003 onwards)



Early history of managed realignment in the UK - “little fish usage”.

Multiple method inter-tidal Thames fish survey (WFD)

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National role to promote sea fisheries policy & WFD led to links with FD staff

WFD implications for FD - “Making Space for Water”

All of which led to an FRM funded study in 2003.....

Fish Sampling Methods

Modified static fyke net: Deployed in main breaches at MLWS to catch fish leaving on ebb



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- 50cm x 40cm x 2.5m, 5m wings (4mm knotless mesh)
- Single sampling tool (after Lafaille, et al.)

High Intertidal Multiple Methods



Tidal Thames Multiple Methods - EU Best Practice and Water Framework Directive Lead

Seine nets:

Small 10m x 1m (5mm knotless mesh)

Large 35m x 2m (5mm knotless mesh & 10 mm wings)

Kick sample: 1mm polyester mesh, 1 min

Passive samplers: 1mm knotless mesh

Baited plastic minnow traps:

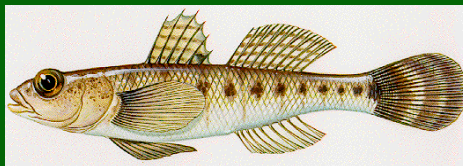
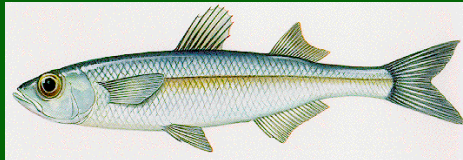
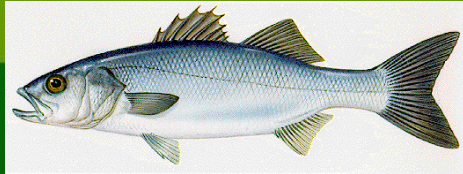
Push net: 3m x1m 4mm knotless mesh

Visual observation:

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Species Captured in the Summer Months



- Sand smelt
- Herring
- Thin & Thick-lipped Mullet
- Sprat
- Bass
- Flounder
- Common Goby
- Sand goby
- Greater pipefish
- Eel
- Three-spined stickleback

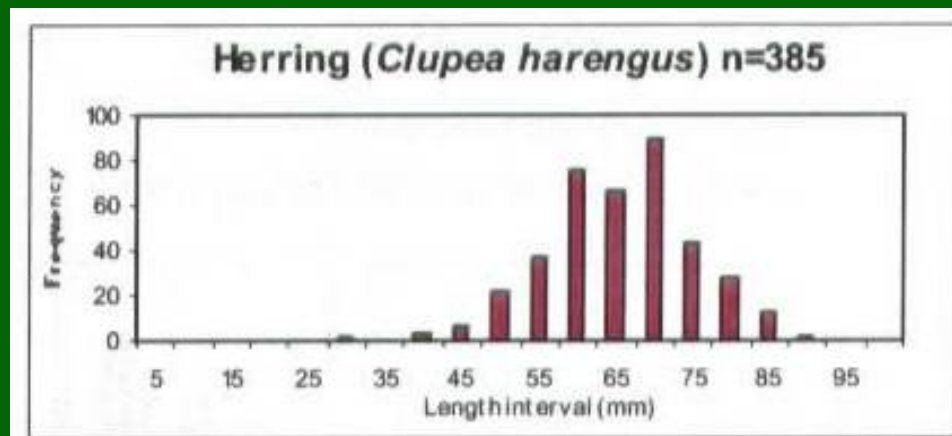


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Herring captured in permanent pond adjacent to Breach B



35m seine in western marsh:
approximately 2000 herring



Length interval frequency
(n=385) (25-90mm)

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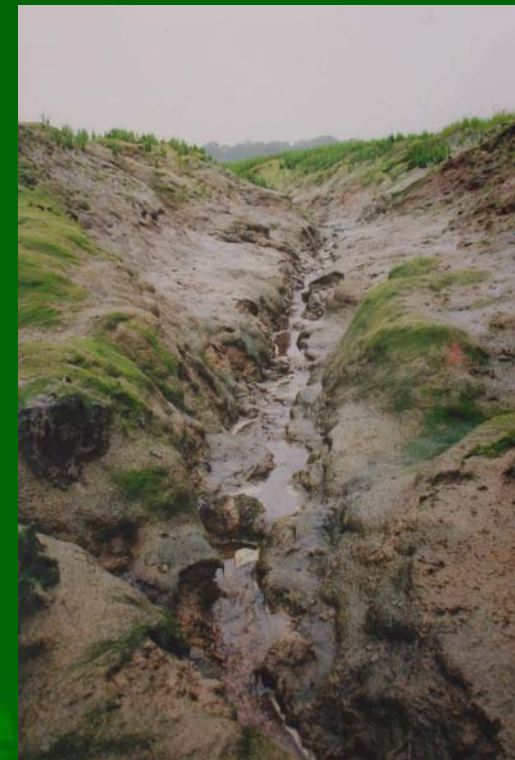
Bass Feeding Ecology

- Feed actively during short flood period
 - **Smallest (<50mm): Copepods**
 - **Small (50-149mm): Crangon**- main food source
 - Hydrobia-Orplands**
 - Mysids**- Abbotts A
 - Amphipods & Trematodes**- parasites?
 - **Large (149-235mm):**As above + larger ***Palaemon, Nereis***
 - Sticklebacks** (Abbotts) vulnerable
 - Peeler Shore & mitten crabs**
- Gut fullness varies with temperature- fuller stomachs at night (Cabral & Costa, 2001) - intertidal variation?



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Habitat Issues



... a better ...

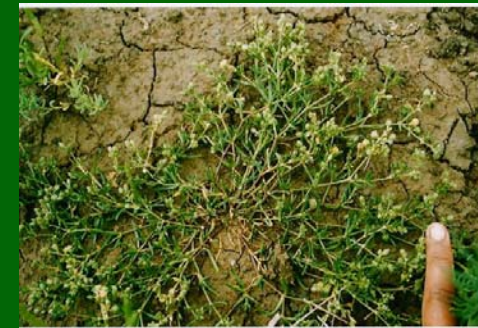
Pioneer Saltmarsh Vegetation



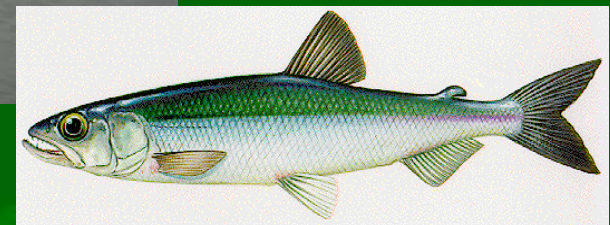
Seasonal winter die-back



Common Sea lavender
Glasswort
Annual seablight
Golden samphire
Sea spurrey
Marsh grass spp.

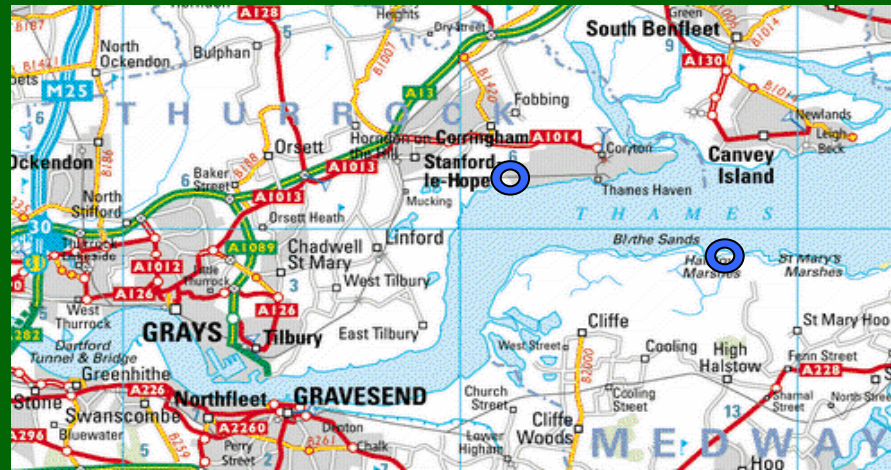


Greenwich Millennium Terraces



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Recommendations

Multiple method sampling strategy - is essential to satisfactorily describe fish usage of such dynamic environments.

Gradual lateral site slope, shallow vertical creek slope & dendritic creek systems -are necessary to maximise access.

Semi-permanent water bodies provide important microhabitats.

Warm, sheltered, unpolluted, productive habitats.

Optimal breach timing for seed establishment & low invertebrate presence (Hughes, 2001).

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Proximity to nursery & spawning sites, improves fish habitat value.

ComCoast (Com bined Functions in Coastal Management Zones)



Environment
Agency



Interreg IIB funded project investigating multifunctional uses of flood management schemes on the coast

5 European partners (NL, Den, Bel, Ger, UK)

€6 Million project

Total UK budget of €1.7 M/£1.19M (EA and UK partner contributions + 50% from Interreg)

The Agency is lead UK partner with EWT, EN and HHA

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Project History

Approached in November 2003 by Dutch with particular interest in “ecological issues of UK approach”

Very short timescales for application in Feb 2004

Project approved for Interreg funds April 2004

Project began in May 2005

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COM COAST aims to facilitate and create multifunctional flood management schemes that benefit the wider coastal community and environment whilst offering economically sound options for the future

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Project Funding

EA Eastern Area staff time/costs	£199k
<u>National EA R&D funding</u>	<u>£100k</u>
HHA	£196k
EWT	£ 50k
English Nature	£ 60k
UEA	£ 16.5k
<i>ABP MER</i>	<i>£ 15k</i>
<u>EU Match funding</u>	<u>£595k</u>
<u>Total external funding</u>	<u>£906k</u>

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Work Packages

- WP1 Spatial planning and visualisation
- WP2 Socio-economic evaluation
- WP3 Technical and engineering
- WP4 Participatory Action
- WP5 Pilot projects and case studies
- WP6 ComCoast project management

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How COM COAST can help to deliver operationally

This project is running alongside strategies and plans currently occurring on the coast.

The project aims to help streamline the strategic implementation process to ensure smooth delivery of projects on the ground post-strategy

Lessons learnt from our EU partners and pilot sites can be directly applied in the UK

Aim to develop useful guidelines for PM's, practitioners and partners

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UK Programme

Project runs from May 2005-December 2007

3 PhD's began Sept 2004 (Fisheries, Nutrients and Economics)

Foreshore recharge pilot at Horsey Island planned for recharge in Nov 2005

Wallasea Island breach planned for August 2006

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Expanding Links



Flood Risk Management/Government/Academia

Contribution to Defra/EA R & Technical Report
FD 1918 on Monitoring Protocols

Common Fisheries Policy

Financial Instrument for Fisheries Guidance/European Fisheries Fund

Water Framework Directive

GES by 2015 - Complimentary Measures

Marine Fisheries Management

RMFEE/SU/Marine Bill - Economics changing

Multifunctional Marine Protected Areas



Other Studies.

Bangor, Paull Holme Strays, Alkborough & Cuckmere

Papers and handouts