

Agent-Based Model of glass eel tidal migration

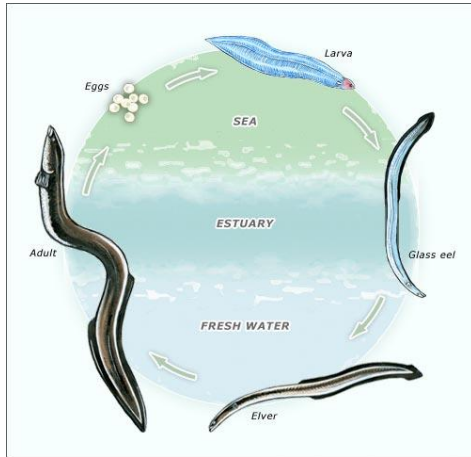
Jasper de Bie, Jennifer Gaskell, Thomas Benson, Paolo
Veza, Jim Kerr, Darren Lumbroso, Markus Owen, Paul Kemp

9th July 2018



UNITED KINGDOM • CHINA • MALAYSIA

Selective Tidal Stream Transport migration

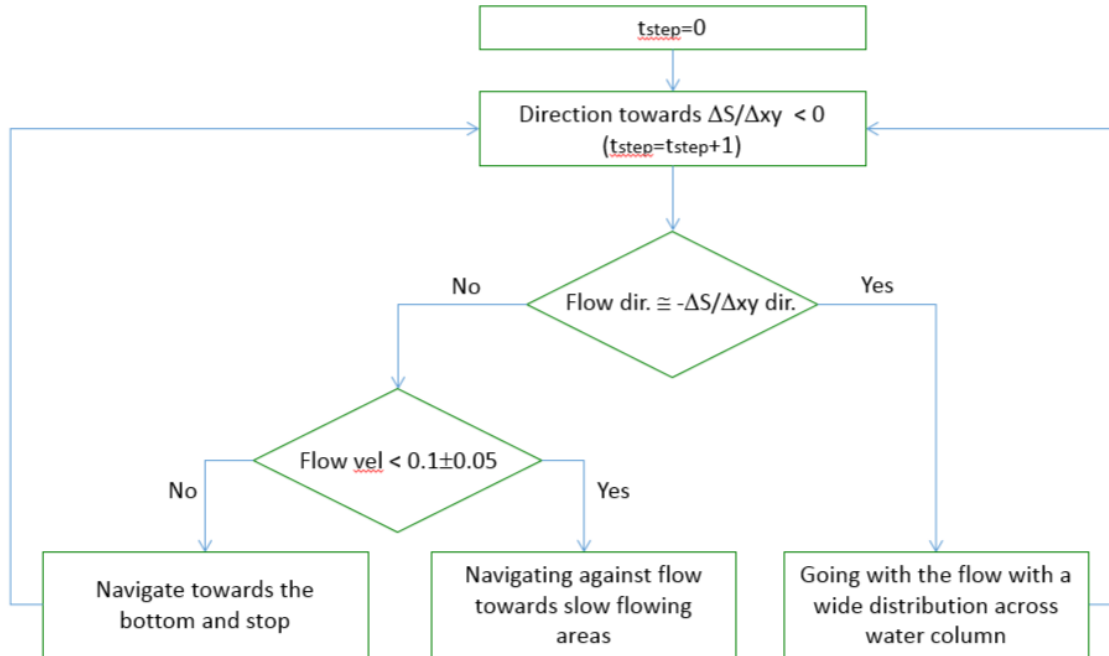


DIRECTION AND STRENGTH OF TIDE	BEHAVIOURAL RESPONSE	DIRECTION AND EXTENT OF MIGRATION
FLOOD	DISPERSED THROUGHOUT WATER COLUMN	→
SLACK ← EARLY EBB	ACTIVE UPSTREAM SWIMMING IN MARGINS	→
← EBB	REMAIN ON BOTTOM SUBSTRATE	↔
← MARINE		FRESHWATER →

Added environmental effects through meta-analysis of literature

- Water temperature ($v_{swimming}$)
- Salinity
- Day/night
- (Moon)light
- *Local interactions*

The ABM



- Salinity gradient
- Evaluation of tide every t
- Categorize tidal regime
- T dependent swimming under slack regime
- Coupled to 3D hydrodynamic model of estuaries.

Application

- Validation in Thames Estuary using ZSL/EA data
- Apply to Milford Haven Waterway to evaluate possible recruitment



