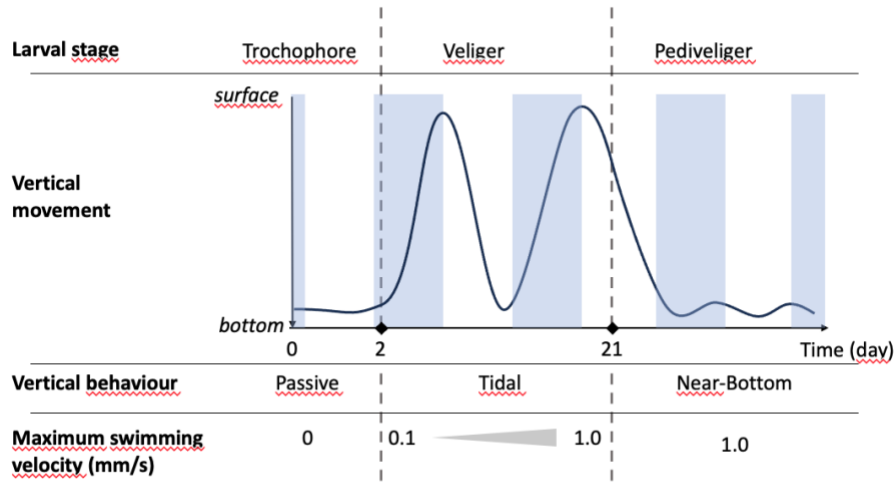## SUPPLEMENT 2. FIGURES AND TABLES

Figure S1. Synthesis on the larval behaviour parametrisation for the transport model of oyster larvae. Blue and white shades represent the alternance between flow and ebb tide, respectively.
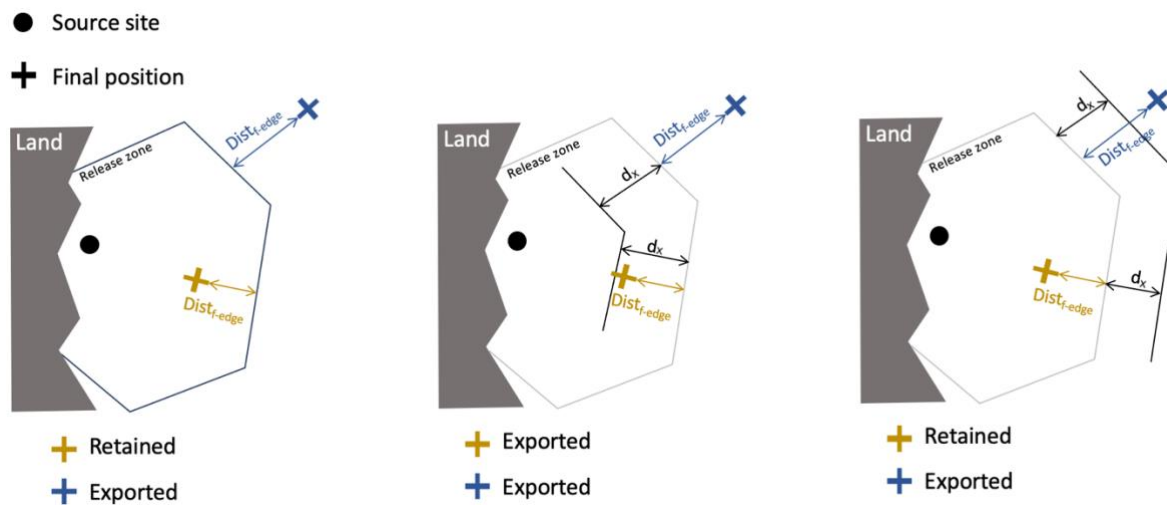

Figure S2. Graphical explanation for the modification in the surface area of Release zones. $Dist_{f\text{-edge}}$ is the least-coast distance between the final position of the 21-days old larvae f to the closest edge of its release zone. d_x is the incrementation from -500 m to 500 m from the initial edge position. Left panel is the initial configuration of the release zone, middle panel is the configuration with $d_x < 0$ m, and right panel is the configuration with $d_x > 0$ m.
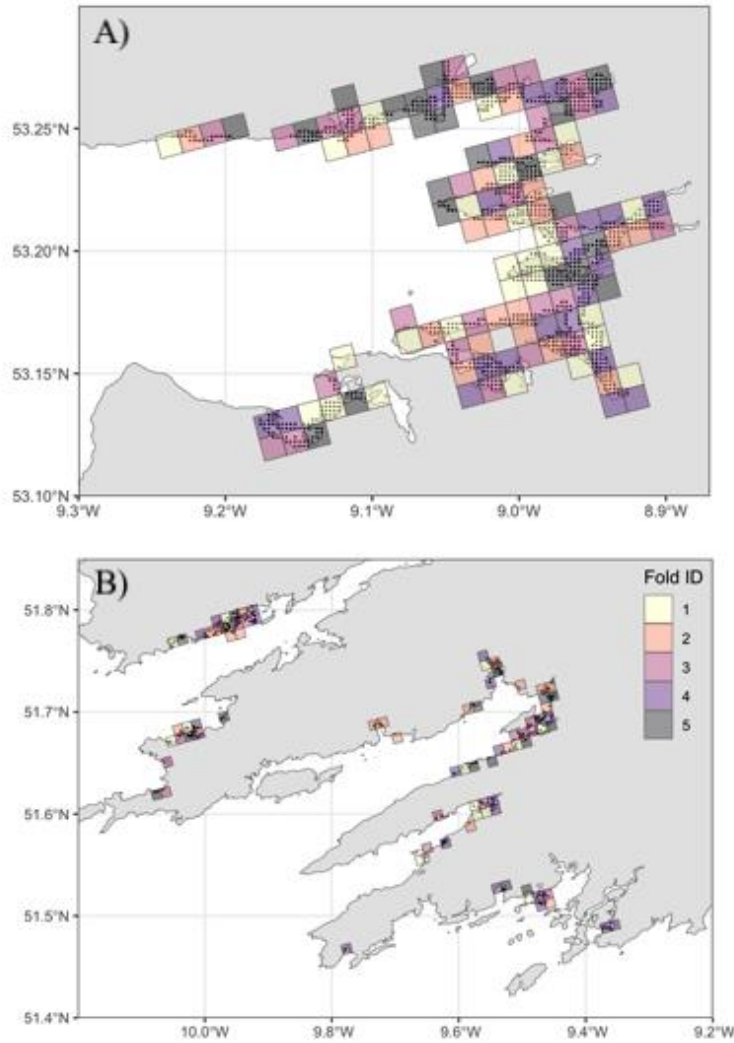
Figure S3. Distribution of source sites in spatial blocks in the Galway (A) and Bantry (B) regions for the block cross validation of the spatial modelling. Folds, here spatial blocks, are represented with 5 colours.
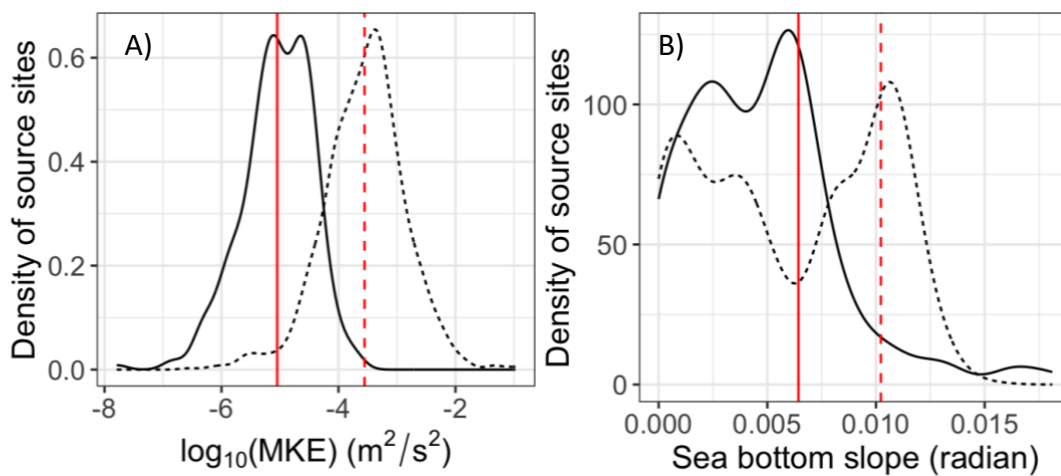

Figure S4. Distribution of the source site density along the values of the (A) Mean Kinetic Energy (MKE) and (B) slope in the Galway (dashed black line) and Bantry (continuous black line) regions. Red vertical lines show the position of the average in (A) and the third quantile in (B) (dashed line) according to the region (Bantry: continuous, Galway dashed).
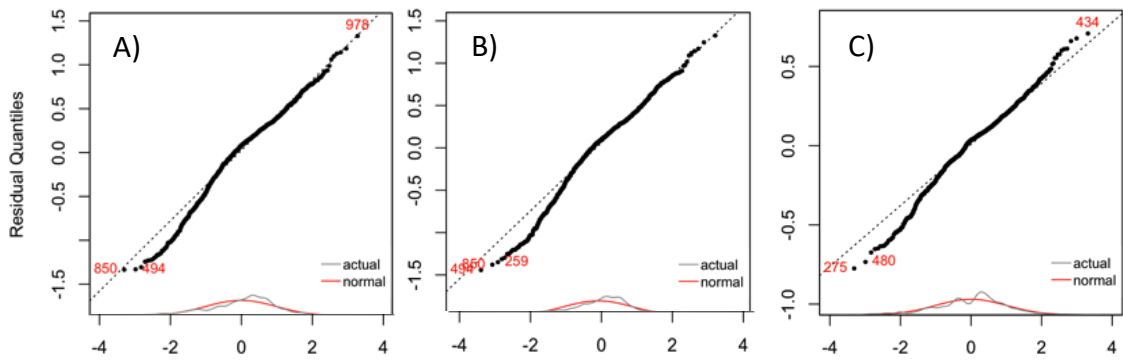
Figure S5. QQplot of the residuals for the statistical models GBM (A), GAM (B), and RFM (C) trained with export rates and coastal features.
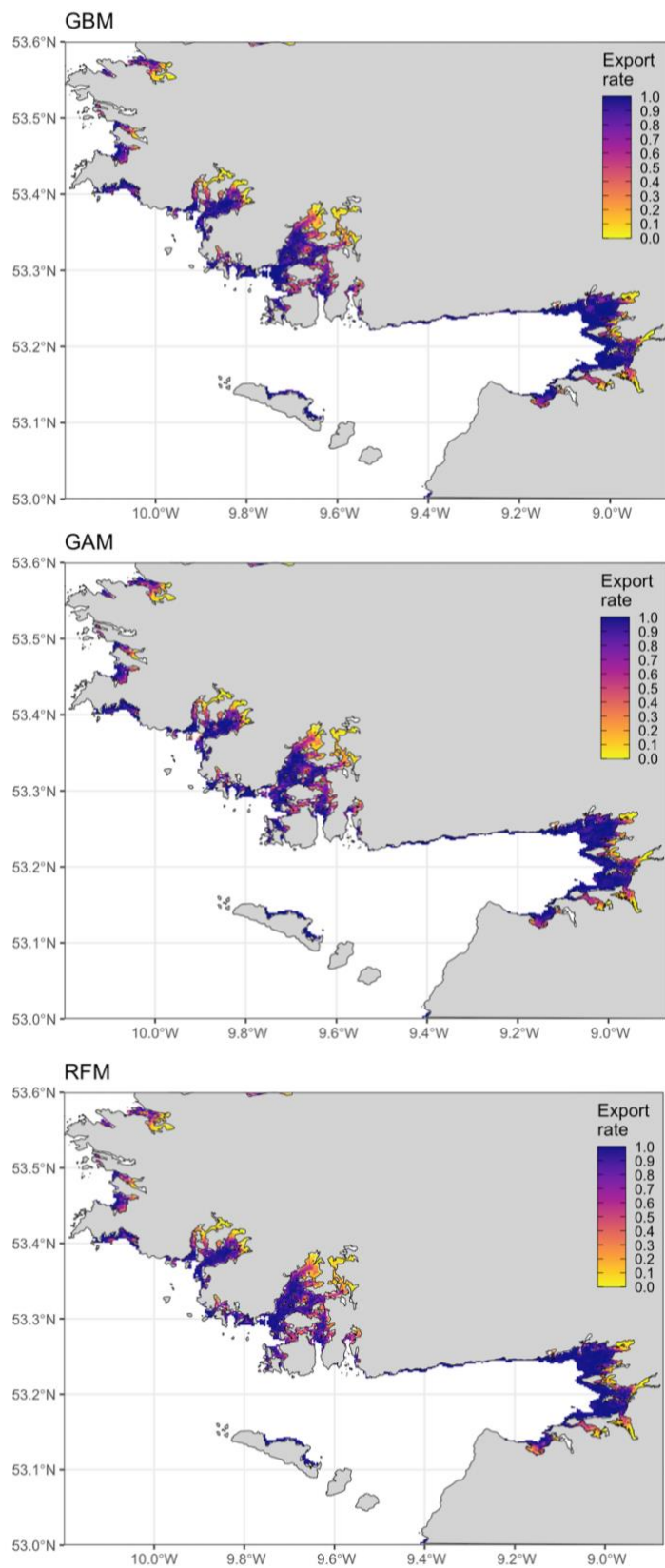
Figure S6. Prediction of the larval export based on the three statistical models GBM (top panel), GAM (middle panel), and RFM (bottom panel) in the extended Galway Region

Figure S7. Prediction of the larval export based on the three statistical models GBM (top panel), GAM (middle panel), and RFM (bottom panel) in the Bantry Region

Table S1. Location of the 32 sites with observations of the Pacific oyster species and time of larval release in the Lagrangian Transport Model.
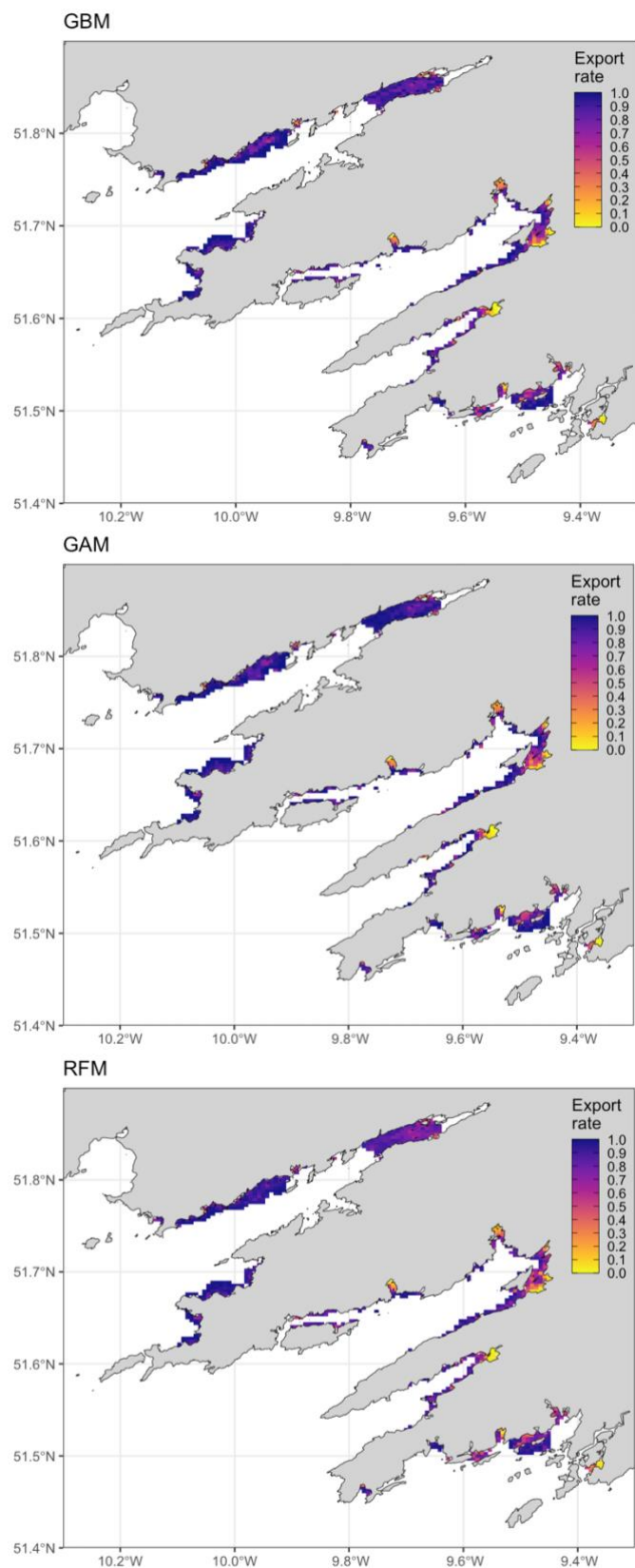
ID	Longitude	Longitude_unit	Latitude	Latitude_unit	Day_of_the_year	Year
1	-8.983347964	decimal_degree	53.23467431	decimal_degree	203	2018
2	-8.986800837	decimal_degree	53.23082386	decimal_degree	211	2018
3	-8.987155781	decimal_degree	53.22977448	decimal_degree	211	2018
4	-8.989556654	decimal_degree	53.22963436	decimal_degree	216	2018
5	-8.993348501	decimal_degree	53.22900175	decimal_degree	218	2018
6	-8.998545105	decimal_degree	53.22847748	decimal_degree	225	2018
7	-9.001858416	decimal_degree	53.22881034	decimal_degree	227	2018
8	-8.986196822	decimal_degree	53.22331523	decimal_degree	207	2018
9	-8.991993576	decimal_degree	53.22196571	decimal_degree	211	2018
10	-8.920206482	decimal_degree	53.21540353	decimal_degree	205	2018
11	-8.923970658	decimal_degree	53.20878837	decimal_degree	212	2018
12	-8.950129179	decimal_degree	53.20837364	decimal_degree	226	2018
13	-8.959351296	decimal_degree	53.20830323	decimal_degree	229	2018
14	-8.963784623	decimal_degree	53.21004902	decimal_degree	226	2018
15	-8.941005145	decimal_degree	53.20244641	decimal_degree	218	2018
16	-8.97386451	decimal_degree	53.19208133	decimal_degree	226	2018
17	-8.990044073	decimal_degree	53.19105758	decimal_degree	232	2018
18	-8.951959073	decimal_degree	53.18007317	decimal_degree	227	2018
19	-8.966053922	decimal_degree	53.17544776	decimal_degree	231	2018
20	-8.96796042	decimal_degree	53.17193226	decimal_degree	229	2018
21	-8.966540073	decimal_degree	53.16392778	decimal_degree	228	2018
22	-8.962980445	decimal_degree	53.1639566	decimal_degree	229	2018
23	-8.959877008	decimal_degree	53.16208098	decimal_degree	227	2018
24	-8.972762924	decimal_degree	53.17671504	decimal_degree	234	2018
25	-8.999968096	decimal_degree	53.15284844	decimal_degree	209	2018
26	-9.00667287	decimal_degree	53.15201654	decimal_degree	216	2018
27	-9.006417106	decimal_degree	53.15046783	decimal_degree	216	2018
28	-9.024333595	decimal_degree	53.15251162	decimal_degree	226	2018
29	-9.024818216	decimal_degree	53.15300029	decimal_degree	230	2018
30	-9.030604112	decimal_degree	53.15232485	decimal_degree	233	2018
31	-9.106834842	decimal_degree	53.14214953	decimal_degree	222	2018
32	-9.108006865	decimal_degree	53.13948031	decimal_degree	228	2018

Table S2. Overall average of the coastal feature in the region (Galway and Bantry) and in the three types of source sites.

Coastal features	Galway			Bantry		
	Overall Mean	*Type*	*Mean in Type*	*Overall Mean*	*Type*	*Mean in Type*
log-transformed MKE (m²/s²)	-3.56	1	-3.65	-5.05	1	-4.84
		2	-4.12		2	-5.13
		3	-3.22		3	-4.75
Distance to the coast (m)	148	1	95	292	1	81
		2	237		2	355
		3	204		3	221
Depth (m)	-3.90	1	-3.74	-3.75	1	-3.72
		2	-3.80		2	-3.72
		3	-4.19		3	-4.24
Day of the year	225	1	219	226	1	217
		2	235		2	227
		3	233		3	234
Wave Exposure (m)	3.14	1	2.87	3.35	1	2.87
		2	3.46		2	3.48
		3	3.46		3	3.43
Slope (radian)	6.2E-3	1	6.6E-3	4.7E-3	1	6.4E-3
		2	2.3E-3		2	3.8E-3
		3	6.7E-3		3	0.1E-2