

Depth distribution of larvae critically affects their dispersal and the efficiency of marine protected areas

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Supplement. Supplementary information on larval traits (Table S1) and depth distribution in relation to light conditions (Fig. S1) of the dominant larval taxa collected in the study, and the relationship between the size of the MPA and local recruitment for 9 different combinations of pelagic larval duration and dispersal depths (Fig. S2).

Table S1. Summary of larval traits. Empirical estimates of larval season (dominant months larvae were collected), dominant depth strata of larvae, percentage of larvae found at that depth, the number of multinet estimates (n) of different larval taxa collected during the field survey, and estimate of pelagic larval duration (PLD) obtained from literature, for benthic gobiids (Gobiinae), cottids (Cottidae), pipefish *Nerophis ophidion*, rock gunnel *Pholis gunnelus*, snailfish (Liparidae), Cirripedia (nauplii and cyprid larvae), bivalves, gastropods, bryozoa and spionid and polynoid polychaetes. juv: dispersal of young juveniles

Taxa	Season	Depth (m)	%	n	PLD (d)	Ref
Pisces						
Gobiinae	Jun-Sep	0–10	61	31	20–30	1
Cottidae	Jun-Feb	0–10	74	3	30	2
<i>Nerophis</i>	Jul-Sep	0–10	100	4	juv	
<i>Pholis</i>	Dec-Feb	10–20	48	4	30*	1
Liparidae	Jul	20–50	44	4	10–20*	1
Invertebrae						
Cirripedia	Nov-Jun	0–10	43	53	10–16	3
Bryozoa	Sep-Jan	0–10	54	13	<1	2,4
Bivalvia	Jun-Sep	10–20	52	46	16–39	3
Spionidae	Dec-May	10–20	38	39	25–42	3,4
Gastropoda	Aug-Nov	20–50	70	26	30	3
Polynoidae	May-Jul	30–90	64	36	20–30*	3

*Estimated from related taxa

References

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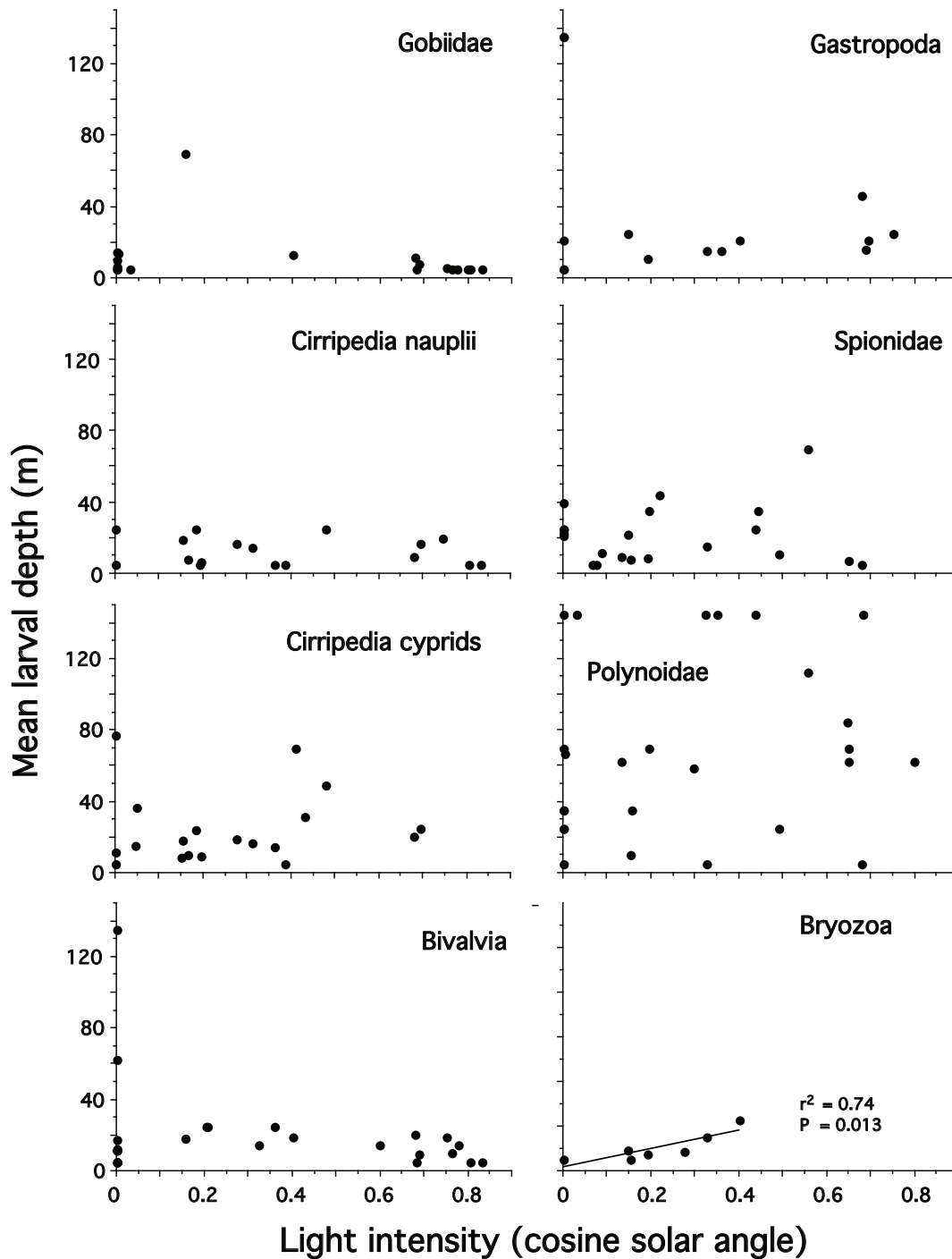


Fig. S1. Field samples of larval depth distribution and light intensity. Mean larval depth of Gobiidae (dominated by benthic Gobiinae species), Cirripedia nauplii and cyprid larvae, bivalves, gastropods, spionid and polynoid polychaetes, and bryozoa per multinet tow (mean depth of 5 multinet samples) as a function of estimated light intensity (cosine of the solar zenith angle) at each sample site and time ($n = 7-29$). Multinet tows that did not collect any larvae of the targeted species were excluded from the analysis. Regression lines are only shown for taxa in which a significant linear regression was found

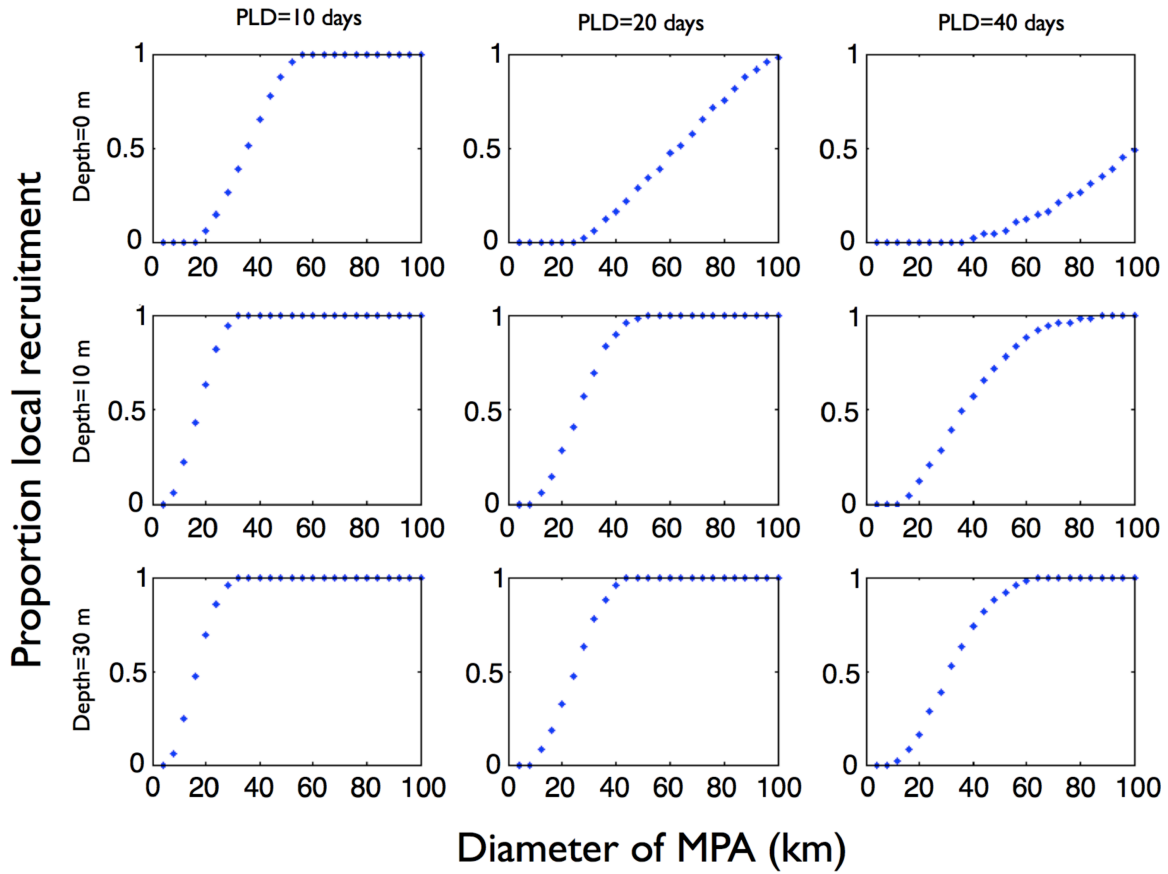


Fig. S2. Median proportion of local recruitment expressed as the proportion of larvae that disperse less than the diameter of a circular MPA ranging from 4 to 100 km in diameter. The 9 panels show local recruitment for different combinations of pelagic larval duration (PLD) and dispersal depths (0, 10 and 30 m)