

Supplementary Material: An experimental assessment of social tolerance and den ecology in
a high-density octopus population

Authors:

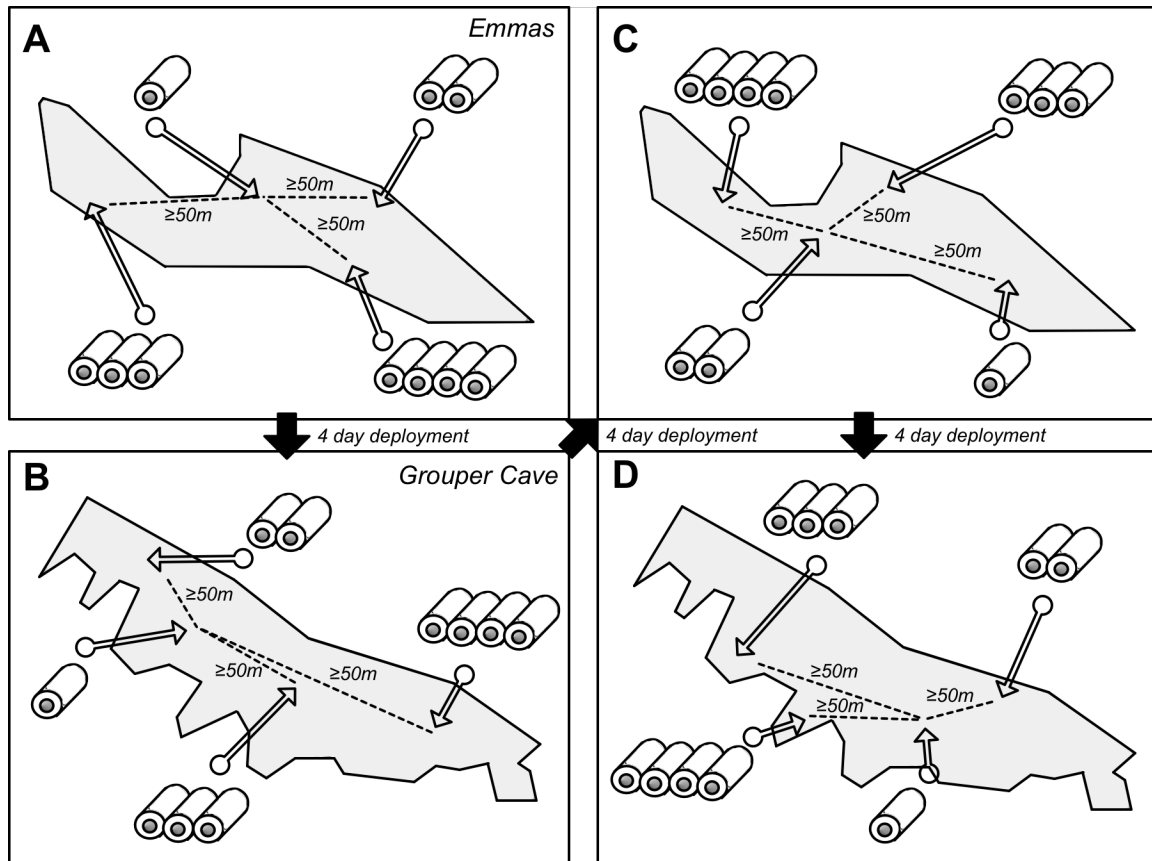
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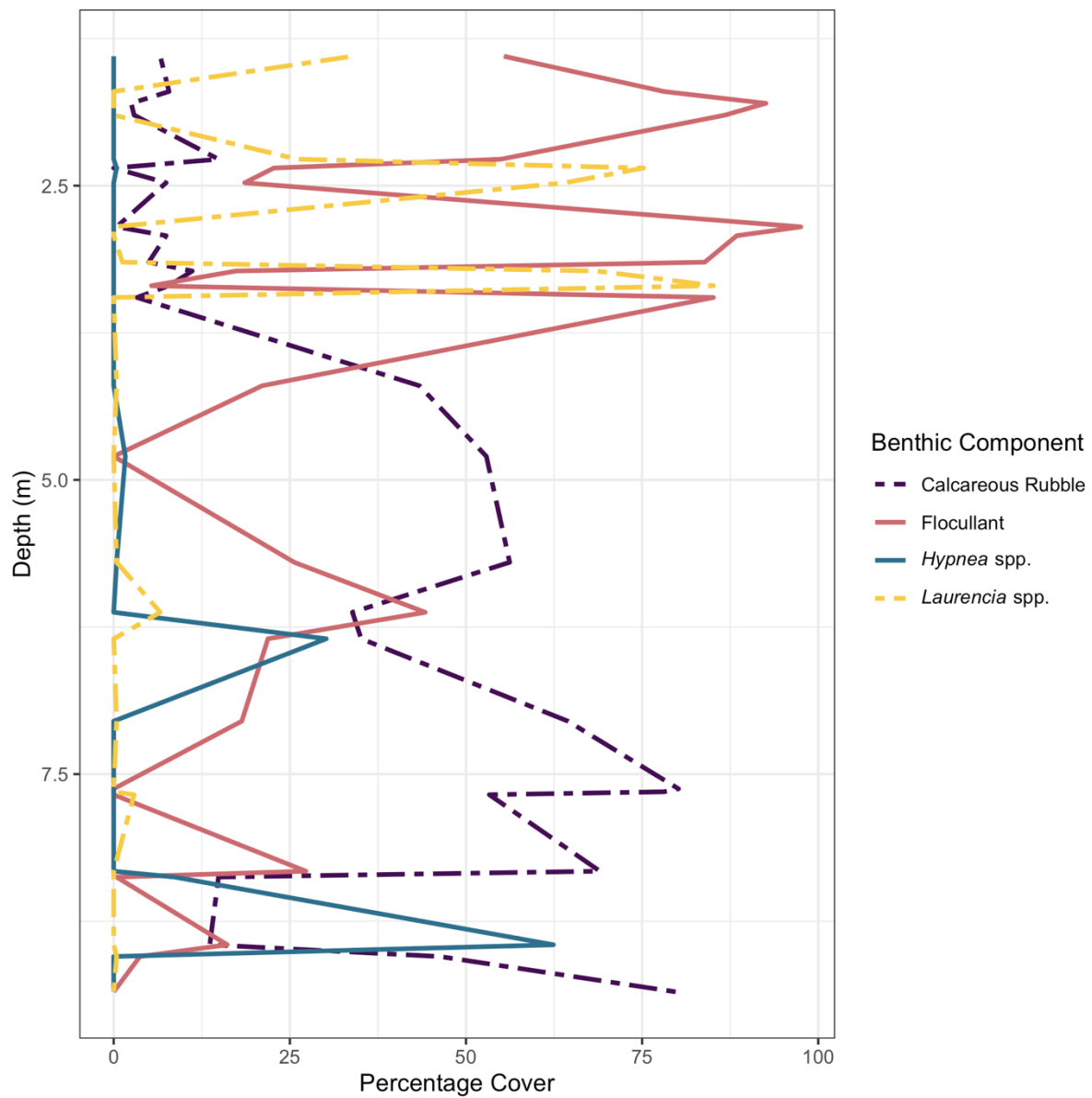


Supplementary Figure 1 – Deployment design of the four forms of den unit (unit size 1 – 4).

Dens were deployed at random coordinates with a minimum of 50 m between units in a single deployment. After a four-day deployment/soak time, all dens were retrieved, cleaned and redeployed in the contrasting site. This was repeated until five deployment cycles are achieved in each site.

Supplementary Table 1. Complete binomial generalized linear mixed effect model testing for differences in occupation likelihood in individual dens according to centered depth, site, habitat and den unit size. Model coefficients for fixed variables are presented as odds ratios with 2.5 – 97.5% confidence intervals. Influence of random effects are also presented alongside total model deviance and degrees of freedom.

AIC	Log Likelihood	Deviance	DF of Residuals
70.4	-29.2	58.4	94
<i>Scaled residuals</i>	First Quartile	Median	Third Quartile
	-0.4054	-0.1461	-0.0479
<i>Random effects</i>	Variance	Std.Dev	
Den unit identifier	0	0	
	Number of observations:100	Number of groups: 41	
<i>Fixed effects</i>	Estimate	Confidence Interval	P value
Intercept(SiteGrouperCave:DenUnit2:CenteredDepth)	1.27	0.12 – 13.30	0.8400
Depth (m)	2.11	1.32– 3.37	0.0017 **
SiteEmmas	0.06	0.00 – 0.66	0.0209 *
Calcareous Rubble Cover	0.96	0.93 – 1.00	0.0729
DenUnit1	11.9	1.26 – 113.00	0.0307 *
DenUnit3	0.51	0.05– 55.03	0.5670
DenUnit4	0.25	0.04 – 1.65	0.1490
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$			



Supplementary Figure 2 - Depth profiles of common benthic components taken from O'Brien *et al.* (2020), pooling benthic data across the entirety of the Sweetings Pond ecosystem.

References

O'Brien DA, Taylor ML, Masonjones HD, Boersch-Supan PH, O'Shea OR, 2020. Drivers of octopus abundance and density in an anchialine lake: A 30 year comparison. *Journal of Experimental Marine Biology and Ecology* 528:151377. doi: <https://doi.org/10.1016/j.jembe.2020.151377>.