Under the canopy: macroinvertebrate associations with microhabitats and rocky reef complexity.

Jacqueline B Pocklington, Timothy D O'Hara, Michael J Keough, Stephen Hawkins, Stuart Jenkins, and Alecia Bellgrove

IN PREP

or...SNAILS ON STUFF

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Perennial intertidal Fucoid canopies

Hormosira banksii

Pocklington *et al* Diversity 2019, 11:79.

Ascophyllum nodosum

Pocklington *et al* 2018 JMBA 98(4):687-698.

13th Beach

(Victoria Australia)

Hannafore Point

(Southern England)

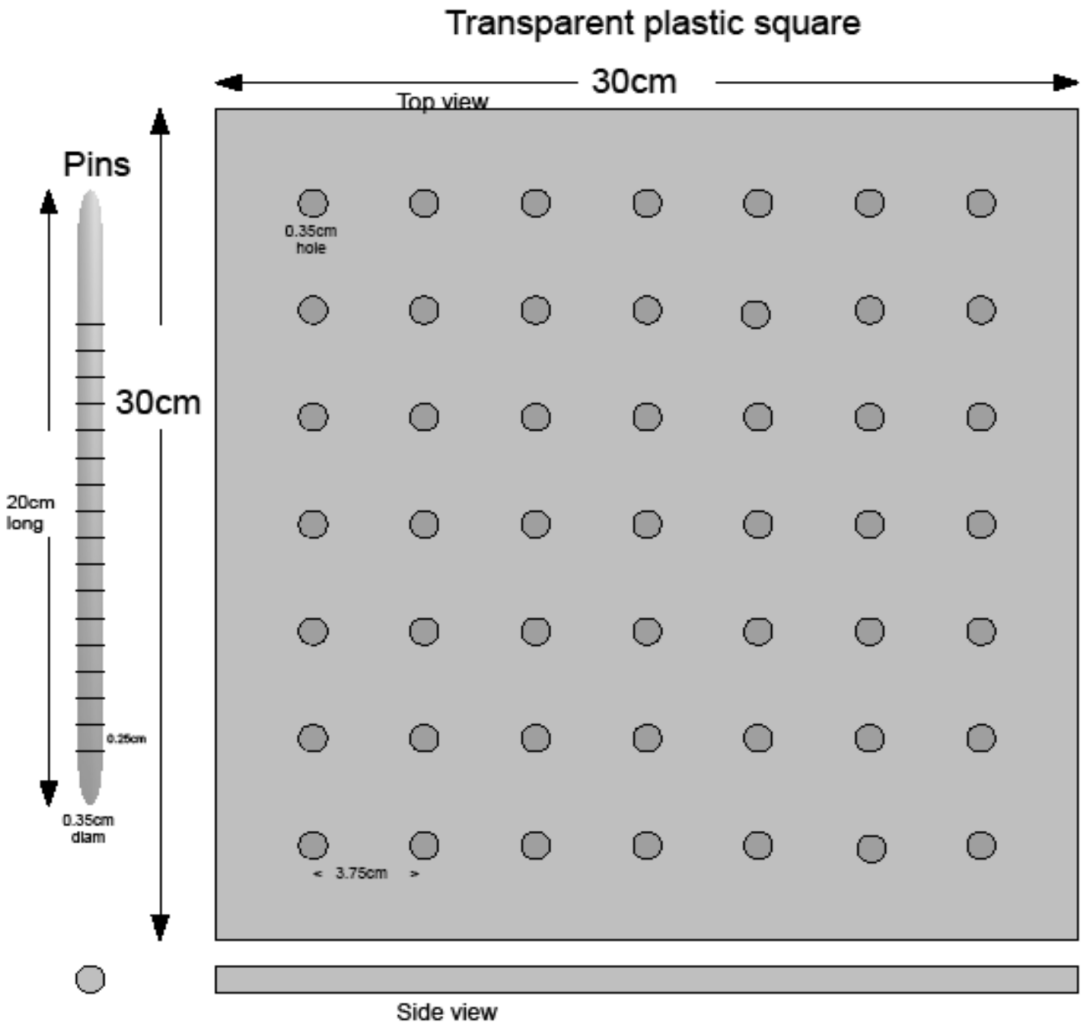
REEF COMPLEXITY

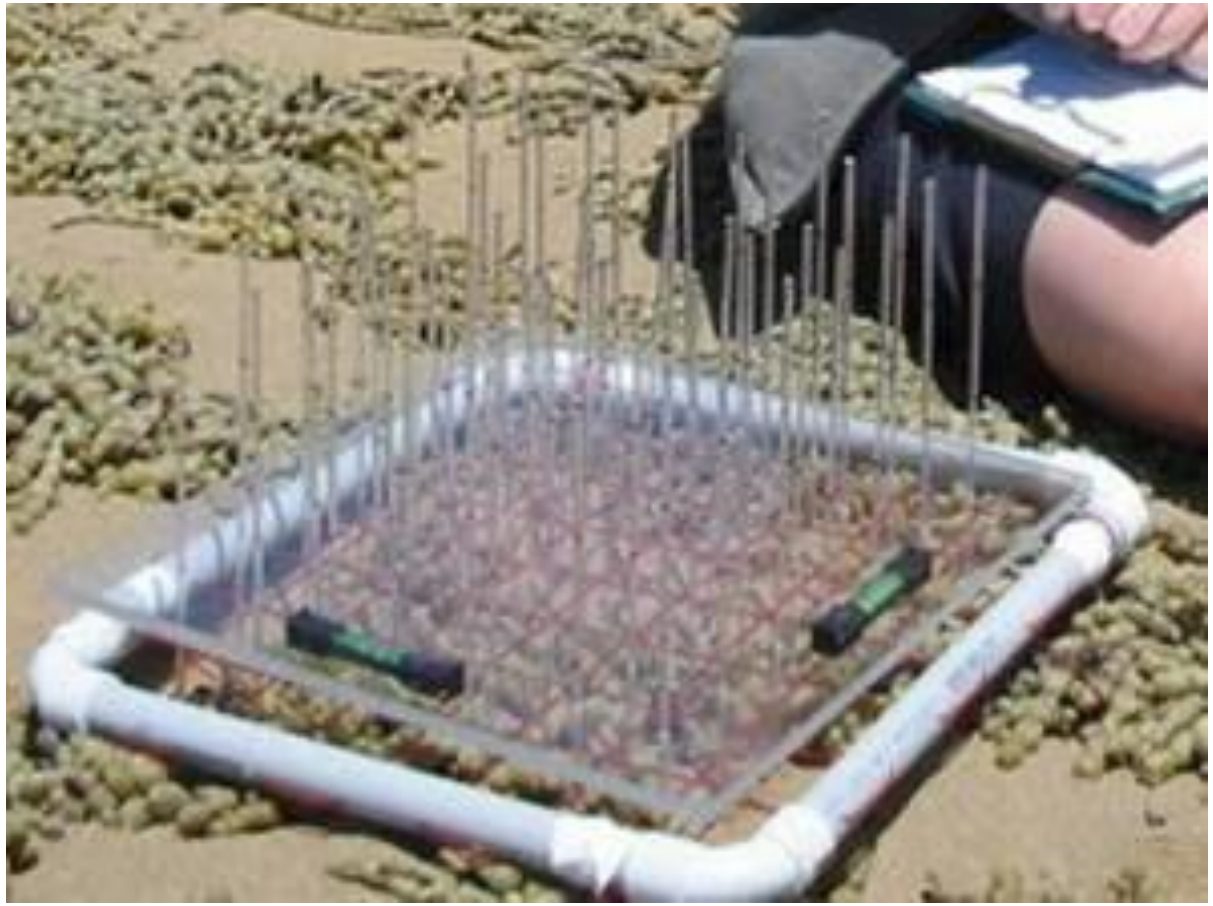
13th Beach – Victoria AUS

Bridgewater Bay – Victoria AUS

Hannafore Point – Southern England

METHOD





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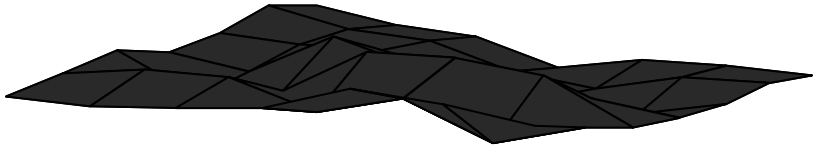
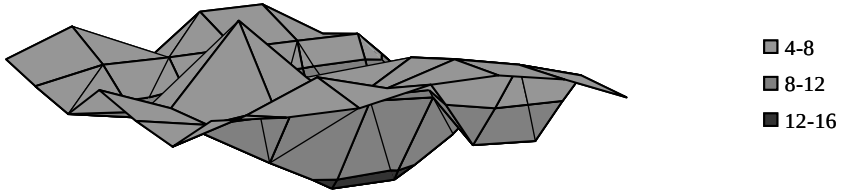
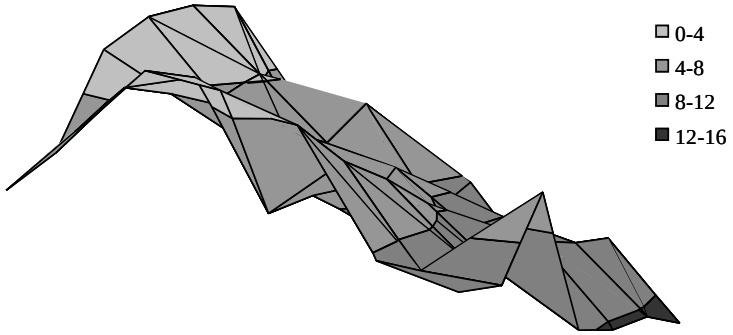
MAD =	0.4	1.0	2.0
No. depressions =	1.0	2.0	1.0
	FLAT	MODERATE	COMPLEX
	BRIDGEWATER BAY	13TH BEACH	HANNAFORE POINT







MAD high at Hannafore Point

No differences between canopy cover

= no interaction with canopy cover

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SPECIES (GROUPS) VARYING WITH MICROTOPOGRAPHY

Site	Species	Day	Covariate	F-ratio	p-value
Bridgewater Bay (Aus) (Experiment Site)	*Dicathais orbita* (1/5)	248	MAD	5.975	0.025
	Anemones (Pooled) (1/5)	1	#DEP	4.804	0.042
	Siphonaria diemenensis (1/5)	5	#DEP	5.161	0.036
13th Beach (Aus) (Experiment Site)	*Dicathis orbita* (1/8)	15	MAD	6.265	0.022
	Limpets (Pooled) (2/8)	0	MAD	9.345	0.007
		5	MAD	19.492	0.0001
	Bembicium nanum (4/8)	15	MAD	15.571	0.001
		32	#DEP	5.749	0.028
		48	#DEP	4.659	0.045
		88	#DEP	5.756	0.027
	Chlorodiloma adelaidae (1/8)	5	#DEP	4.537	0.047

Note: Only *Chlorodiloma adelaidae* more abundant in full canopies Pocklington et al. 2019

UK = ns

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Snails on stuff not Seals on stuff!

Grey Seal, Farnes Islands, NE England

Leopard Seal, Victoria AUS

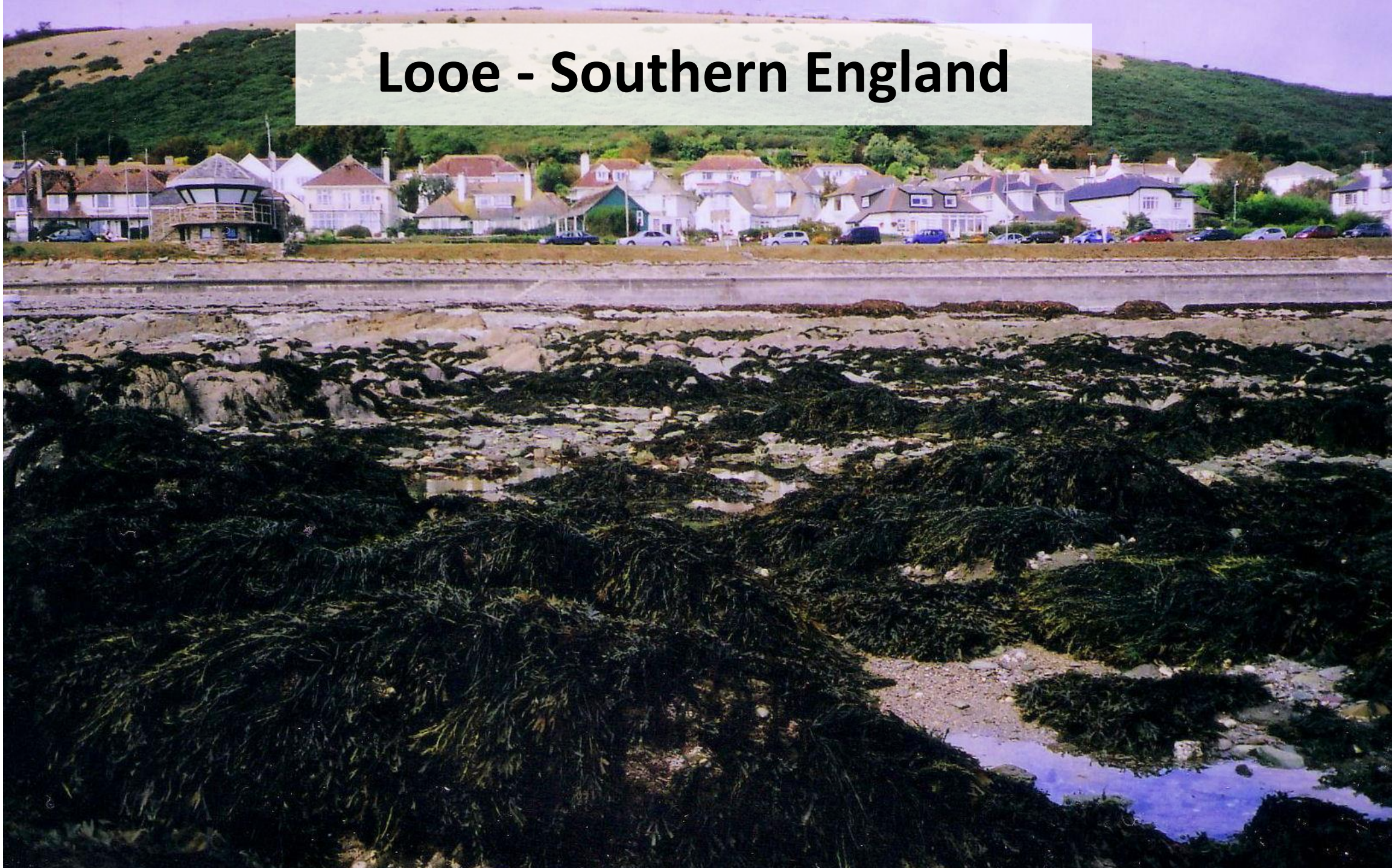
MICROHABITATS

Sorrento Back Beach – Victoria AUS

Point Roadknight – Victoria AUS

Batten Bay – Southern England

Looe - Southern England



Crevices

Small pits

Bare rock - horizontal

Microhabitat types

- Canopy (frond)
- Holdfast
- Bare rock (Horizontal)
- Bare Rock (Vertical)
- Crevices
- Small pits (AUS)
- Mussels (AUS)
- Turf algae (AUS)
- Sand (AUS)

Bare rock - vertical

Canopy/frond

Littorina obtusata

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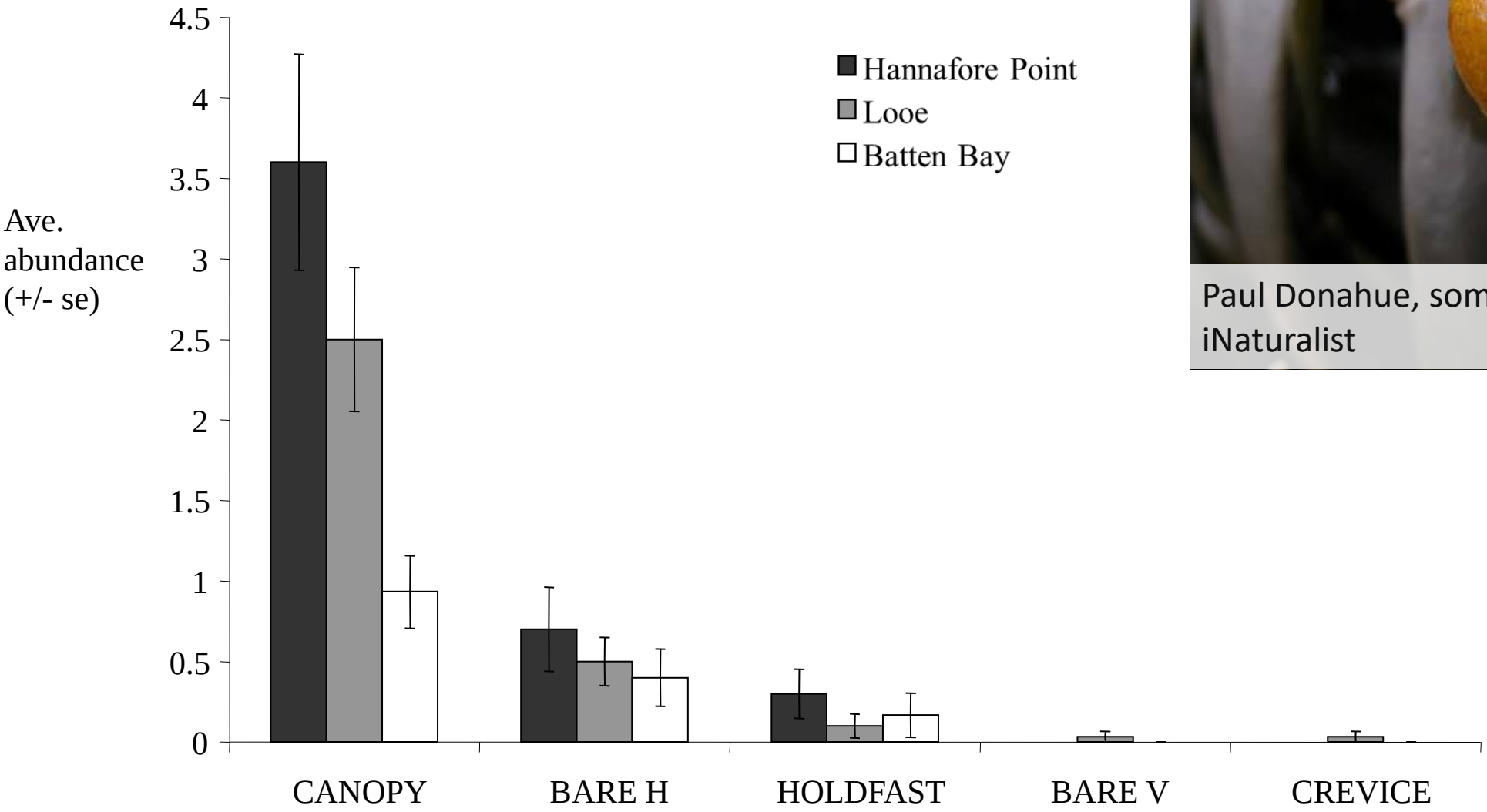

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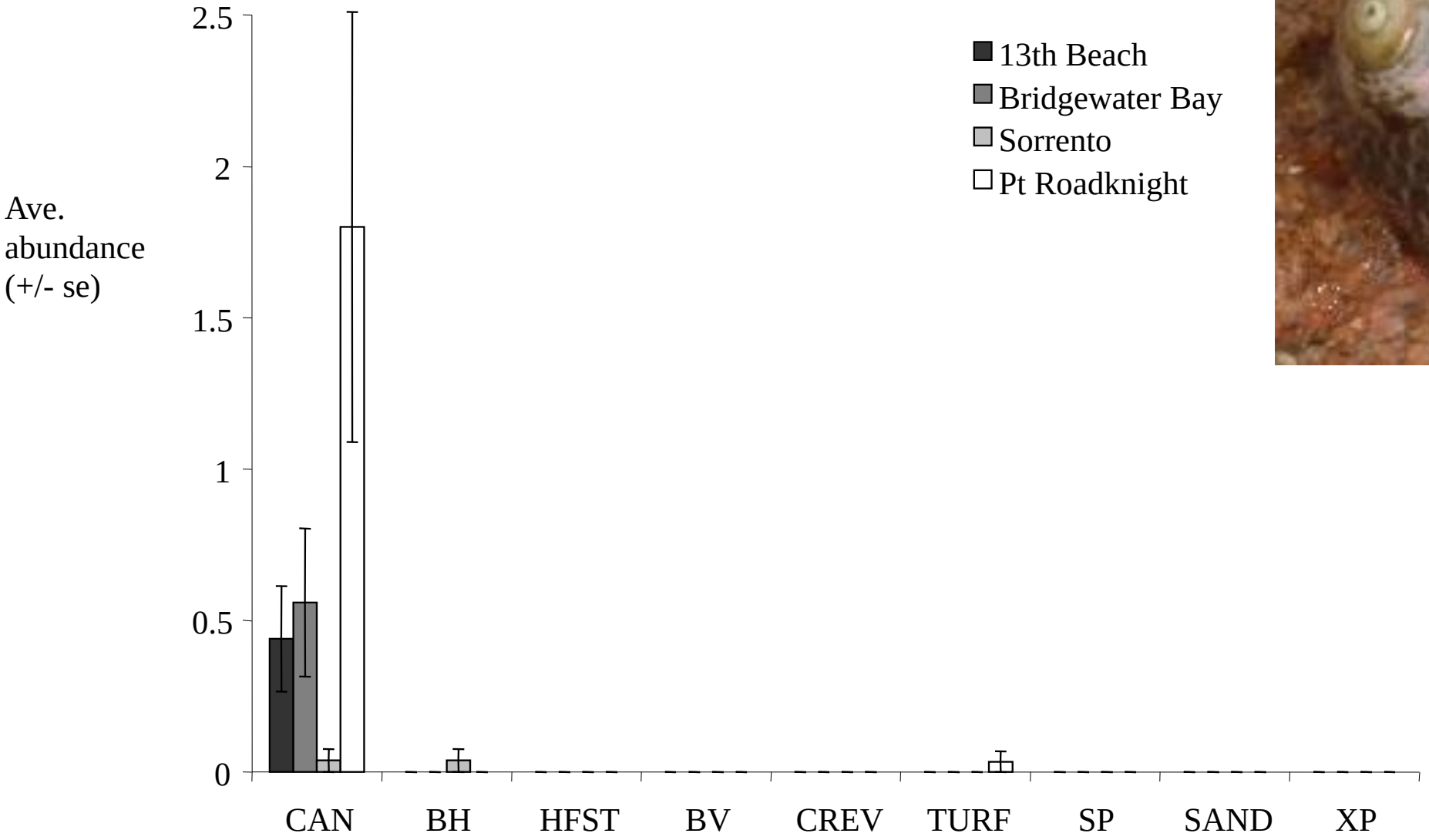
Chlorodiloma adelaidae



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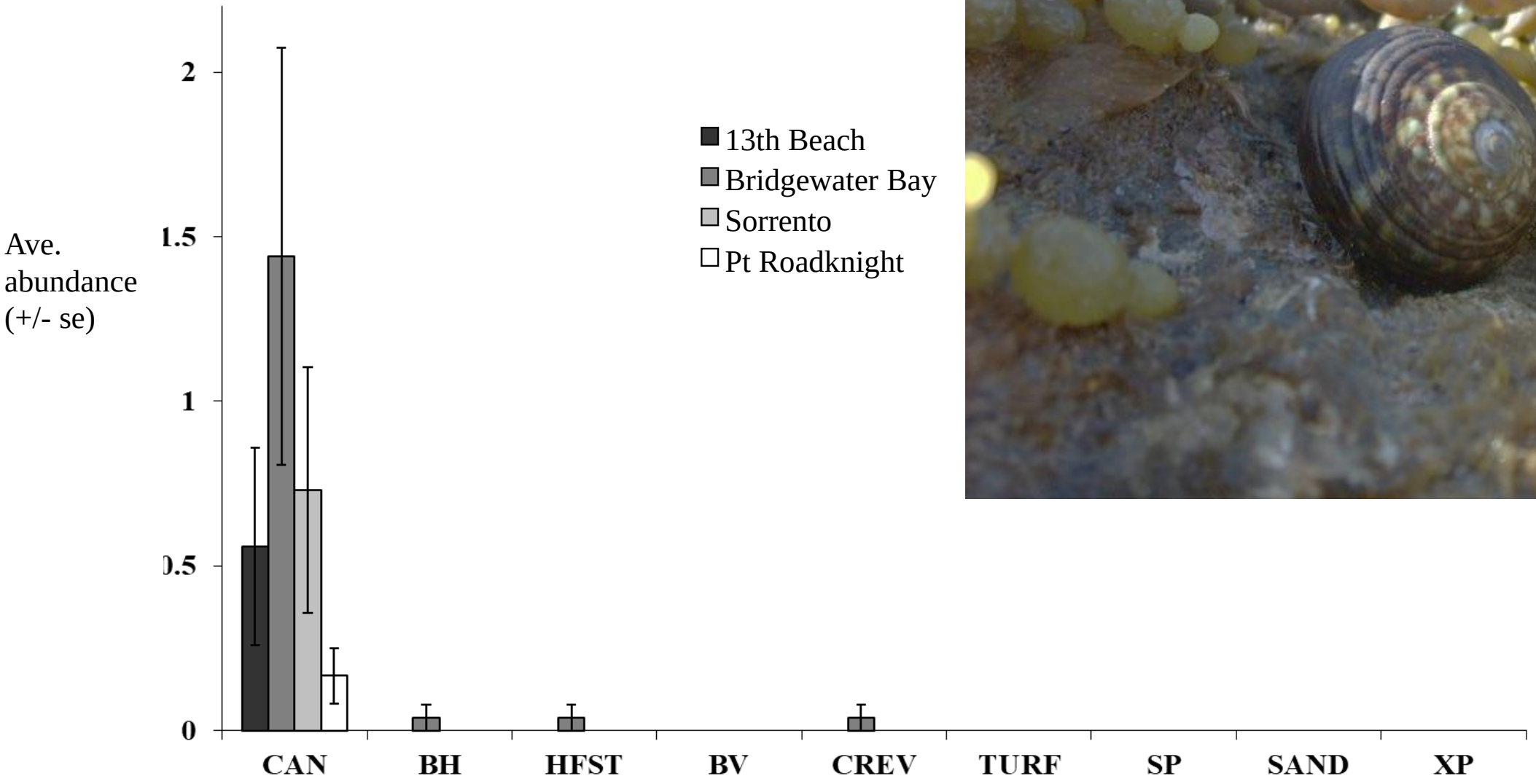
Lunella (Turbo) undulata



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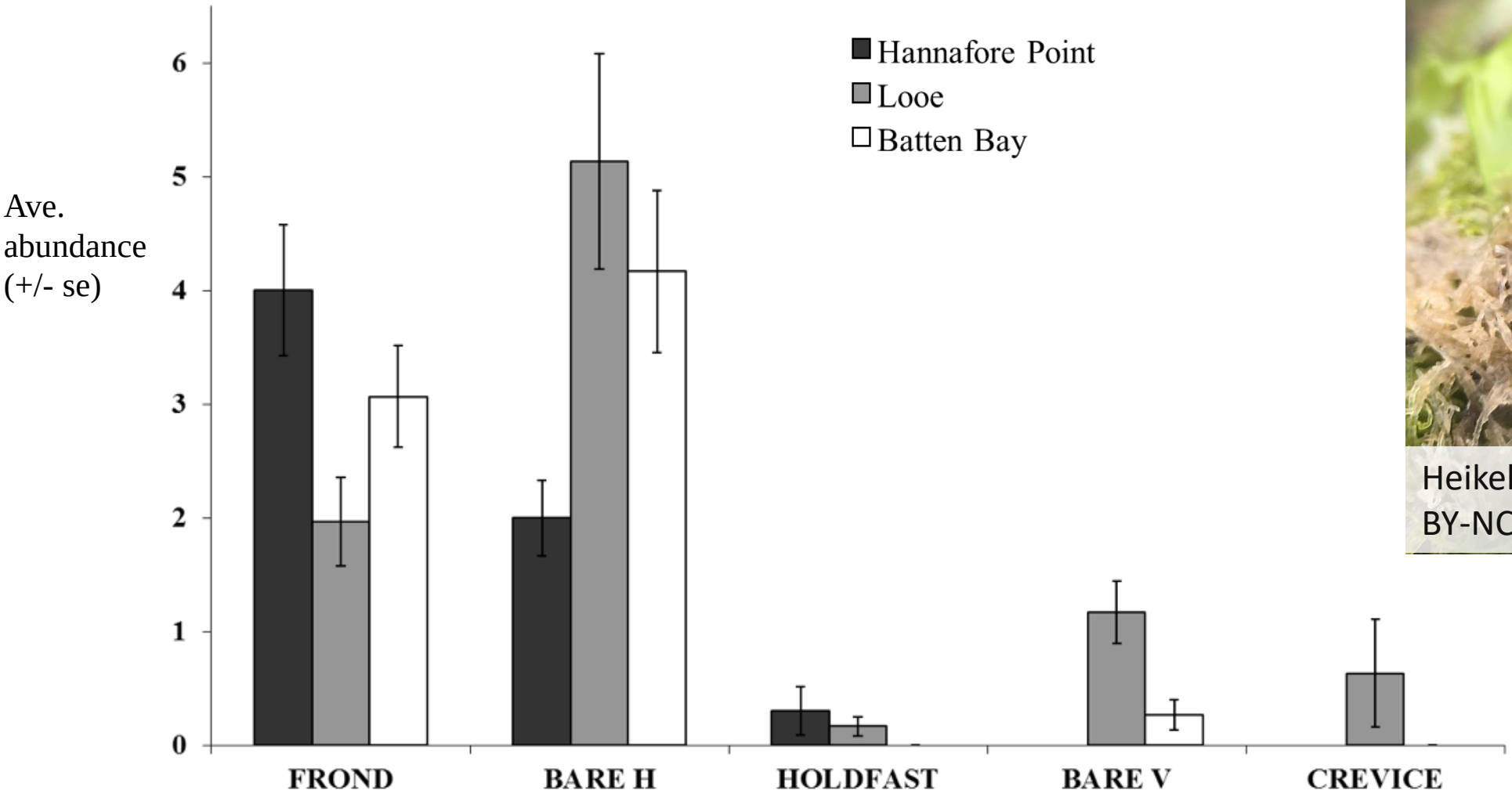
Steromphala (Gibbula) umbilicalis



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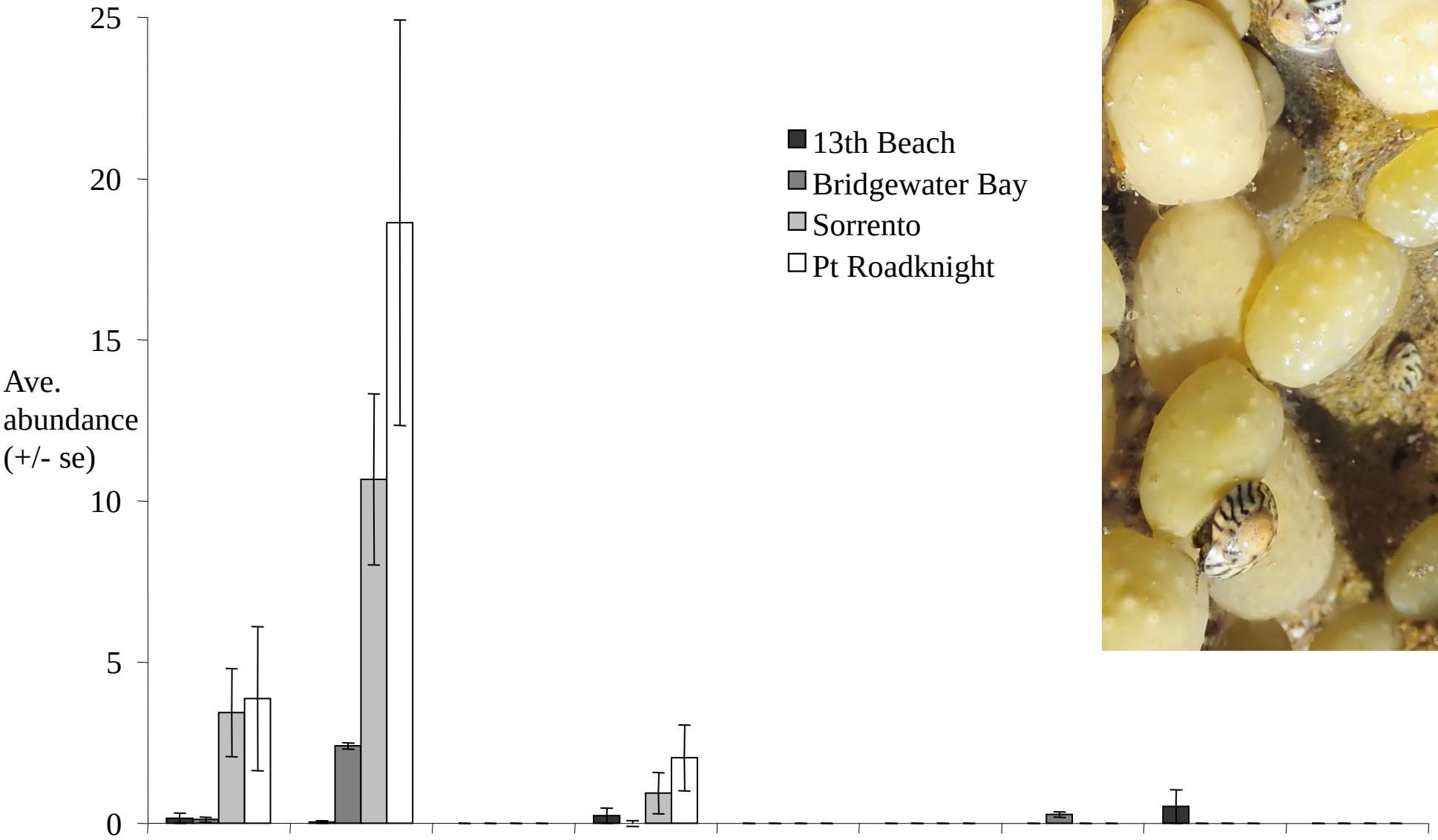
Bembicium nanum



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CONCLUSIONS

- Canopy associated species often rely on the canopy structure as a microhabitat
- Microtopography doesn't alter response of invertebrates to canopy loss in UK, though may explain some of the species preferences of species not strongly associated with full canopies on VIC rocky shores
- *Hormosira banksii* and *Ascophyllum nodosum* important Autogenic Ecosystem Engineers with specific assemblages.

Hormosira banksii

Ascophyllum nodosum

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