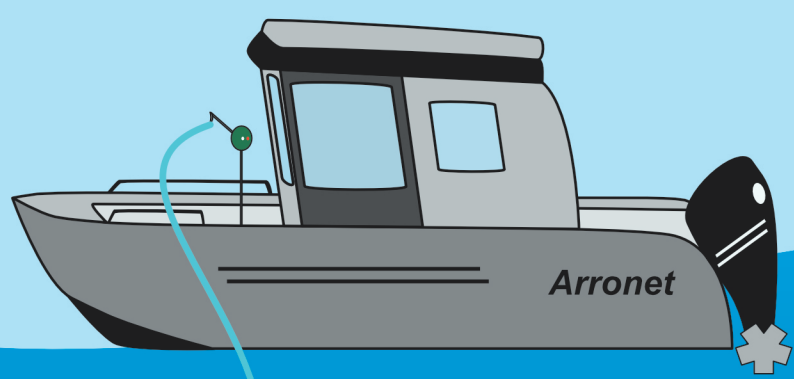


Tales from the Tareskog: A dive into GEcoKelp research activities in Nordic kelp forests



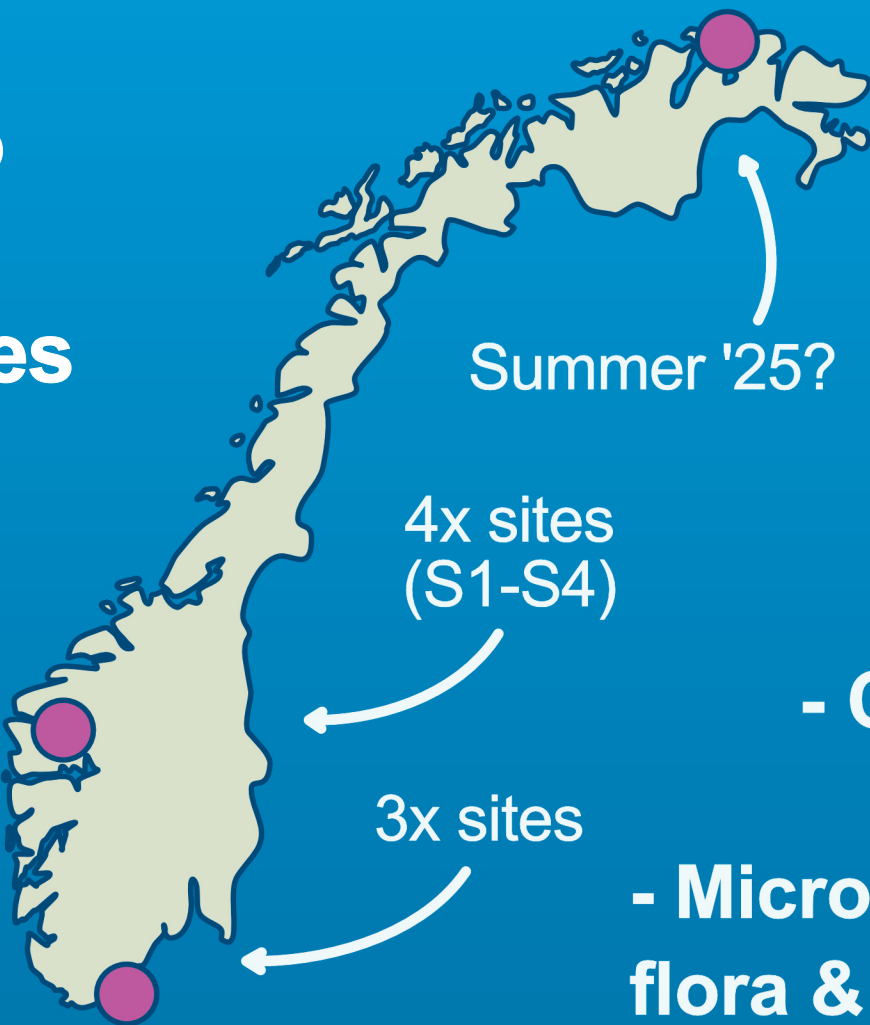
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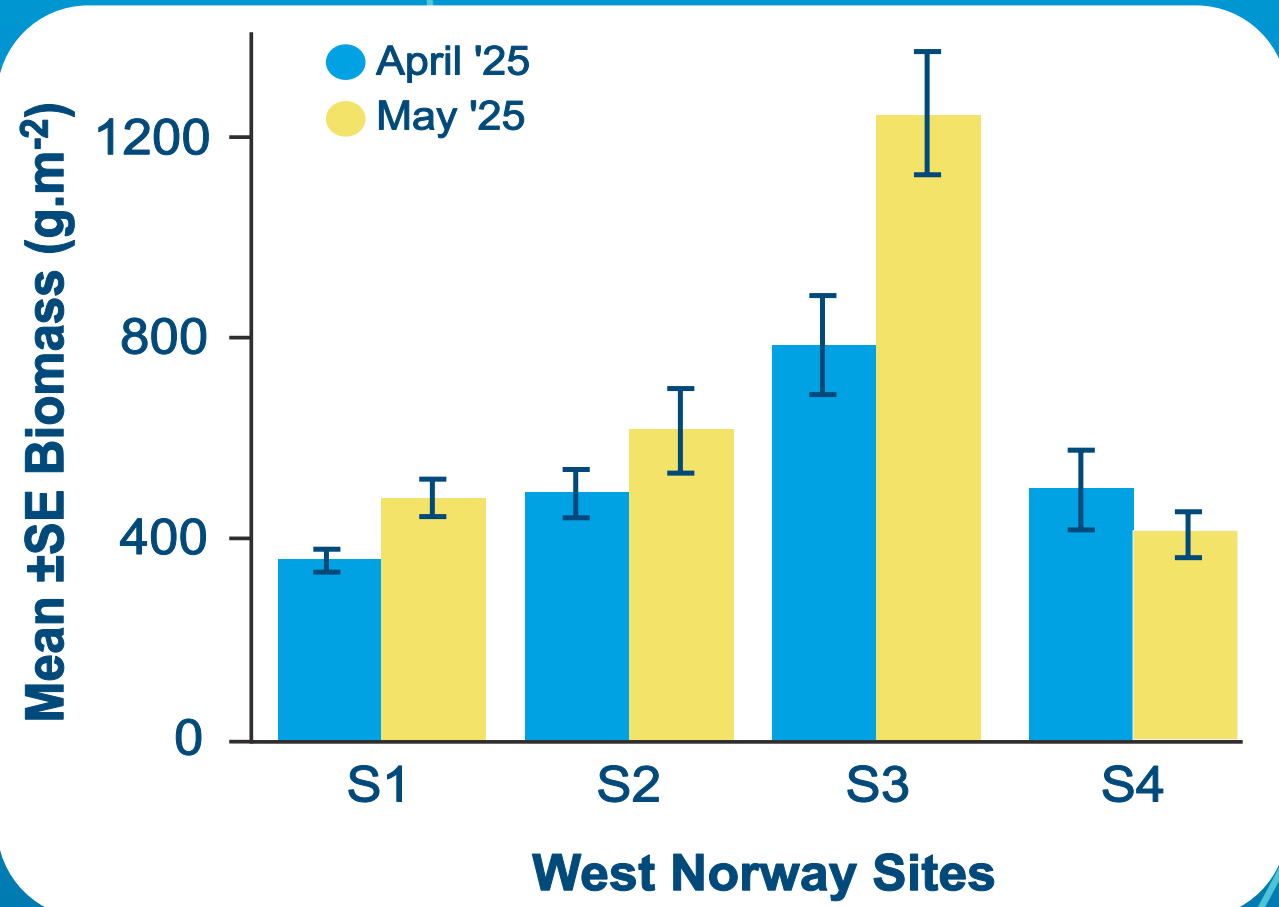
Intertidal investigations

Laminaria digitata is a key **intertidal kelp** species along the Norwegian coast. Climate & human stressors **threaten** these coastal foundation species, with robust **baseline data** essential to understand, manage & conserve them & their associated assemblages often **limited**.

Aim: Investigate **spatio-temporal variation** in the **structure, productivity & biodiversity** of Norway's *L. digitata* forests



- Forest structure: quadrat surveys, clearings for morphology & biomass.
- Growth & dislodgement: 30x plants per site tagged & hole-punched.
- C content: dried for elemental analyses.
- Microhabitat biodiversity: holdfast, stipe, blade flora & fauna collected & preserved.



Mean Facts

Length: 84.4 ± 2.2 cm
Biomass: 508.5 ± 19.4 g
Density: 112.4 ± 12.2 ind. m⁻²
Growth (Apr-May): 0.63 ± 0.01 cm. day⁻¹

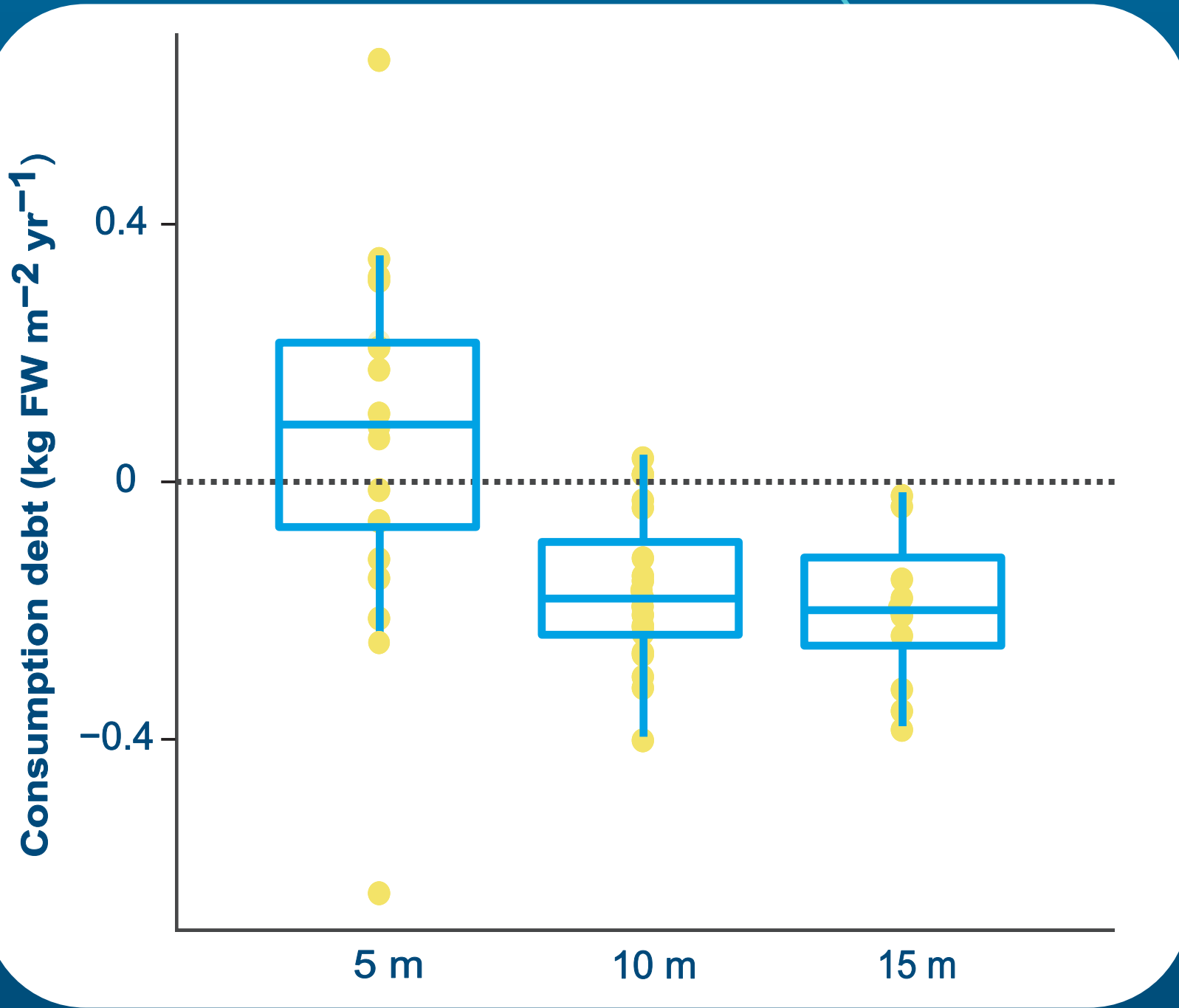
Decoding depth distributions

The **Arctic** is **warming 3x faster** than the global average, but **ecological data** from this remote region is **limited**. Arctic kelp forests are expected to **benefit from warming**, but this could be offset by **coastal darkening & sea urchin grazing**. The interaction between these factors & their influence across **depth gradients** is unknown. Kelp forests at the Arctic-Boreal interface are important **sentinels of a future Arctic**.

Aim: Investigate the **balance** between *L. hyperborea* **productivity** & **sea urchin consumption** across a **light stress gradient** in SW Iceland (sub-Arctic)

- Productivity: kelp density * annual kelp production.
- Consumptive demand: urchin biomass * species & biomass specific grazing rates.

$$\text{Balance (Consumptive Debt)} = \text{Productivity} - \text{Consumptive demand}$$

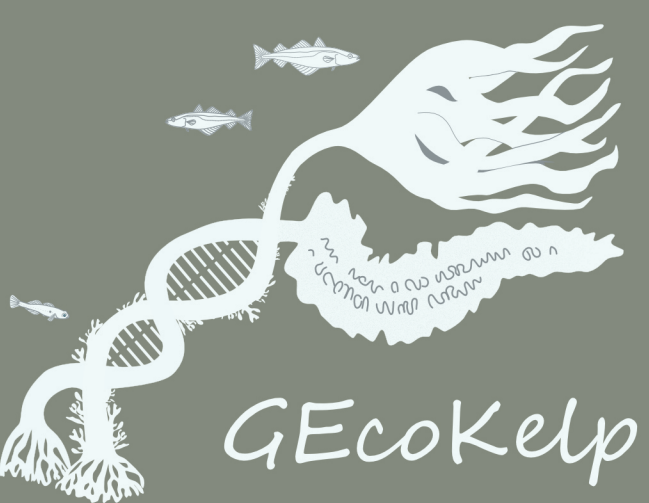
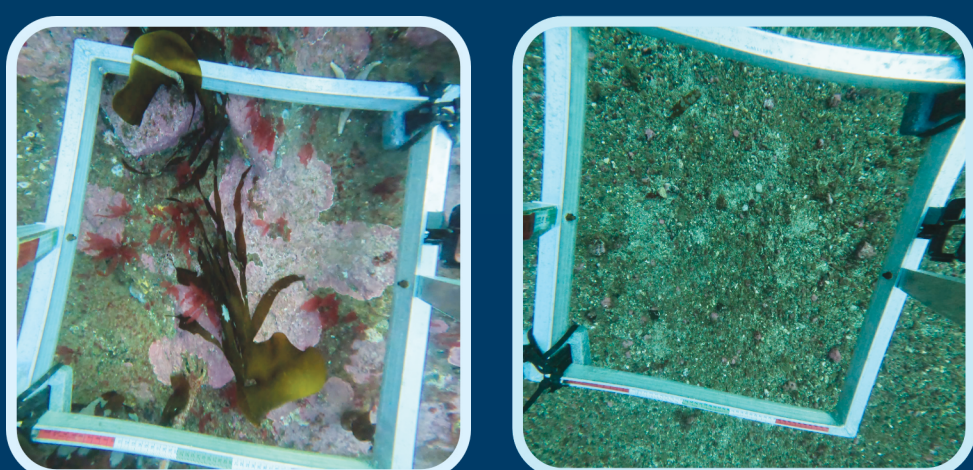
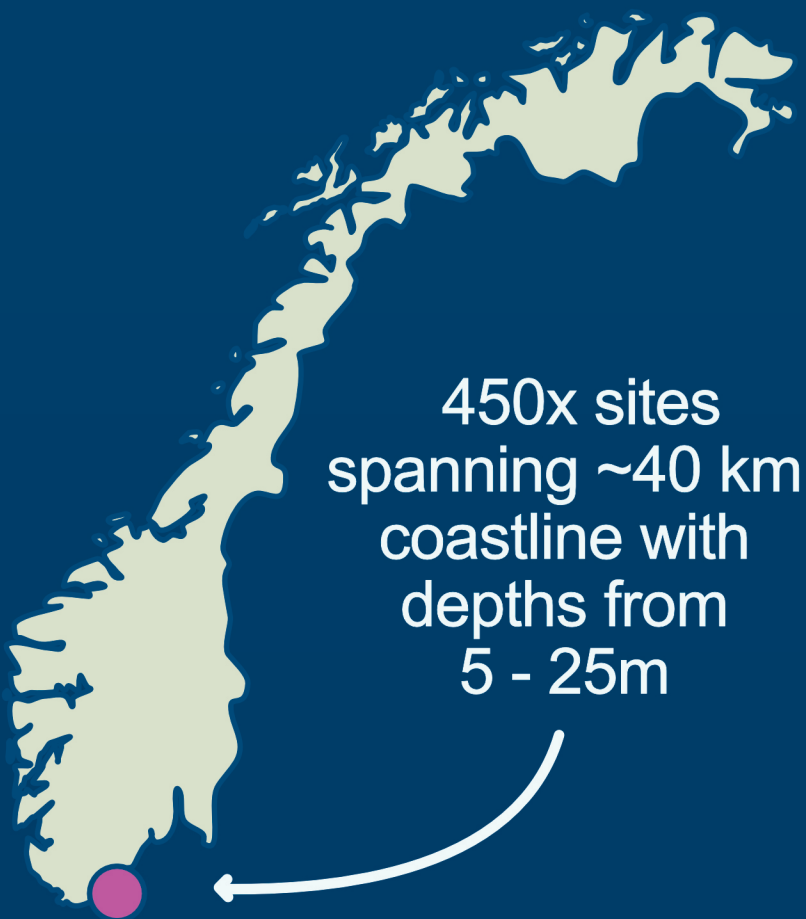


Consumptive demand increases with depth, suggesting predicted kelp gains may be depth limited

Diving with the drop-cam

L. hyperborea is important ecologically, commercially & in terms of blue carbon. **Models** have estimated kelp **standing stocks** in W. Norway. However, *L. hyperborea* forests in S. Norway differ in structure relative to W. Norway, meaning current models may not **accurately predict** their distribution & standing stock.

Aim: Generate a **spatially explicit model** of *L. hyperborea* **biomass** in S. Norway



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