Gametophyte propagation and direct seeding for Saccharina latissima cultivation in Alaska

Cameron Jardell and friends

Alutiiq Pride

CHUGACH REGIONAL RESOURCES COMMISSION

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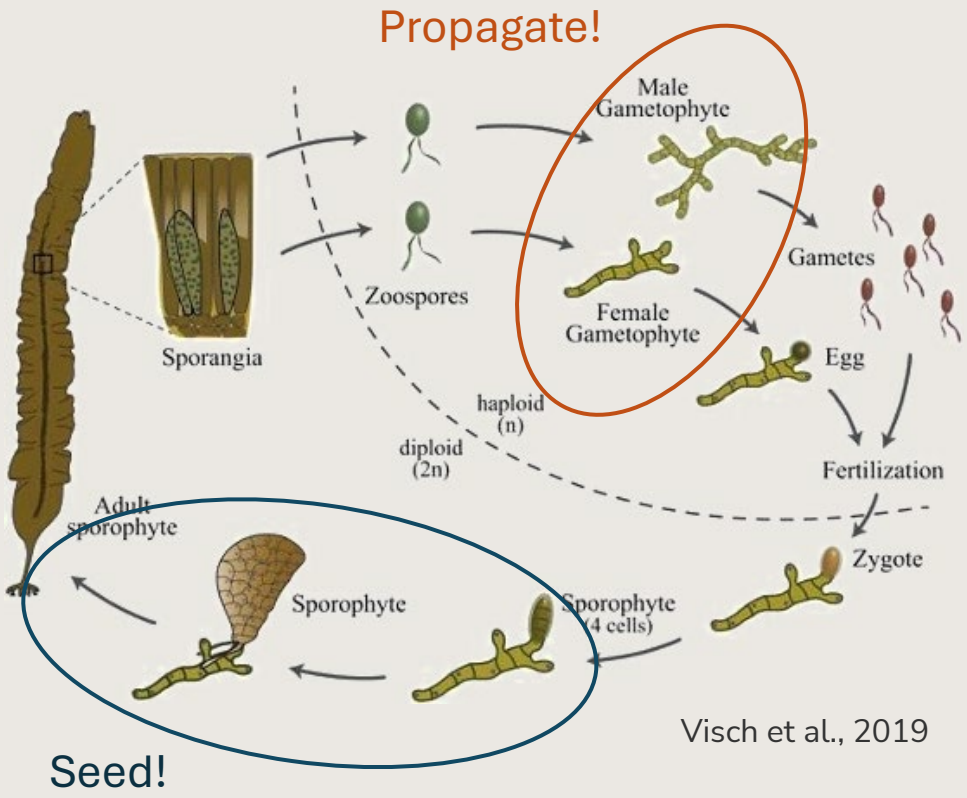
ALASKA FISHERIES Development Foundation, Inc.

The gametophyte life stage offers unique seeding benefits for farmers, but challenges must be overcome.

Goal: Enhance gametophyte hatchery resources for Alaskan kelp farmers



Visch et al., 2019

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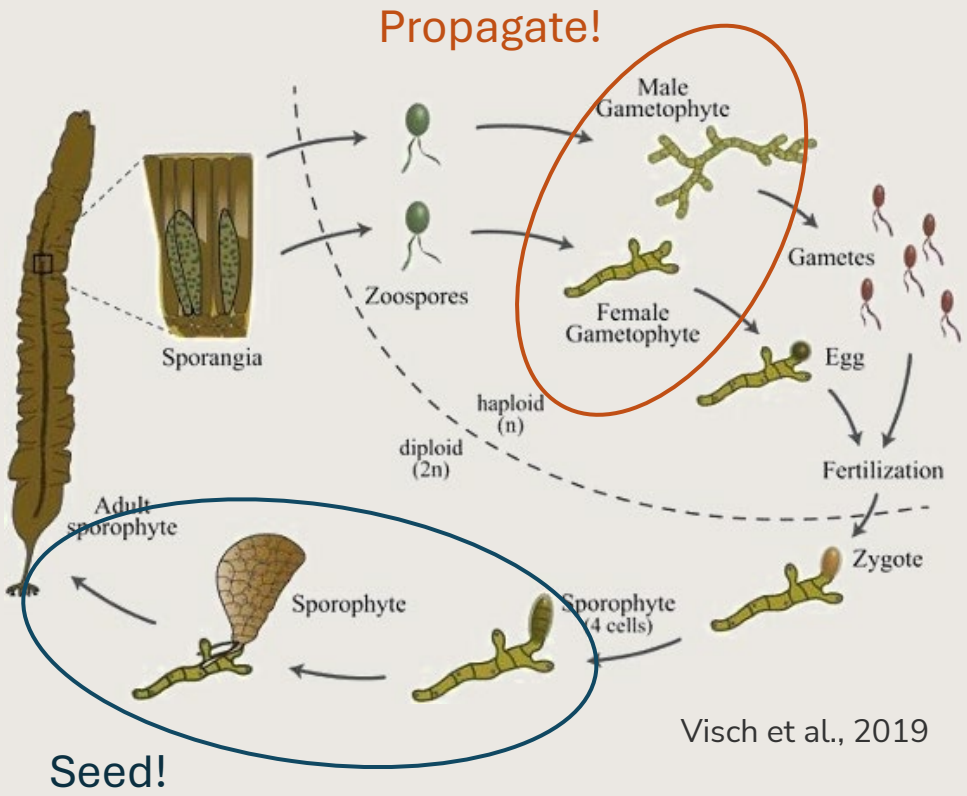

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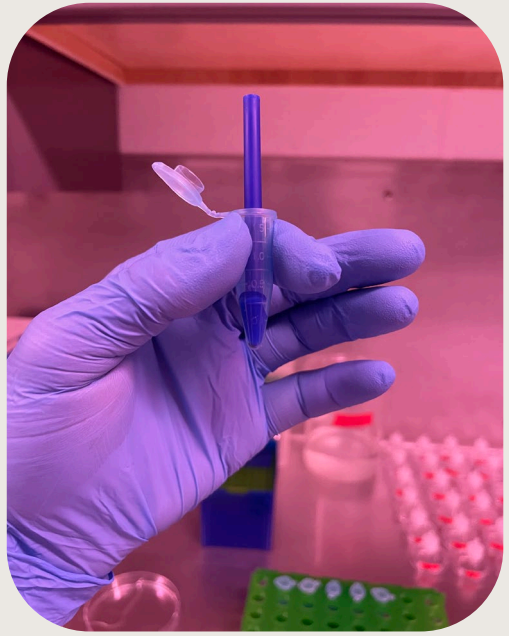
Protocols & best practices



Equipment

APMI Gametophyte Hatchery Initiative

- Focus species: **sugar kelp** (*Saccharina latissima)*

Joint Innovations Grant (AFDF)

- *Optimize gametophyte husbandry protocols*
- *Test seeding methods under lab conditions*

Seed Quality Improvement (SEC)

- *Continue husbandry optimization*
- *Ocean seeding trials*

Gametophyte propagation → Lab seeding trials → Ocean seeding trials

Propagation:

How can we most efficiently grow sugar kelp gametophytes?

- Mixed sex cultures
- Biology and practicality considered

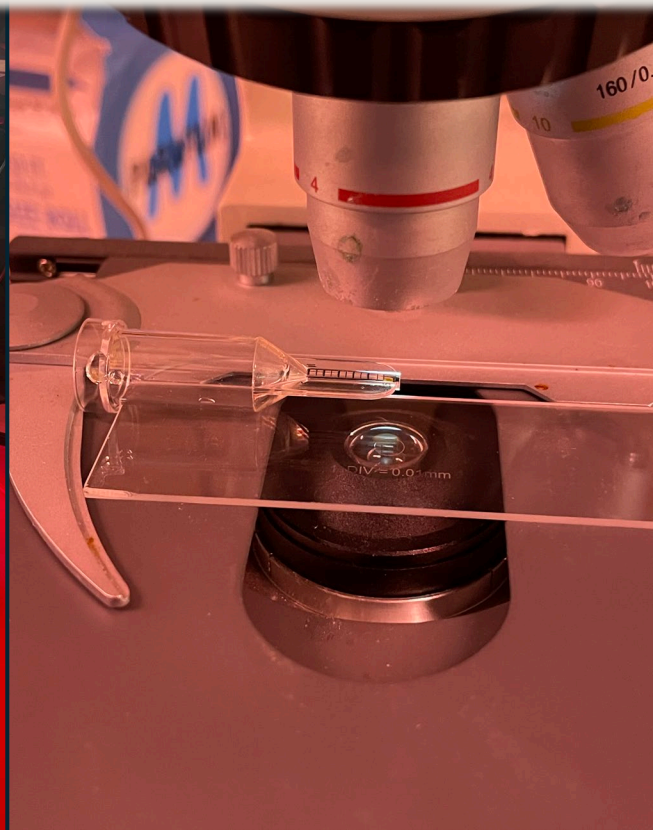
Light

Nutrients

Temperature

Density

Fragmentation



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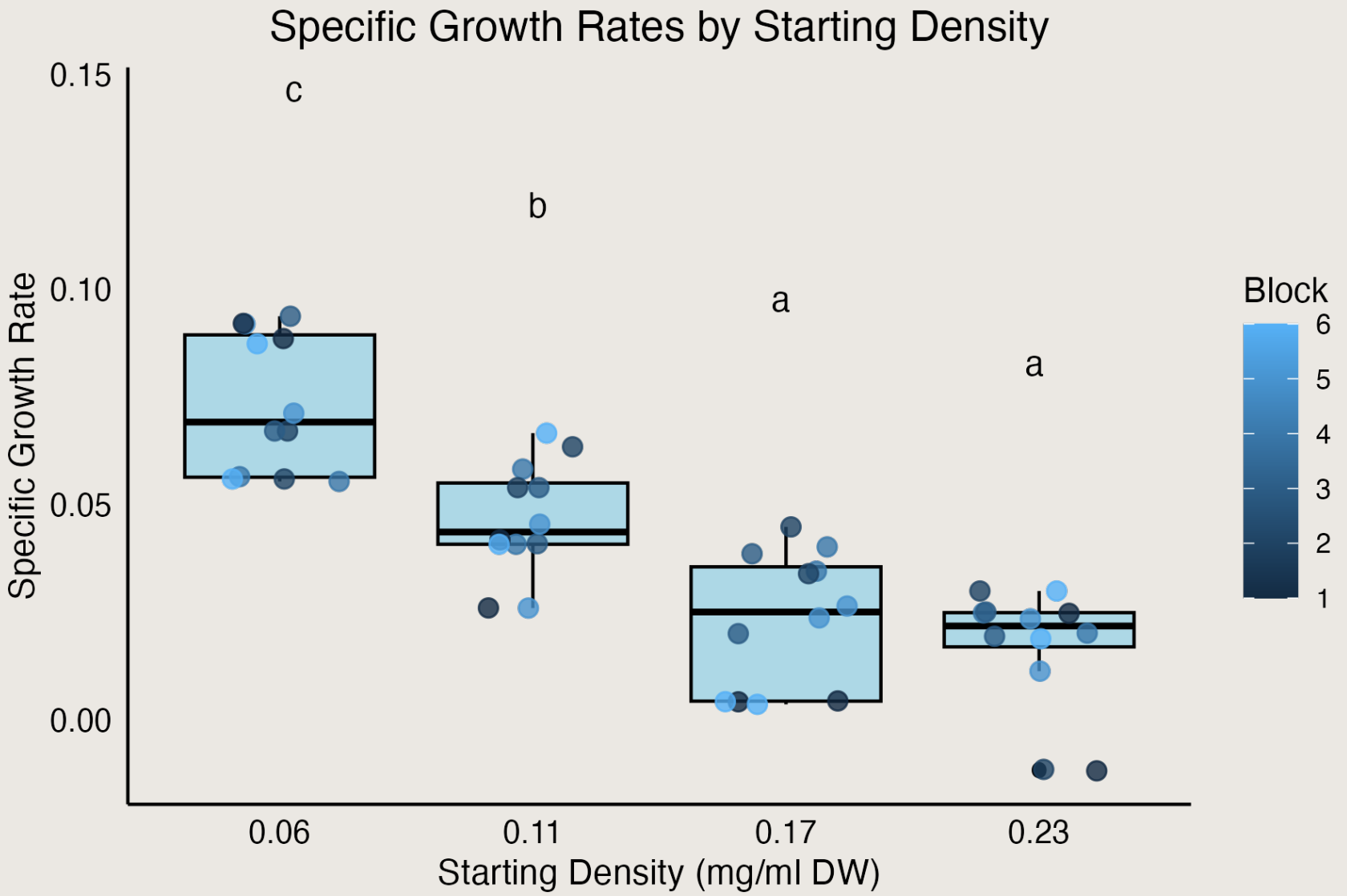

Density

Fragmentation

Tukey's post hoc*

Seeding trial:

Compare the performance of ocean grown sporophytes using spool and direct seeding methods

performance ~ seeding_method * substrate * site

(biomass)	(gametophyte spool)	(3 strand polydac)	(Kasitsna bay)
(density)	(spray direct)	(Sirputis braided)	(Jakalof bay)
	(spray direct + binder)		

Outplant **Sample**

January → May

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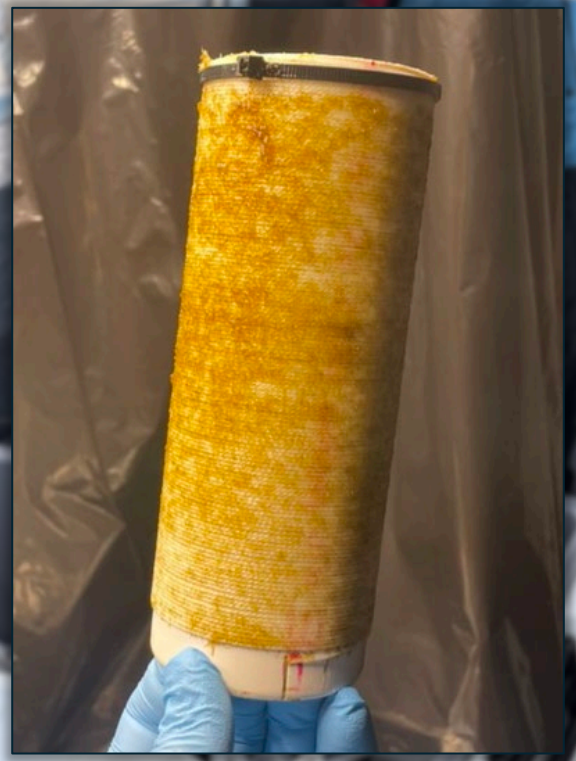

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Summary and future directions:

- Progress towards commercial hatchery protocols
- Contamination has caused research delays
- Hatchery and seeding equipment improves capabilities

NOAA, Kasitsna Bay Lab

Paul Cziko

WHOI, Lindell Lab

Scott Lindell

Daniel Gossard

Spinnaker Sea Farms

Lindsay Olsen

Questions?

cameron@alutiiqprideak.org

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