

# Kelp Farming: Promises, Pitfalls, and What We Still Don't Know

## April 11, 2023—Recorded Chat

11:34:01 From Serena Renner to Everyone:

Hi Leona. Yes, this webinar will be recorded and available at the YouTube link where we're also live streaming. <https://www.youtube.com/watch?v=o5tceLEKtA>

11:34:27 From Mike Roberson to Everyone:

Is it possible to get a transcript post-meeting?

11:35:17 From Mike Roberson to Everyone:

I trust no one can hear all the noise in the background where I am currently located.

11:36:41 From Serena Renner to Everyone:

Hi Mike. Email us directly at [info@hakaimagazine.com](mailto:info@hakaimagazine.com) and we'll try to get you a transcript.

11:37:03 From Mike Roberson to Everyone:

Thank you

11:38:23 From Serena Renner to Everyone:

I also want to remind you all to feel free to include questions here in the chat. Vanessa and I will be collecting those for the Q&A at the end.

11:39:31 From Serena Renner to Everyone:

I believe the common names for the Cascadia kelps Jenn mentioned are sugar kelp, winged kelp, and giant kelp.

11:40:12 From Mike Roberson to Everyone:

Do you have a need for seasonal workers? I am 68, but fit 😊

11:40:49 From Geri Rhodes to Everyone:

Is kelp certified as a fertilizer for organic gardeners?

11:41:18 From Nichole Price to Everyone:

@Geri - yes, kelp can be certified organic for food, feed, and fertilizer

11:41:40 From rs konik to Everyone:

Can the kelp be grown in fresh water?

11:41:45 From Kevin McRae to Everyone:

Curious about the status of our wild kelp forests? With regards to Urchin barrens/SSWD/rising ocean temperatures; are our wild kelp forests recovering or getting worse?

11:41:51 From Erin Bremner-Mitchell to Everyone:

Hi Mike ~ Erin from Cascadia Seaweed here. Thank you for your interest! Our seasonal work is offered to our First Nations partners in the communities in which we work.

11:42:30 From Mike Roberson to Everyone:

Is land farming of kelp, where temperature is more manageable, viable?

11:43:25 From Mike Roberson to Everyone:

I mean land farming as in ponds or aquariums of course.

11:43:42 From Rajiv Bhushan to Everyone:

Jen, is that 200 wet tonnes total annually?

11:44:13 From Ian McFarland to Everyone:

Does anyone know who is leading R&D for open ocean farm designs? I'm aware of Seafields, Ocean Rainforest, and Running Tide wanting to expand out beyond bays and coastlines.

11:44:53 From Madelyn Jones to Everyone:

With the pressing climate issues and governance systems, what are the current site selection processes for selecting appropriate kelp farm locations?

11:45:02 From chris shelton to Everyone:

How does ocean pollution effect seaweed used in the food chain?

11:45:27 From Jennifer Clark to Everyone:

We don't grow bull kelp because we get all our requirements from the kelps we grow currently and bull kelp can be challenging to grow on long lines

11:45:41 From Franchesca Perez to Everyone:

That was so interesting, thank you for sharing!

11:46:16 From Mike Roberson to Everyone:

Thanks Erin, fully understood about working local populations.

11:46:53 From Kiara Franke to Everyone:

Can you manipulate the kelp genes to use genetic lines that are better adapted to certain Impacts or is the modified kelp a Problem for the natural gen pool? Are you able to use other kelp species than the species growing in the area?

11:46:54 From Bill Davis to Everyone:

Boothbay Hahbah!

11:46:59 From Mike Roberson to Everyone:

How about volunteers? 😊

11:47:20 From Natascia Tamburello to Everyone:

Chris Shelton - there have just been a few studies on this so far in BC (that I know of):

One by the BC CDC on food safety considerations for edible bull kelp:

<http://www.bccdc.ca/resource-gallery/Documents/Educational%20Materials/EH/FPS/Food/bullkelpmarineproductsafety1.pdf>

And a scientific study looking at all types of contaminants in seaweeds in the Salish Sea:

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0269269>

11:47:28 From Rhoda Green to Everyone:

Dune, Thank you for sharing those historical stories. Kelp bricks is excellent! I would like share your stories if possible.

11:48:34 From Erin Bremner-Mitchell to Everyone:

Hello Rajiv ~ Erin from Cascadia Seaweed here. Yes, we are predicting a wet harvest of 200 tonnes this year. We expect that number will grow as we add additional farm sites along the coast of British Columbia.

11:49:06 From Griffin Hill to Everyone:

+1 to Kiara's question regarding genetic optimization of Canadian farmed kelp stocks. It sounds like Cascadia collects directly from the wild every year, but is there any plan for nursery

programs or strain refinement as operations continue to scale up? Is there regulation in place guiding the exchange of genetic material between kelp populations wild and cultivated?

11:49:10 From Barry Udelson to Everyone:

@Kiara Franke: Scott Lindell from WHOI in Massachusetts has been doing some selective breeding.:<https://www2.who.edu/site/lindell-lab/projects/mariner-kelp-breeding/>

11:49:35 From Paul Molyneaux to Everyone:

What about carbon recovery as biofuel?

11:50:00 From Benjamin Van Alen to Everyone:

Is it reasonable that we can introduce, grow, and harvest kelp at an industrial scale knowing that open kelp farming operations are mining more nutrients than they recycle?

11:50:31 From Erin Bremner-Mitchell to Everyone:

Thank you, Mike! We love the idea of volunteers, however, we have been focused on providing economic benefits (jobs) to the members of our partner Nations. =)

11:51:16 From Madelyn Jones to Everyone:

@Kiara Chris Neufeld is doing work with kelp genetics at Kelp Rescue Initiative in British Columbia <https://kelprescue.org/>

11:51:29 From Samuel Savoie to Everyone:

Is there any guide of good practice/sustainable development in the industry coming from Canada? I see a lot of them coming from USA or Europe but I don't know if there is anything like that here? In the perspective of improving production volumes to sustain biofuel factory for example and making sure in the other hand that some guidelines are there to frame the economic, social and environmental aspect of a project?

11:51:42 From Amanda Root to Everyone:

Please can you tell me if we know yet which seaweeds are known to reduce methane production in cattle?

11:51:49 From Jen Otoadese to Everyone:

Thank you Dune! For everyone, here is a link Dolly Garza's PDF on the NOAA site of Garza's Common Edible Seaweeds in the Gulf of Alaska:

[https://repository.library.noaa.gov/view/noaa/36703/noaa\\_36703\\_DS1.pdf](https://repository.library.noaa.gov/view/noaa/36703/noaa_36703_DS1.pdf)

11:52:17 From Mike Roberson to Everyone:

Fully understood about jobs for your Partner Nation. Good on ya!!!! I'll follow-up offline as I would just love to see your operation, without being a nuisance of course.

11:52:31 From Giles to Everyone:

Wouldn't sinking large quantities of kelp impact buried ecosystems?

11:52:36 From Erin Bremner-Mitchell to Everyone:

[erin@cascadiaseaweed.com](mailto:erin@cascadiaseaweed.com) = )

11:52:55 From Joachim Carolsfeld to Everyone:

I was wondering about evidence that kelps reduce methane production in ruminants - I thought it was demonstrated in a particular red alga. Does it happen with all macroalgae?

11:53:34 From Mary Cate Bernal to Everyone:

Nicole just brought up so many questions that have been floating around my brain. I'm very curious about which species are recommended given algal die off as well how the farm footprints impact the natural ecosystem. Can you elaborate on these considerations?

11:54:21 From Rajiv Bhushan to Everyone:

Giles,

Sinking kelp is not the only way to sequester carbon - You can convert it to carbon, or to humic acids, and use both of those as carbon sinks

11:54:25 From Nichole Price to Everyone:

Some useful links

US Ocean Climate Action plan

[https://www.whitehouse.gov/wp-content/uploads/2023/03/Ocean-Climate-Action-Plan\\_Final.pdf](https://www.whitehouse.gov/wp-content/uploads/2023/03/Ocean-Climate-Action-Plan_Final.pdf)

Preprint paper on CO2 Sequestration

<https://www.biorxiv.org/content/biorxiv/early/2023/01/07/2023.01.02.522332.full.pdf>

Funding opportunity for Marine Carbon Dioxide Removal research from Google

<https://blog.google/outreach-initiatives/sustainability/apply-now-for-new-carbon-removal-research-awards/>

11:54:43 From Erin Bremner-Mitchell to Everyone:

Cascadia Seaweed BCSRIF project:

<https://www.cascadiaseaweed.com/using-kelp-farms-to-help-fish-biodiversity>

11:54:58 From Nichole Price to Everyone:

Interagency Working Group on Farmed Seaweeds in the US

11:54:59 From Nichole Price to Everyone:

<https://www.ars.usda.gov/animal-production-and-protection/aquaculture/docs/iwg-farming-seaweeds-and-seagrasses/>

11:55:05 From Charles Blair to Everyone:

Not come across kelp in that context (methane reduction)...the main species is

Asparagopsis: [Fiona@theseaweedalliance.org.uk](mailto:Fiona@theseaweedalliance.org.uk)

11:55:07 From bob bob to Everyone:

Biofuel and Bioplastics Bingo! ARPA-E US Military funded research for Navy and aviation fuel. Has Bigelow got an estimate on the minimum size of these farms, and where to place them? 10,000 Hectares?

11:55:14 From Karyn Murphy to Everyone:

Is the harvest an annual one-time harvest, or do you stagger the production?

11:55:46 From Barry Udelson to Everyone:

Another resource link:

11:55:46 From Joachim Carolsfeld to Everyone:

Are there thoughts about keeping some of the kelp in the water to optimize habitat benefits, while harvesting others?

11:55:50 From Barry Udelson to Everyone:

<https://seaweedhub.extension.uconn.edu/>

11:57:12 From Ian McFarland to Everyone:

As kelp dries and decays, how much carbon is emitted into the air vs stored in the blade, float, stipe, holdfast?

11:57:20 From Bernt Soerensen to Everyone:

How does PFAS pollution effect seaweed?

11:57:27 From Erin Bremner-Mitchell to Everyone:

Hello Joachim and Amanda ~ Cascadia Seaweed is conducting research with British Columbia brown seaweeds (kelp) as a feed supplement and measuring methane reduction, feed conversion, and animal health.

<https://www.cascadiaseaweed.com/agriculture-and-agri-food-canada-invests-in-the-future-of-food-and-feed-through-research-collaboration-led-by-cascadia-seaweed>

11:58:24 From Paul Molyneaux to Everyone:

It's my understanding, from US dept of energy literature, that seaweed grown for food, animal feed, and other markets "are stepping stones to the real goal of biofuel and chemicals." Are we really going to sink that carbon, or are we going to recover it as biofuel?

11:58:26 From Joachim Carolsfeld to Everyone:

Bigelow has a large genebank for algae, and there is a project on selective breeding on the east coast. Can you comment on this, especially considering the impact on native genetic diversity?

12:00:30 From bob bob to Everyone:

Samuel, check out Seaweed Commons for sensible and critical thinking on the Seaweed "Green Rush" -folks using and thinking with the Precautionary Principle.

<https://seaweedcommons.org/>

12:01:42 From Samuel Savoie to Everyone:

Awesome thanks!

12:01:42 From channing grivas to Everyone:

Can you repeat that information about animal entanglement

12:01:50 From Rajiv Bhushan to Everyone:

Paul, I do not think biofuels will ever be able to compete against renewable energy, I think the value of carbon sequestration will outweigh its value as a biofuel.

12:02:08 From Caitlin Russell to Everyone:

Is there any concern with herring spawning on kelp and sinking the kelp to the point the roe don't get enough oxygen?

12:03:03 From Liz Glowacki to Everyone:

Can you put a link to that ?

12:03:10 From sachie hayakawa to Everyone:

I'm curious if there are any lessons learned from places like Japan and South Korea where there are more developed and long-standing seaweed infrastructure

12:03:12 From Natascia Tamburello to Everyone:

Liz:

<https://www.nist.gov/news-events/events/2023/05/supporting-standardization-seaweed-measurements>

12:03:15 From Stephen Malcolm to Everyone:

are the natural kelp forests in areas where you are farming in good condition

12:03:49 From Jenny Koester to Everyone:

What developments are being made to make macroalgae aquaculture more economically sustainable?

12:04:13 From Rositta Brouillette to Everyone:

We understood that Kelp contains a Polysaccharide, which is the most abundant carbohydrate found in foods whose molecules consist of a number of sugar molecules bonded together known as Carrageenan.

12:04:31 From Griffin Hill to Everyone:

Is there a shift away from *Saccharina latissima* in Canada towards species such as *Alaria* with reduced iodine content or is that a non-issue for the ag facing feed supplements Cascadia is producing?

12:06:17 From bob bob to Everyone:

The Kelp2Kows schemes ongoing in Australia and Kona in Hawaii, all involve red kelp, with serious concerns by Indigenous Hawaiians as the kelp strains being used are important foods and culture going back forever.

12:06:40 From Anoushka Concepcion to Everyone:

There is also the Safe Seaweed Coalition: <https://www.safeseaweedcoalition.org/>. They focus on growing the seaweed industry in a safe and sustainable manner related to consumer safety, environmental safety, and occupational safety

12:07:39 From Sean to Everyone:

New food safety guide: A Nordic approach to food safety risk management of seaweed for use as food released in January

<https://norden.diva-portal.org/smash/get/diva2:1729775/FULLTEXT01.pdf>

12:07:50 From Caitlin Russell to Everyone:

is there groups that are successfully cultivating perennial species? Is there any difference in the cultivation strategy and methods?

12:07:53 From Kris Schlech to Everyone:

This forum is so heartening- thank you! As a retired phycologist I am so thrilled at the diversity of marine agronomy compared to 40 years ago! Really give me hope!

12:08:21 From Giles to Everyone:

Have killer whales been documented "kelping" in the farms? Southern Residents actively seek out and engage with naturally growing kelp. I'd like to learn more about the breakaway lines that are being explored.

12:08:51 From Judith Weis to Everyone:

Does anyone know anything about the potential of another brown alga, *Sargassum*, to be turned into anything useful (e.g. biofuels). It is creating enormous problems in Florida and the Caribbean as the seaweed that normally floats in the ocean is now coming ashore in huge quantities and landing on the beaches, decaying etc. and has to be carted away to landfills. It potentially could be a resource instead of a major problem.

12:08:54 From bob bob to Everyone:

Kelp2Kows: Red seaweed (e.g., *Asparagopsis taxiformis*) has been praised for inhibiting methane production from cattle by more than 80 percent because of its high bromoform content. In contrast, brown seaweed (e.g., *Ascophyllum nodosum*) has a lower bromoform content and is less effective at being antimethanogenic.

12:09:12 From Erin Bremner-Mitchell to Everyone:

Hello Griffin ~ Erin from Cascadia Seaweed here. We are less concerned about the iodine levels in our biostimulant products than we were when we were in the human food business (Kove Ocean Foods).

12:09:43 From molly bogeberg to Everyone:

UNH research on composite lines -

[https://media-gallery.unh.edu/media\\_submission/724/](https://media-gallery.unh.edu/media_submission/724/)

12:09:44 From channing grivas to Everyone:

Id love more information about these risks, especially as it relates the animals in the sea.

12:09:59 From Anoushka Concepcion to Everyone:

Yes, the National Seaweed Hub is a great non-advocacy, practical resource:

<https://seaweedhub.extension.uconn.edu/>

12:10:01 From Thomas Storwick to Everyone:

Judith, there's a good amount of research in turning seaweeds into refined files, like gas and kerosine, but nothing is fully commercialized yet

12:10:08 From Griffin Hill to Everyone:

Thanks Erin! Past tense, does that mean Cascadia is moving away or has moved away completely from kelp as human food or supplements?

12:10:09 From Nichole Price to Everyone:

USDA funded project about algae as livestock feed

12:10:10 From Nichole Price to Everyone:

<https://www.coastcowconsumer.com/>

12:10:18 From Antonia Mendel to Everyone:

good to stay away from the language "our" Indigenous People

12:10:46 From Antonia Mendel to Everyone:

I've heard that Cascadia's partnerships with FN are just for optics and to speed up process

12:11:02 From Antonia Mendel to Everyone:

speed up permitting process

12:11:31 From Benjamin Van Alen to Everyone:

On land, we have learned to, we've had to, do virtually all of our agriculture and aquaculture in controlled environments. Why are we now thinking we can economically farm kelp in the marine environment? No feeding, fertilizing, or other cultivation? Why would we assume we can get something for nothing?

12:11:38 From Matt Hoehn to Everyone:

In terms of creating solutions, "de-risking the investment", and not re-inventing the wheel. What can we learn from Asia?? they already have a massive seaweed farming and processing market.

12:12:08 From warren neth to Everyone:

@Jennfier Clark - You mentioned Kelp Farming role in supporting salmon habitat. Is there research links on that you can share?

12:12:35 From Paul Molyneaux to Everyone:

<https://www.energy.gov/sites/default/files/2022-06/beto-02-Advanced-Algal-Systems-2021-peer-review.pdf>

12:13:08 From Antonia Mendel to Everyone:

if Cascadia is planning to be the 'largest kelp operation in North America', how do you plan on actually ensuring just and fair relations with First Nations and small rural communities with such a large scale corporate approach?

12:13:45 From Jessica Outhwaite (Leitao) to Everyone:

Kelp Culture and wild harvest of aquatic plants are managed under the BC Fish and Seafood Act and the BC Fish and Seafood Licencing Regulation.

12:14:20 From bob bob to Everyone:

The Asparagopsis claims on methane are highly speculative and the research findings are all over the board. Kelp2Kows schemes are highly speculative at this time, as the hype is huge, as are the potential profit\$\$\$\$. Cue the arrival of the usual crypto type characters. The Kelp Bitcoin is coming in your "Carbon Wallet" lol.

12:14:24 From Mike Roberson to Everyone:

Asia has been mentioned a few times. What's to be learned there both good and bad? I live there part time and the seaweed/kelp fields are near shore and vast.

12:14:48 From Erin Bremner-Mitchell to Everyone:

Hello Antonia ~ Erin from Cascadia Seaweed here. Thank you for expressing your concern. I can assure you that forming mutually beneficial partnerships with coastal First Nations is part of our values, and does not always ensure an expedited process for permits and licenses.

12:15:35 From Antonia Mendel to Everyone:

ok thanks Erin.

12:15:47 From Paul Molyneaux to Everyone:

Hi Nichole, We spoke about the biofuel potential of seaweed at the Maine Fishermen's Forum in 2011. What do you think the prospects for biofuel as a direct product from algae farming, or from the waste stream of other algal products?

12:16:02 From Paul Molyneaux to Everyone:

2017

12:16:13 From Jon Crofts to Everyone:

How much funding from the Salmon restoration fund went to Cascadia for the research to show that fish in the ocean like cover/hiding places?

12:16:20 From manjula ramakrishnan to Everyone:

<https://www.theargus-co-uk.cdn.ampproject.org/c/s/www.theargus.co.uk/news/23113250.amp/>

12:16:53 From Griffin Hill to Everyone:

tribe held CDQs for mariculture sound amazing! What is the biggest obstacle to making this happen in North America?

12:17:16 From Benjamin Van Alen to Everyone:

How is mariculture different from "ocean ranching" of salmon? Both involve the introduction of species that mine more nutrients than they recycle. Where on Earth has this proven sustainable, ecological, or profitable?

12:17:24 From Nichole Price to Everyone:

Hi Jon - the Coast-Cow-Consumer program is looking at kelp as a direct substrate for anaerobic digestion, and also how the manure of cows that have been fed algae (micro or macro) might impact biogas generation in on-farm AD systems

12:18:06 From bob bob to Everyone:

Wow, just a \$1lb. wet? In 2016 when I was working on building the first kelp farm in Alaska, Greenwave and Blue Evolution were telling us \$2. How big a farm are you going to need in Alaska for a farm to make it at \$1 lb. wet?

12:18:23 From Alex Izard to Everyone:

Hi Warren, in response to your question re: Salmon, herring a food fish for salmon among other species lay eggs in broadleaves of kelp forests. I'll share Ocean Wise's 2021 report with plenty of great info on this and other areas:

<https://ocean.org/app/uploads/2022/07/OceanWise-SeaforestationV1-1.pdf>

12:18:56 From warren neth to Everyone:

Thanks Alex.

12:19:46 From Tiffany Stephens to Everyone:

People are racing to the bottom for kelp prices, already. A lot of outside investors thinking they can establish a farm that runs on \$0.25-0.40 /lb wet. 🙄

12:19:47 From Jessica Seevers to Everyone:

Could CDQs be structured similarly to CBSFAs in Hawaii?

12:20:38 From Mary Finelli to Everyone:

"Want Carbon-Neutral Cows?

Algae Isn't the Answer"

Also, how does it affect the cows' health?

\* <https://www.wired.com/story/carbon-neutral-cows-algae/>

12:20:39 From Google Account to Everyone:

Any comments on kelp+uni aquaculture ?

12:20:59 From Morgan Fogg to Everyone:

Kelp Farmer here - we dry most of our kelp and produce our own products here in Maine, but we do sell some wet kelp and have for the last 5 years. We've never paid \$2/lb. I wish!! Ive never known anyone getting that much for wet kelp

12:21:20 From Griffin Hill to Everyone:

Do you see large scale epigenetic "priming" becoming standard in the kelp aquaculture production cycle?

12:22:20 From Samuel Savoie to Everyone:

Thank you for addressing my question, very interesting, I'm asking because as I finish my master in environmental management I'll write my essay about attempting to create some kind of guidelines based around sustainable development

12:22:21 From Rajiv Bhushan to Everyone:

Tiffany, If you are getting \$0.25 to 0.40/lb. then have you given any thoughts to getting carbon credits?

12:22:48 From Jessica Outhwaite (Leitao) to Everyone:

Thank you to the panel and hosts. I just want to correct information Jennifer stated regarding the licencing of Aquatic Plants in BC. We do have legislation and regulation for

Aquatic Plants in BC and it is not managed under shellfish or any shellfish related legislation or regulation. Please see information regarding aquatic plants in British Columbia - <https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/fisheries-and-aquaculture/commercial-fisheries/aquatic-plant-harvesting>

12:23:36 From Tiffany Stephens to Everyone:

I'm not getting that; just what I hear outside business developers think is possible. I don't know of any carbon programs that pay enough to bridge the gap to have it make sense for farmers at those prices...and still waiting on the science to help proof that model

12:23:54 From Elizabeth Carpenter to Everyone:

Thank you panelists! If anyone is curious, here is some work being done on kelp genetics in regard to farming and restoration in California and elsewhere:

<https://uwm.edu/news/uwm-biologist-awarded-2-8-million-grant-improve-farming-kelp-bioenergy/>

12:24:01 From Anne Parkinson to Everyone:

A 'circular' economy is small, cooperative, tribal. A 'linear' economy today means large, pyramiding \$\$, with heavy footprint. The entire 'tone' of any industry needs to remove 'profit margin' context from the a few and place the share of benefits in all hands. Delete mass shipping, eat local and seasonal.

<https://www.canada.ca/en/services/environment/conservation/sustainability/circular-economy.html>

12:24:02 From Tiffany Stephens to Everyone:

(I don't think it is possible in current times; low-balling farmers too much).

12:24:21 From Mike Roberson to Everyone:

Is it possible to post the speakers emails?

12:24:52 From Vanessa Minke-Martin to Everyone:

If you want to read Hakai Magazine's past stories on kelp and kelp farming, you can find some great ones here: <https://hakaimagazine.com/tag/kelp-farming/>

12:24:53 From Anoushka Concepcion to Everyone:

Kelp farming also has a very short growing season, which may limit the amount of kelp that is being captured or sequestered

12:24:57 From Mike Roberson to Everyone:

This has been like drinking from a fire hydrant 😊

12:25:24 From Madelyn Jones to Everyone:

There is a large gap in research about the fate of the carbon initially absorbed by kelp that needs to be addressed before the question of carbon credits comes into play

12:26:16 From Erin Bremner-Mitchell to Everyone:

Hi Jon ~ Cascadia Seaweed was Awarded \$1.8M in Grant Funding (for a two-year project) from the BC Salmon Restoration and Innovation Fund, and we have been conducting research on 3.5 hectares off the West Coast of Vancouver Island.

<https://www.cascadiaseaweed.com/using-kelp-farms-to-help-fish-biodiversity>

12:26:34 From Rajiv Bhushan to Everyone:

Madelyn, I am talking of direct verifiable carbon sequestration, and not sinking of vegetative matter

12:26:47 From Rajiv Bhushan to Everyone:

verifiable

12:27:37 From bob bob to Everyone:

Hey Hakai, can you archive all these comments so we can do research on all the links and aspect mentioned?

12:27:41 From Geniene McCarthy to Everyone:

Thank you all for this presentation today. I'm from Newfoundland & Labrador and I've been researching the idea of an indigenous protected and conserved seaforest over the last year for the express purpose of food, social and ceremonial for our area.

12:27:47 From Alejandra Mora-Soto to Everyone:

I love you Dune!

12:27:52 From Google Account to Everyone:

Kelp meal fertilizer is the real surf and turf. Kelped cows not so green or ethical. Greenwashing from livestock industry aka finding the wrong way to do the right thing.

12:27:56 From Vanessa Minke-Martin to Everyone:

Hey all, we're going to export the entire chat log and try to share it with participants.

12:27:58 From Anne Parkinson to Everyone:

Clam gardens, kelp forests, remove human foreshore impacts

12:28:02 From Giles to Everyone:

I would love a deeper dive workshop!

12:28:07 From bob bob to Everyone:

Yes! Dune, so many folks are concerned

12:28:17 From Mary Cate Bernal to Everyone:

Dune, what's your email? I'm interested!

12:28:19 From Caylie Graham to Everyone:

I definitely need the links in the chat and thank you for this talk.

12:28:20 From Edward Gregr to Everyone:

ROI as Ripples of Impact. Love this. Will be using that - with credit, of course.

12:28:24 From Sharon McBreen to Everyone:

Thank you all for your time. This was great!

12:28:26 From Vanessa Minke-Martin to Everyone:

For the early-career ocean professionals and students, please join us at this Zoom link right after this event: <https://us06web.zoom.us/j/83534226238>

12:28:26 From Kerry Jothan to Everyone:

Thanks very much! Great info and discussion!

12:28:34 From Dune Lankard to Everyone:

[dune@nativeconservancy.org](mailto:dune@nativeconservancy.org)

12:28:38 From Eric Rosa to Everyone:

Great webcast, thank you and the panel

12:28:39 From Vanessa Minke-Martin to Everyone:

We'll be continuing the conversation with the panelists here:

<https://us06web.zoom.us/j/83534226238>

12:28:40 From Naomi Tabata to Everyone:

Form more seaweed talks, hosted by North Island College:

<https://www.nic.bc.ca/about-us/research/carti/projects/seaweed-series/>

12:28:42 From Mckenzie Margarethe to Everyone:  
Would love for more on Kelp soon!

12:28:45 From Nicola Miller to Everyone:  
Thank you so much for this

12:28:46 From Asa Jomard to Everyone:  
Thank you, very interesting. Asa Jomard Biomimicry Specialist

12:28:48 From Michael Irving to Everyone:  
Thanks, everyone!

12:28:54 From Ranah Chavoshi to Everyone:  
Thank you all!

12:29:00 From bob bob to Everyone:  
<http://Seaweedcommons.org> for sobriety on seaweed

12:29:02 From Gina Lemieux to Everyone:  
Excellent discussion, thank you!

12:29:03 From Kris Schlech to Everyone:  
Thanks so much- really made my day! I'm hopeful!

12:29:06 From Éric Tamigneaux to Everyone:  
Great ! Thank you for this interesting discussion.

12:29:07 From feini yin to Everyone:  
Thanks so much to the organizers and panelists!!! So much more to discuss, would love a follow up

12:29:08 From Nichole Price to Everyone:  
to reach Nichole Price: [seafoodsolutions@bigelow.org](mailto:seafoodsolutions@bigelow.org)

12:29:14 From Morgan Arrington to Everyone:  
Thank you panelists and hosts!

12:29:16 From Rachel Baker to Everyone:  
Thank you, everyone! That was great!

12:29:18 From Mckenzie Margarethe to Everyone:  
thank you all!

12:29:25 From Jon Crofts to Everyone:  
Ouch. 1.8 m could have contributed so much to salmon habitat enhancement.

12:29:27 From Sean Russell to Everyone:  
Thanks all for the great session!

12:29:31 From Simon Benson (he/him) to Everyone:  
Thanks!

12:29:32 From Lincoln Paine to Everyone:  
Many thanks for great presentations.

12:29:37 From Melanie Prentice to Everyone:  
Thank you panelists and hosts! Really interesting stuff :)

12:29:40 From Charles Blair to Everyone:  
Happy to support from UK: [fiona@theseaweedalliance.co.uk](mailto:fiona@theseaweedalliance.co.uk)

12:29:41 From Ella Talks to Everyone:  
Thank you all :)

12:29:43 From Vanessa Minke-Martin to Everyone:

<https://us06web.zoom.us/j/83534226238>

12:29:44 From Benjamin Van Alen to Everyone:

Thanks everyone for sharing!

12:29:48 From bob bob to Everyone:

Thanks Rebecca and Vanessa!!!!

12:29:56 From Morgan Fogg to Everyone:

Thanks all!

12:29:58 From Jen Otoadese to Everyone:

Thank you - excellent event

12:30:01 From Dianne Moores to Everyone:

thank you for such an informative presentation

12:30:01 From Erin Bremner-Mitchell to Everyone:

Thank you!

12:30:04 From Rhoda Green to Everyone:

Thank you all