

Wild Aquatic Plant Harvest Plan Proposal Guidebook

This guidebook is intended to provide helpful advice for people applying to harvest wild aquatic plants for commercial purposes or for personal use greater than 100 kg. Helpful hints can be found throughout this guidebook including useful links and mapping information.

All harvesters must submit a completed harvest plan proposal to be considered for a wild aquatic plant harvest licence.

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General Information:

Information included in the harvest plan proposal will be included as your management plan if you are successful in obtaining an aquatic plant harvest licence. You must adhere to the information included in the harvest plan proposal. Harvest plan proposals are included in referral packages to First Nations for consultation.

If you need any help or clarification of any of the components of the guidebook please contact <u>AquaticPlants.Courtenay@gov.bc.ca</u>

Please note: filled out components of the harvest plan proposal and included as screen grabs below in the guidebook have been made up although locations may be real places.

The application is a fillable PDF which can be filled out on your computer using a free adobe application which can be <u>downloaded here</u>.

Section 1: Harvester Experience

Section 1: HARVESTER EXPERIENCE Applicant Full Name or Company Name: Seaweed Harvesters R Us (Alexander Postels) 1. Name of person who will be the primary harvester under the licence: Alexander Postels

Fill out the first section clearly, this should match the information you included on the harvest licence application.

2. Describe any experience the primary harvester has harvesting aquatic plants and/or following conditions of a natural resource licence. If you plan on training new employees, describe how you will train these employees to harvest aquatic plants and follow the conditions of licence.

Alexander Postels has been harvesting kelp in this area for over 20 years. I have always followed the conditions of licence and returned my harvest royalty form yearly and on time. I will have three new harvesters working with me this year. Training will happen during the first three harvesting trips where I will join the new harvesters. I will show them how to harvest properly, where to cut fronds and blades at the appropriate length. I will also show them how to drift through the kelp bed to ensure we don't disturb the remaining kelp and how to harvest only 20% of the bed.

Please fill out this section to the best of your ability. Include any relevant information. For example, if you have previous experience harvesting aquatic plants under a wild aquatic plant harvester licence, include how long you have been harvesting aquatic plants for, and what you do to follow the conditions of licence. If you are training new employees please describe how you will train the employees. How often will you work with them in the field, how will you ensure they know how much of a kelp bed they can harvest, and any other activities you will do with them to ensure the sustainable harvest of the species you are requesting harvest licences for.

Section 2: Distribution and Quantity

SECTION 2: DISTRIBUTION AND QUANTITY

Pursuant to the Fish and Seafood Licencing Regulation an aquatic plant harvest proposal must include scientific information regarding the distribution and quantity of the aquatic plants to be harvested in the proposed harvest area, divided according to aquatic plant group and aquatic plant species (FSLR 10 (3) (a)). Please answer the following questions regarding the distribution and quantity of each aquatic plant species that you propose to harvest.

 1. As referenced in your Wild Aquatic Plant Harvester Application, how may aquatic plant species do you propose to harvest?
 Number of Species: 2

You will need to fill out a harvest plan proposal for each group of species that you are proposing to harvest and for each DFO management area. For example, if you are applying to harvest *Nereocystis luetkeana*, bull kelp, (Group 1) and *Alaria marginata*, winged kelp, (Group 2) from DFO management area 23, you must submit a separate harvest area proposal for bull kelp (Group 1) and winged kelp (Group 2). If you are applying to harvest *Macrocystis pyrifera* from DFO management area 17 and DFO management area 14, you must submit a separate harvest area proposal for DFO management area 17 and DFO management area 14. However, if your harvest methods are highly different between species we recommend that you submit an individual proposal for each species.

Specie	Species Scientific Name, Species Common Name: Macrocystis pyrifera , Giant kelp						
Propo	Proposed Number of Aquatic Beds Harvested: 4						
<u>Bed</u> <u>#</u>	<u>GPS</u> (center point)	Estimated Bed Length (meters parallel to the shore).	Estimated Bed Width (meters perpendicular to the shore)	Estimated Bed Area (Bed length x bed width, m^2)	Estimated Density of Plant per Bed (low, medium, high)	<u>Proposed</u> <u>Harvest</u> <u>Quantity</u> (<u>Tonne</u>)	
1	49°20'66.89"N 122°59'36.40"W	100	30	3,000	Medium	3	
2	49°19'64.82"N 122°58'36.39"W	10	10	100	High	2	
3	49°20'50.12"N 122°57'68.40"W	400	50	20,000	High	20	
4	49°19'51.31"N 122°59'55.88"W	500	100	50,000	Low	10	
Total Proposed Quantity Harvested Per Species:					35		
3. If you are proposing to harvest more than one species in Groups 1,7, and 8, have you completed the additional tables in Appendix 1?					N/A		

When to fill out this table:

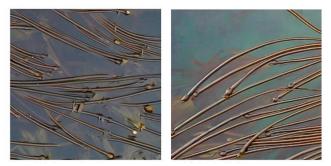
- Only fill out section 2 question 2 and 3 if you are requesting to harvest species in Group 1,7, or 8.
- If you are proposing to harvest species in groups 2-6 or 9 you can skip filling out the table.

How to fill out this table:

- Start by filling out the table with information about kelp beds you are more confident to be harvesting from and indicate if any beds are "back-up" beds you will only harvest if your initial bed choices are diminished in size, looking unhealthy, or if there are other reasons you can't harvest from them. This can be indicated by adding "back-up" to the bed # column.
- If there are beds you can't harvest from that you typically do, please indicate this in an email to <u>AquaticPlants.Courtenay@gov.bc.ca</u>.

- Be sure to estimate the size of each bed you are proposing to harvest from. If you can collect GPS points from the corners of the beds that is even better. This can be submitted to the <u>AquaticPlants.Courtney@gov.bc.ca</u> email address separately.
- If you are intending to harvest from more than 5 beds, there are additional tables in Appendix 1. Continue with the numbering for bed # if you need to use the additional tables for the same species.
- Indicate if aquatic plant density per bed is **low, medium, or high.** When determining this please visually estimate the coverage of aquatic plant across the entire bed as described by the size indicated in the table. High density is roughly 70-100% across the majority of the bed. Medium is 40-69% across the majority of the bed. Low is less than 40 % across the majority of the bed. If half of the bed is roughly a medium and half of the bed is low you can include both.

Nereocystis density estimation examples



High Density – 70-100% cover across most the bed



Medium Density - 40-69% cover across most the bed



Low Density - up to 39% cover across most the bed

Diagram modified from the MaPP monitoring methods.

Reminder: Your condition of licence will indicate the percentage of the bed you can harvest and this amount should be spread over the entire bed. For example, removing the top 1 meter of Macrocystis along a path as you float through the bed, moving over 10 meters and collecting along another path until you have harvested from 20% of the bed.

Section 3: Harvesting Methods

Section 3: Harvesting Methods				
Pursuant to the Fish and Seafood Licencing Regulation an aquatic plant harvest proposal must include a description of the proposed method of harvesting aquatic plants and the equipment to be used ((FSLR 10 (3) (b)). Please answer the following questions regarding your proposed harvest methods, for each bed or area you propose to harvest.				
 Will you be using a marine vessel to access any aquatic plant beds? 	√ Yes	No		
 a) If you answered YES to the question above, please prov i) Vessel Name: Seaweed Saver ii) Vessel Registration: HMV30330 iii) Vessel Type: Herring Skiff iv) Vessel Size: 8m v) Vessel Size: Purple vi) Vessel Material (aluminum, fibreglass): Aluminum vii) Type of propulsion: Gas engines viii) Type of engine: Yamaha ix) Number of engines: Twin 350 x) Location of moorage: French Creek 		etails:		

Please fill this out completely with as much information about your vessel as possible (if applicable). This information is for monitoring purposes and may be shared with natural resources staff.

 For each species you will be harvesting, please use the table below to describe your proposed harvest methods. If harvest methods differ at a different location or time, please indicate that by filling out multiple rows for that species. 					
Species (Scientific	Harvest Timing:	Harvesting Method:	Harvest Practices Used to Promote		
name, common			Aquatic Plant Regrowth		
<u>name)</u>	name)				
Harvest Location					

This table must be filled out for **all species** which you are proposing to harvest. We have provided some examples below.

Harvest Location:

- If you are proposing to harvest species in group 1,7 or 8 the harvest location listed should match up with the bed numbers that were used in Section 2 Part 2.
- If you are proposing to harvest any other species the harvest location could be a GPS location or a description of the location (e.g., west side of Thetis island, Prasiola Point).

Harvest Timing:

- Please include the window of time during which you are proposing to harvest and the number of times you will be harvesting a particular location. Be as specific as possible.
- Indicate if you will need to harvest on a particular low tide (include the tide window).
- Include what closes your harvest window (e.g., quality of the aquatic plant, presence of bryozoans, presence of reproductive structures).

Harvest Method:

- Clearly indicate **how** you propose to harvest each species.
- How many people will typically be harvesting at one time?
- Will harvest happen from a boat or from the shore?
- How will harvested material be transported?
- What type of instruments will you be using (e.g., gaff, sharp knife, etc)?
- Where will the cuts be made on the plants?

Harvest Practices to Promote Aquatic Plant Regrowth:

- Describe, in detail, all of the actions you will take to promote the regrowth of plants you harvest and how you will harvest in a sustainable manner.
- Include how much of each bed will you intend to harvest.
- Include considerations around the timing of harvest (e.g., early in the season to allow for regrowth of harvested areas before kelp are affected by bryozoans, after the first bloom of the season).
- Include any considerations around the annual reproduction of the aquatic plants (e.g., reproductive structures won't be harvested).
- Are there any environmental cues that you are watching for that would signal an early end to harvest for the year?

Examples:

Macrocystis Giant kelp Location	n Juneglant keip from a skin. Crewn Junemembers will use a reaching toolIstarting(gaff) to grab kelp fronds fromIp are large(gaff) to grab kelp fronds will beng whenthe surface. Kelp fronds will bens arepulled until tight and cut at thenthewater line using a sharp toollow tides(knife). Fronds will be collected0.5 m toin 1.5m tall x 1.0-meter-wide bins	Giant kelp harvest will be uniformly distributed across the kelp bed. No more than 20% of each bed will be harvested. Giant kelp harvest will be conducted early in the season to maximize time for regrowth post harvesting. Harvesting of the surface portion of fronds only. At least 2 meters of kelp will be left in the water (including the holdfasts). No reproductive material will be harvested. Any kelp beds that look like they are being impacted by either increased temperatures or bryozoans harvesting will stop.
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Species Nereocystis Bull kelp Location Beds 1-3	Nereocystis will be harvested over 15 days from June 1-July 10 starting when kelp are large and ending when bryozonas are visible on the blades. Harvest will occur on low tides between 1-3 meters above chart datum.	Three crew members will harvest bull kelp from a skiff. Crew members will use a reaching tool (gaff) to grab kelp stipes from the surface. Kelp blades will be cut 20 cm above the bulb using a sharp tool (knife). Blades will be collected in 1.5m tall x 1.0-meter-wide bins located in the skiff.	Bull kelp harvest will be uniformly distributed across the kelp bed. Bull kelp harvest will be conducted early in the season (May/June) to maximize time for regrowth. Harvesting of the blades only. Only 20% of blades from an individual plant will be harvested. No reproductive material (sori) will be harvested. Any kelp beds that look like they are being impacted by either increased temperatures or bryozoans harvesting will not be harvested.
Species Nereocystis Bull kelp Location Beds 4-5	Nereocystis will be harvested over 10 days from June 15-July 15 starting when kelp are large and ending when bryozonas are visible on the blades. Harvest will occur on low tides between 1-3 meters above chart datum.	Three crew members will harvest bull kelp from a skiff. Crew members will use a reaching tool (gaff) to grab kelp stypes from the surface. Kelp blades will be cut 20 cm above the bulb using a sharp tool (knife). Blades will be collected in 1.5m tall x 1.0-meter-wide bins located in the skiff.	Bull kelp harvest will be uniformly distributed across the kelp bed. Bull kelp harvest will be conducted early in the season to maximize time for regrowth. Harvesting of the blades only. Only 20% of blades from an individual plant will be harvested. No reproductive material (sori) will be harvested. Any kelp beds that look like they are being impacted by either increased temperatures or bryozoans harvesting will stop.
Species Alaria spp Winged kelp Location	Alaria spp. will be harvested over 7 days between June 1-August 31. Harvest will occur on Iow tides between 0-1.25 meters above chart datum.	Four crew members will harvest Alaria from the shore using a sharp knife to cut the plant no lower than 10 cm above the holdfast keeping the stipe intact.	Plants will be randomly selected across the bed to distribute the impact of the harvesting. No more than 20% of the plants in an area will be harvested. We will harvest early in the season to allow for re-growth. Additionally, we will only harvest healthy looking plants and will stop when the aquatic plants start to look tattered.
Species Salicornia Pickleweed Location Beds 1,2,4	Salicornia will be harvested between June 15 - August 1 over 8 days. Tide is not a consideration for our harvest.	Three crew members will harvest Salicornia from the beach using a sharp knife to cut the tips of the plants. We wait until the plants are at least 15 cm long to harvest. Harvested plants are placed into totes which are carried back to the air conditioned vehicle by foot and transported to the processing facility.	Harvest occurs in small areas of each bed ensuring that no more than 20% of a patch is harvested. We only harvest if the bed is healthy (dark green colour, plants are firm to- the touch), and we avoid areas if any dodder is present ensuring we don't walk through areas with dodder to prevent transfer of it. Harvesting stops if the plants start to wilt. Roots are left undisturbed during the harvest. Salicornia is a slow growing plant so we are careful to not over-harvest any area, any bed is only harvested once per year and- we ofter alternate harvesting beds year to year.

Section 4: Ecology and Environment

Section 4: Ecology and Environment

Pursuant to the Fish and Seafood Licencing Regulation an aquatic plant harvest proposal must include a description, based on scientific information and including data, of the potential adverse effects of the proposed harvest on the environment and ecology of the proposed harvest area ((FSLR 10 (3) (c)). Please answer the following questions regarding your proposed harvest methods, for each bed you propose to harvest.

1. Please describe the anticipated impacts on the ecology and environment of the aquatic plant beds you propose to harvest arising from your aquatic plant harvest.

Small-scale (10s of meters) harvest of giant kelp at intermediate levels of intensity(~20% of the canopy) allows for plant bed recovery. Harvest may temporarily alter the abundance of canopy and benthic reef-associated fishes. However, more work is required to understand long-term impacts of repeated harvest. Additionally, increasing ocean temperatures is going to have increasing impacts of kelp populations.

In this section we are requiring harvesters to think about their potential impacts to the aquatic plant species they are applying to harvest and species that may use the aquatic plant as habitat. In crafting your answer consider not only how harvest is impacting the aquatic plant you're harvesting but also the rest of the ecosystem as well (e.g., invertebrates, fish, other aquatic plants).

Things to think about when writing your answer:

- Have there been any studies on the effects of harvesting the aquatic plant? E.g., any studies showing how harvest affects the individual plants, level of sustainable harvesting, etc.
- Are any organisms reliant on the species being harvested for food or habitat? E.g., Is the aquatic plant a known nursery for animals like salmon or herring. Is there known abalone presence near the aquatic plant bed you are applying to harvest from.
- Have any studies been conducted to understand the impacts to other organisms? You don't need to have conducted the studies yourself but reference other work.
- If you have been involved in any research please indicate that in this section.
- How long have you been harvesting in this particular area, what changes have you noted over time?

Rational for requesting this information:

The province is asking harvesters to consider the impacts of harvesting to recognize that these are living organisms which are important members of our aquatic ecosystems. Harvesting any natural resource will have some impacts to the species being harvested but also to other organisms as well.

2. Please describe the existing or anticipated impacts on the ecology and environment of the aquatic plant beds/areas you propose to harvest from. This could include impacts from industry, recreation, or other factors.

The bed is disturbed from recreational boat traffic in the summer and develops high bryozoan cover in mid-July (see attached photo). Increasing urchin populations are also eating the kelp beds.

In this section we are requiring harvesters to think about potential impacts to the species which are being proposed to be harvested from other factors occurring in the environment. In crafting your answer consider not only how harvest is impacting the aquatic plant you're harvesting but also other factors which may be affecting the aquatic plants and ecosystems.

Things to think about when writing your answer:

- Is the area highly trafficked by commercial or recreational boaters? Is there potential for boat wake to affect the aquatic plants?
- Is there increased development in the area which could affect the aquatic plants (e.g., increased run off, increased human presence, etc.)?
- Is ocean temperature changing in your proposed harvest area?
- Have there been any changes to other species which may affect aquatic plants (e.g., sea otters returning to an area, urchin populations increasing, sea star populations rebounding, increased presence or change in timing of bryozoan observance)?
- Have any studies been conducted to understand the impacts of how changes in the environment may be affecting the aquatic plants you are proposing to harvest?

Rational for requesting this information:

The province is asking harvesters to consider multiple impacts and potential cumulative effects that these natural ecosystems may be experiencing. Harvesting any natural resource will have some impacts to the species being harvested but also to other organisms as well.

3. For each species you are proposing to harvest, please use the table below to describe the ecology and environment of each bed you propose to harvest. If you are proposing to harvest more than one species, additional tables are available in Appendix 2.

Reference the bed number(s) entered in Section 2 if applicable

In this section you are being asked to include additional information about the areas in which you are harvesting. If you are proposing to harvest species in groups 1,7,8 the bed number should match with what has been included in section 2. For all other species include harvest areas which are geographically similar (e.g., a side of an island, a section of shoreline, etc). Some examples are shown below.

Examples:

Species Scientific Name, Species Common Name: Macrocystis pyrifera, Giant kelp					
Proposed Number of Aquatic Beds or Areas Harvested for the above species: 3 beds					
Bed Number/area and	Shoreline Features where the bed	Predominate Ocean Conditions -			
<u>Depth (m)</u>	is located	select all that apply			
Bed #/Area:	✔ Bay	Exposed			
1	Rocky Outcrop	✓ Sheltered			
	Offshore Island	High Current			
Bed Depth:	🖌 Intertidal zone	Low Current			
5 meters	Other:	Other:			
Bed #/Area:	Bay	✓ Exposed			
2	Rocky Outcrop	Sheltered			
	Offshore Island	✔ High Current			
Bed Depth:	Intertidal zone	Low Current			
5 meters	Other:	Other:			
Bed #/Area:	√ Bay	Fxposed			
3	Rocky Outcrop	Sheltered			
	Offshore Island	High Current			
Bed Depth:	Intertidal zone	Low Current			
4 meters	Other:	Other:			

Species Scientific Name, Species Common Name: Alaria spp , winged kelp					
Proposed Number of Aquatic Beds or Areas Harvested for the above species:					
Bed Number/area and	Shoreline Features where the bed Predominate Ocean Condition				
<u>Depth (m)</u>	<u>is located</u>	select all that apply			
Bed #/Area:	Bay	✓ Exposed			
Ed King Island	Rocky Outcrop	Sheltered			
	Offshore Island	High Current			
Bed Depth:	🖌 Intertidal zone	Low Current			
Low intertidal	Other:	Other:			
Bed #/Area:	Вау	✓ Exposed			
Prasiola point	Rocky Outcrop	Sheltered			
	Offshore Island	High Current			
Bed Depth:	🖌 Intertidal zone	Low Current			
Low intertidal	Other:	Other:			
Bed #/Area:	Вау	Exposed			
Diana Island	Rocky Outcrop	√ Sheltered			
	Offshore Island	✓ High Current			
Bed Depth:	🖌 Intertidal zone	Low Current			
Low intertidal	Other:	Other:			

Species Scientific Name, Species Common Name: Salicomia spp, Pickle weed				
Proposed Number of Aquatic Beds or Areas Harvested for the above species: 1				
Bed Number/area and	Shoreline Features where the bed	Predominate Ocean Conditions -		
Depth (m)	<u>is located</u>	select all that apply		
Bed #/Area:	Вау	Exposed		
Deep Bay spit	Rocky Outcrop	Sheltered		
	Offshore Island	High Current		
Bed Depth:	Intertidal zone	Low Current		
splash zone	Other: cobble shore	Other:		
		<u> </u>		

 If you are proposing to harvest more than one aquatic plant species, have you completed the additional tables in Appendix 2? 	✓ Yes	No	N/A
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There are more tables at the end of the application for additional species or if you are proposing to harvest more beds/areas.

Section 5: Additional Required Information

	Section 5: Additional Required Information					
inc	Pursuant to the Fish and Seafood Licencing Regulation an aquatic plant harvest proposal may include any additional information required by the licensing officer ((FSLR 10 (3) (d)). Please answer the following questions required by the licensing officer.					
1)	Have you consulted with the First Nation(s) in whose territory you are proposing to harvest?					
	a) If you answered YES to the question above, did the First Nations request any additional harvesting conditions?					
	b) What were the requested harvesting conditions?					
	The First Nation requested that they accompany our harvesters on at least one harvesting trip. I have let them know the anticipated time for the first harvest of the year and will let them know when we make a decision for the actual date. I will ensure all of our harvesters will be on that trip. The Nation also requested that we take pictures kelp when bryozoans start to colonize and let them know the date we first start to see them.					

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Consultation with First Nations in whose territory harvesters are proposing to harvest wild aquatic plants is very important to the Province. We strongly recommend that you develop a relationship with the Nation in whose territory you are applying to harvest from in addition to the provincial consultation process. Please indicate if you have done so and what the result of this engagement was.

2)	Do you have any additional bed biomass data to support your harvest plant proposal?	✓ Yes	No			
	 a. If you answered YES to the question above, please give a brief outline of your survey methods, data collected, and conclusions to support your application. 					
	We have been using the MaPP monitoring met area the last two years. Data are attached with		elp beds in the			

Things to think about for this section:

- If you have been doing biomass monitoring of the species you are proposing to harvest please indicate that here and include the methodology that you have been using. If possible, please consider sharing any data you have collected with the Province to justify your conclusions regarding aquatic plant biomass and health.
- Methods should be written out clearly to understand how monitoring has been conducted. If you are using a standardized methodology (e.g, MaPP canopy kelp monitoring methods, Salicornia methods) you can indicate that.
- If you would like to develop a method to monitor a species for which is there no standard methodology please contact <u>AquaticPlant.Courtenay@gov.bc.ca.</u>
- It is particularly important to include data in areas where aquatic plant abundance has been noted to be declining assuming you are applying to continue harvesting in that location.

DISCLOSURE: The personal information on this form is collected by FrontCounter BC under the legal authority of section 26 (a), (c) and (e), and 27(1)(a)(i) of the Freedom of Information and Protection of Privacy Act (the Act) for the purposes of reviewing and processing your inquiry or application under the BC Fish and Seafood Act and may be used by FrontCounter BC for survey purposes.

Your personal Information may be disclosed by FrontCounter BC to local, provincial and federal governments and First Nations on an as needed basis for the purposes of reviewing and processing your inquiry or application under the BC Fish and Seafood Act. As required, non-personal information (harvest area and the quota approved) may be shared electronically/hard copy with the public in discussions relating to specific applications. The collection, use, and disclosure of personal information is subject to the provisions of the Act.

For more information regarding the collection, use, and/or disclosure of your personal information by FrontCounter BC, please contact FrontCounter BC at 1-877-855-3222 or at: FrontCounter BC Program Director, FrontCounter BC, Provincial Operation, 441 Columbia Street, Kamloops, BC V2C 2T3.

Signature(s) of applicant(s) or authorized representative	Printed name(s) of Applicant(s) or authorized representative	Date

Once you have completed to document please review the disclosure statement, sign, print, and date the document. You can either print off the form or sign electronically. Please consider saving a copy of this form with a different name before you sign it, in case you are asked to make application revisions. This form must be included with your wild aquatic plant harvest licence application.

****Please double (and even triple) check your form before you sign it electronically through adobe**** Once you add a digital signature the form locks and you can no longer edit it. If you find a mistake you will have to start over once it is signed.

Please use "save as" to save your signed application under a different name. For example, **Aquatic Plant Harvest Proposal for Seaweeds R Us_2023_Signed**. Reviewers may ask for application revisions. If the application is only saved with a digital signature the form locks and you will have to start over again to make the revisions.