

GENERAL GUIDELINES FOR OPERATIONS DURING PACIFIC HERRING SPAWN WINDOWS

(AMENDED JAN 2017)



Prepared by:



Introduction

Under Section 35 of the federal *Fisheries Act* , “no person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational, or Aboriginal fishery, or to fish that support such a fishery”, where *serious harm* is defines as “the death of fish or any permanent alteration to, or destruction of, fish habitat”. Marine log handling operations which take place either near areas where Pacific herring (*Clupea pallasii*) historically spawn, or during times when herring are spawning, have the potential to cause disruption to herring and their eggs. Therefore, a monitoring program is required to avoid causing *serious harm* to Pacific herring. The following document has been developed to ensure that log handling activities do not cause *serious harm* to herring during spawning or migration events.

Species Biology

Pacific herring are a pelagic fish species found in the inshore and offshore waters of the Northeastern Pacific from California to the Beaufort Sea. They are a small (up to 46 cm in length), relatively short-lived finfish. Herring can be identified by their laterally compressed body with dark green colouring along their dorsal ridge and silvery white colour on the ventral side (Photo 1) (McConnaughey and McConnaughey, 1998).



Photo 1: Pacific herring sample.

Herring mature and recruit to the spawning stock predominantly between the ages of two and five (Fisheries and Oceans Canada, 2009). Spawning takes place in early spring (Feb – May) when mature adults migrate inshore, entering estuaries to breed. Herring spawn is usually restricted to sheltered inlets, sounds, bays, and estuaries (Photo 2). Most herring

spawn is deposited within 10m of the mean tide level, and >90% occurs within 150m of the inshore edge of spawning. Eggs are deposited on surfaces of vegetation in 1 – 5 layers on average, with a maximum of 20 layers found (Photo 3). Once deposited, the eggs take about 14 days to hatch in areas in the South Coast, and closer to 21 days in the north, depending on water temperatures (DFO Herring Spawn Survey Manual, 2009).



Photo 2: Herring spawn in shallow estuary area as shown by the milky spawn in water and eggs deposited on intertidal algae.

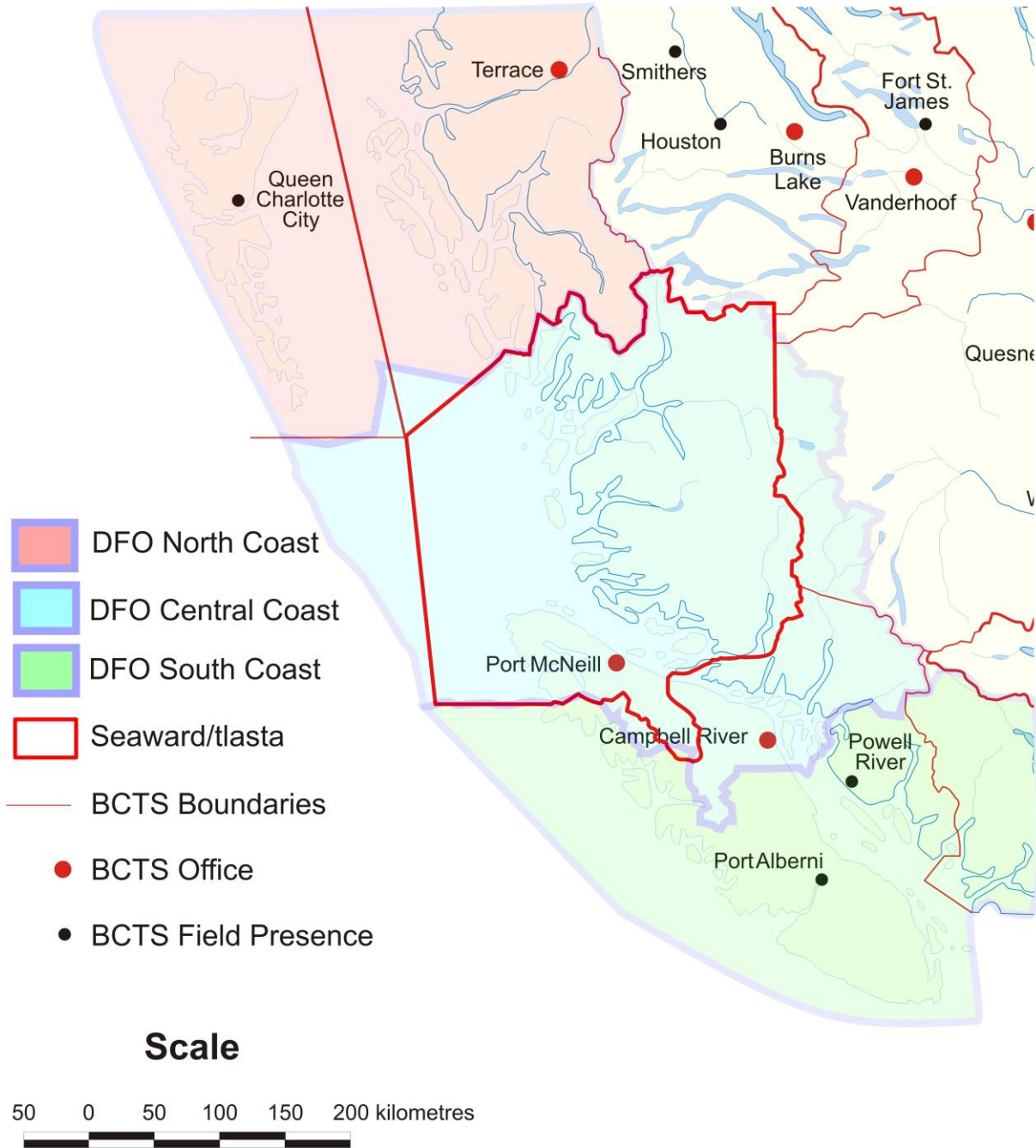


Photo 3: Close up view of herring eggs deposited on intertidal vegetation.

Herring Spawning Windows

Operations taking place around marine and estuarine waters outside of the region-specific timing windows listed in Appendix 2, Table 1 require a qualified environmental monitor present at the worksite. Please note that these timing windows may be updated periodically by DFO, and are therefore subject to change without notice. Prior to commencing works, for the most up to date marine and estuarine timing windows, please consult the DFO website (<http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/bc-s-eng.html>) where region-specific timing windows are provided. For informational purposes, historic timing of herring spawning events specific to different locations are available on the DFO Pacific Herring website (http://www.pac.dfo-mpo.gc.ca/sci/herring/herspawn/pages/default0_e.html).

Seaward/tlasta Timber Sales Area



Note : This is not an official DFO map so if your area of work is near the borders separating districts than your local DFO branch should be contacted to confirm the timing window that applies to you. In addition DFO has indicated that it will be changing timing windows and district boundaries in March or April of 2010 so the following link should be checked prior to commencing work (http://www-heb.pac.dfo-mpo.gc.ca/decisionsupport/os/timing_marine_e.htm)

Figure 1: Overview of the BC coast highlighting the separation between the north coast, central coast, south coast and the BCTS Seaward/tlasta operating area.

Monitoring Program

Schedule:

Monitoring should begin at the start of the expected spawn timing window and continue for the duration of the window. During the spawning season observations of the approach areas should be conducted for 2-hour scans weekly. Observations will include:

- Investigating and recording signs of herring schools,
- Surveys of historical spawning locations,
- Shoreline observations,
- Soundings to search for schooling herring,
- Verify or investigate third party reports of spawning/schooling herring.

These observations can be made by boat from the water or by shoreline walks, and should include both the immediate area surrounding the log handling facility and nearby shorelines and inlets.

Identification of Spawning:

Herring often appear in large schools and ‘ball up’ when spawning. During large spawn events the marine water will often change to an opaque colour, with the deposition of eggs and milt (Photo 2). The appearance of large groups of marine birds and/or mammals may also occur during spawning events. Along the shoreline small white/translucent eggs will be coated on intertidal vegetation or rocks. Herring monitors should be trained to differentiate between herring schools and pilchard schools.

Reporting:

If either schools of herring or evidence of recent spawns are observed BCTS should be immediately notified. A monitoring log (Appendix 1) must be filled out for each observation day. Carefully note location and fish behaviour – example: “Active spawning with fish traveling in northern direction along shoreline”; or “Large ball of fish holding at mouth of inlet.”

Once observed in the area, daily monitoring will take place on-site by a trained herring monitor, as directed by a Qualified Registered Professional (QRP).

References

Fisheries and Oceans Canada. 2014. British Columbia Marine/Estuarine Timing Windows for the Protection of Fish and Fish Habitat – South Coast and Lower Fraser Areas. February, 2014. <http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/bc-s-eng.html> (Accessed on Jan 13, 2017).

Fisheries and Oceans Canada. Pacific Herring website. Retrieved April 29, 2009 from http://www.pac.dfo-mpo.gc.ca/sci/herring/bulletin_e.htm

Fisheries and Oceans Canada. 2009. Herring Spawn Survey Manual. Fisheries and Oceans Canada Science Branch.

McConnaughey, B.H. and E. McConnaughey. 1998. Pacific Coast – A Comprehensive Field Guide. Chanticleer Press Inc.

Appendix 2 – British Columbia Marine/Estuarine Timing Window for the Protection of Fish and fish Habitat.

Table 1. Information pertaining to marine/estuarine in water working windows in areas 1-6 on the BC coast.

| Location | Description | Species | Timing window | | Exceptions |
|----------------------------------|---|---------|----------------|---------|------------|
| | | | Start | Finish | |
| Area 1 - Masset | This area includes the north coast of Haida Gwaii from Fife Point (excluded) to Tian Bay (excluded). It includes all small islands near the coast between the two points, masset inlet and Naden Harbour | All | Summer: July 1 | July 31 | N/A |
| | | | Winter: Jan 1 | Mar 1 | |
| Area 2E – Sandspit | This area includes the east coast of Haida Gwaii from Cape of St. James (excluded) to Fife Point (included). It includes all small islands near the coast between the two points. | All | Summer: July 1 | July 31 | N/A |
| | | | Winter: Jan 1 | Mar 1 | |
| Area 2W – West Coast Haida Gwaii | This area includes the west coast of Haida Gwaii from Cape of St. James (included) to Tian Bay (included). It includes all small islands near the coast between the two points. | All | Summer: July 1 | July 31 | N/A |
| | | | Winter: Jan 1 | Mar 1 | |
| Area 3 – Lower Nass | This area includes the coast of the mainland of B.C. between Hook Point (included) and Pearse Canal (included). It also includes all parts of Finlayson Island north of Hook Point and the north part of Dundas Island (from Edith Point to the center of the eastern coast). It also includes Portland Canal, Pearse Canal, Work Channel and all inland bodies of water (i.e. bays, inlets, etc.) resulting from them. | All | Summer: N/A | N/A | N/A |
| | | | Winter: Nov 30 | Feb 15 | |
| Area 4 – Lower Skeena | This area includes the coast of the mainland of B.C. between Ker Point (excluded) and Hook Point (excluded). This area also includes the north portion of Porcher Island (from Oona to Fan Point excluding Kitkatla Inlet and islands), south portion of Finlayson Island (south of Hook Point), south part of Dundas Island (from Edith Harbour to center of the eastern shore), and all islands south of Dundas Island and north of Gibson Island. This area excludes the coast of the mainland from Cannery to Schreiber Point, part of Prince Rupert Harbour east of Schreiber Point, the Morse Basin, and the eastern part of Kaien Island (from Ridey to Prince Rupert (included)). | All | Summer: N/A | N/A | N/A |
| | | | Winter: Nov 30 | Feb 15 | |
| Area 4A - Waterfront | This area includes the coast of B.C. from Cannery (included) to Schreiber Point (included). It also includes the part of Prince Rupert Harbour east of Schreiber Point, the Morse Basin, and the eastern part of Kaien Island (from Ridey to Prince Rupert (included)). | All | Summer: N/A | N/A | N/A |
| | | | Winter: Nov 30 | Feb 15 | |
| Area 5 – Grenville Principe | This area includes the coast of B.C. and all islands between Hartley Bay (included) and Ker Point (included). It also includes Promise, Pitt and Banks Islands and the south part of Porcher Island (from Oona Point to Fan Point including Kitkala Inlet and all islands in it). The area does not include the south part of Pitt Island (from Devenport Point to Saycuritay Cove). | All | Summer: N/A | N/A | N/A |
| | | | Winter: Nov 30 | Feb 15 | |
| Area 6 - Butedale | This area includes the coast of B.C. between Catala Passage (included) and Hartley Bay (excluded). It also includes the south part of Pitt Island (from Devenport Point to Saycuritay Cove) and the Tolmie, Squally, Whale and Otter Channels and all islands within those channels. The area also includes all islands in Caamano Sound south of Banks Island. The area excludes Grenville Channel and Promise Island. | All | Summer: N/A | N/A | N/A |
| | | | Winter: Nov 30 | Feb 15 | |

Table 1 continued. Areas 7 – 13E.

| Location | Description | Species | Timing window | | Exceptions |
|---------------------------|---|---------|----------------|--------|---|
| | | | Start | Finish | |
| Area 7 – Bella Bella | This area includes the coast of B.C. from Leckie Bay (partially included, approximately halfway across the bay) to Catala Passage (excluded) and all islands between these points. It also includes the Johnson, Finlayson, Mathieson, and Spiller Channels and all inland bodies of water resulting from these channels (i.e. inlets, bays). The area excludes the Tolmie Channel, and all resulting bodies of water. | All | Summer: N/A | N/A | N/A |
| | | | Winter: Jul 1 | Feb 28 | |
| Area 8 – Bella Coola | This area includes the coast of B.C. from Fish Egg Inlet (excluded) to Leckie Bay (partially included, approximately halfway across the bay) and all islands between these points. It also includes portion of Culvert Island north of Truman Point and King Island. The area also includes the Burke, Fisher, and Dean Channels and all inland bodies of water (i.e. inlets, bays) resulting from these channels. The area excludes the Johnson Channel and all resulting bodies of water. | All | Summer: N/A | N/A | N/A |
| | | | Winter: Jul 1 | Feb 28 | |
| Area 9 – Rivers Inlet | This area includes the coast of B.C. from Kelp Head (excluded) to Fish Egg Inlet (included) and all islands between these points. It also includes the portion of Culvert Island south of Truman Point. | All | Summer: N/A | N/A | N/A |
| | | | Winter: Jul 1 | Feb 28 | |
| Area 10 – Smith Inlet | This area includes the coast of B.C. from Silvester Bay (south of Cape Caution, included) to Kelp Head (included) and all islands between these points.. | All | Summer: N/A | N/A | N/A |
| | | | Winter: Jul 1 | Feb 28 | |
| Area 11 – Port Hardy | This area includes the coastline of the mainland of B.C. between Akam Point (excluded) and Silvester Bay (excluded) and the coast of Vancouver Island from Nels Bight (excluded) to Robson Bight (excluded) including all the open water area of the Queen Charlotte Strait between those points. This area does not include any islands in the Queen Charlotte Strait and Johnstone Strait east of Akam Point. All the open water more than 1 km away from the western shore (Vancouver Island) of the Johnstone Strait is excluded from the area. | All | Summer: Jul 1 | Aug 15 | Seymour River Estuary: Jul 1 – Jul 15 Summer windows do not apply in the following estuaries: Shushartie River, Nimpkish River and Quatse River |
| | | | Winter: Nov 15 | Feb 15 | |
| Area 12- Alert Bay | This area includes the coast of mainland B.C. between Shaw Point (included) and Akam Point (included) and all islands and open water in the Queen Charlotte Strait and Johnstone Strait west of Shaw Point and east of Akam Point and the part of Bradwicke Island west of Shaw Point. Area 12 does not include open water within 1 km from the shore of Vancouver Island. | All | Summer: Jul 1 | Aug 15 | Embley Creek Estuary: Jul 1 – Jul 15 Summer windows do not apply in any of the following estuaries: Ahnuhati River, Fulmore River, Kakweiken River, Kingcome River, Klinaklini River, Mackenzie Snd. Creek, Protection Pt. Creek, Sim River, and Wakeman River. |
| | | | Winter: Nov 15 | Feb 15 | |
| Area 13E – Campbell River | This area includes the coast of mainland B.C. between Pryce Channel / Sutil Channel (included) and Shaw Point (excluded) as well as the coast of Vancouver Island between Discovery Passage southern end (included) and Camp Point (included) and all islands and open water between these points. The area also includes Bute Inlet, Loughborough Inlet, and the part of Bradwicke Island east of Shaw Point. | All | Summer: Jul 1 | Sept 1 | Amor de Cosmos Creek Estuary: Jul 1 – Jul 15 Summer windows do not apply in any of the following estuaries: Apple River, Campbell River, Heydon Creek, Homalthko River, Phillips River, Stafford River, and Village Bay Creek. |
| | | | Winter: Nov 1 | Feb 15 | |

Table 1 continued. Areas 13W – 17

| Location | Description | Species | Timing window | | Exceptions |
|--------------------------|--|---------|---------------|--------|--|
| | | | Start | Finish | |
| Area 13W – Sayward | This area includes the coast of Vancouver Island between Camp Point (excluded) and Robson Bight (excluded). It does not include any open water more than 1 km away from the shore.. | All | Summer: Jul 1 | Sept 1 | Summer windows do not apply in the following estuary: Eve River |
| | | | Winter: Nov 1 | Feb 15 | |
| Area 14N - Comox | This area includes the coast of Vancouver Island from Deep Bay (Mapleguard Point included) to the southern end of Discovery Passage (excluded). It also includes Denman and Hornby Island and extends into the open water of the Strait of Georgia to approximately the halfway point between Vancouver Island and the Mainland. | All | Summer: Jun 1 | Sept 1 | Oyster River Estuary: Jul 1 - Jul 15 Puntledge/Courtney River Estuary: Aug 1 - Aug 10 Trent River Estuary: Jul 1 - Aug 1 Tsable River Estuary: Jul 1 - Aug 1 |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 14S – Qualicum | This area includes the coast of Vancouver Island from Cottam Point (included) to Deep Bay (Mapleguard Point excluded). This area also includes Southwest Lasqueti Island from Jelina Island to Young Point. It does not include Northwest Bay. The area extends into the open water of the Strait of Georgia to approximately the halfway point between Vancouver Island and the Mainland.. | All | Summer: Jun 1 | Sept 1 | Qualicum River Estuary: Jul 1 - Aug 1 Englishman River Estuary: Jul 1 - Aug 1 Summer windows do not apply in the following estuary: Little Qualicum River. |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 15 – Powell River | This area includes the coast of the mainland of B.C. from Frolander Bay (excluded) to Toba Inlet (included). This area also includes Redonda Island and most of Cortes Island. It does not include the Pryce Channel, the Sutil Channel and adjacent coast of Cortes Island. The area extends into the open water of the Strait of Georgia to approximately the halfway point between Vancouver Island and the Mainland. | All | Summer: Jul 1 | Sept 1 | Brem River Estuary: Jul 1 - Aug 1 Theodosia River Estuary: Jul 1 - Aug 1 Toba River Estuary: Jul 1 - Aug 1 Whittal Creek Estuary: Jul 1 - Aug 1 Summer windows do not apply in either of the following estuaries: Klite River and Lang Creek. |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 16 – Pender Harbour | This area includes the coastline of the mainland of B.C. from the Trail Islands (excluded) to Frolander Bay (included). It also includes Jervis Inlet, Texada Island and Northeast Lasqueti Island from Jelina Island to Young Point. The area extends into the open water of the Strait of Georgia to approximately the halfway point between Vancouver Island and the Mainland | All | Summer: Jul 1 | Sept 1 | Cranby Creek Estuary: Jul 1 - Aug 1 Dorsiton Creek Estuary: Jul 1 - Aug 1 Lang Creek Estuary: Jul 1 - Aug 1 McNair Creek Estuary: Jul 1 - Jul 15 Mill Creek Estuary: Jul 1 - Aug 1 Potlatch Creek Estuary: Jul 1 - Aug 1 Rainy River Estuary: Jul 1 - Jul 15 Summer windows do not apply in any of the following estuaries: Angus Creek, Brittain Creek, Jefferd Creek, and Skwawka River. |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 17- Nanaimo | This area includes the coast of Vancouver Island between Grave Point (excluded) and Cottam Point (excluded). It includes all the open water and all islands within an area that extends north to Lasqueti Island, east to the Trail Islands (included) and south to Sturdies Bay on Galiano Island (included). The area also includes Northwest Bay, partially includes parts of the Gulf Islands geographically north of Sturdies Bay, and includes the south-eastern tip of Lasqueti Island from Young Point to Squitty Bay. | All | Summer: Jun 1 | Sept 1 | Chemainus River and Bonsall Creek Estuary: Jul 1 - Jul 15 Knarston Creek Estuary: Jul 1 - Sept 1 Summer windows do not apply in the following estuary: Nanaimo River. |
| | | | Winter: Dec 1 | Feb 15 | |

Table 1 continued. Areas 18 – 24.

| Location | Description | Species | Timing window | | Exceptions |
|------------------------|---|---------|----------------|--------|--|
| | | | Start | Finish | |
| Area 18 – Cowichan | This area includes the coast of Vancouver Island from Swartz Bay (included) to Grave Point (included). It also includes all of the Gulf Islands south of Sturdies Bay on Galiano Island (excluded) but excludes the portion of Saltspring Island north of Swartz Bay, and the portion of Galiano Island north of Sturdies Bay. The area also extends east into open water 2 km past the easternmost tip of the Gulf Islands. The area excludes the part of Saanich Inlet south of Hatchet Point | All | Summer: Jul 1 | Oct 1 | Summer windows do not apply in the following estuary: Cowichan/Koksilah |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 19 - Victoria | This area includes the coastline of Vancouver Island from Race Passage (included) to Swartz Bay (excluded). It also includes the part of Saanich Inlet south of Hatchet Point and extends into open water to the east and the south to the approximate halfway point between Vancouver Island and the United States. | All | Summer: Jul 1 | Oct 1 | Summer windows do not apply in the following estuary: Durrance Creek |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 20 – Sooke | This area includes the coast of Vancouver Island from Race Passage (excluded) to Carmanah Point (included). It extends south into open water to approximately halfway across the Strait of Juan de Fuca. | All | Summer: Jul 1 | Oct 1 | Gordon River Estuary: Jul 1 - Aug 1 San Juan River Estuary: Jul 1 - Jul 15 Sooke River Estuary: Jul 1 - Aug 15 |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 22– Nitnat | This area includes the coast of Vancouver Island from Carmanah Point (excluded) to Mills Peninsula (excluded). The area includes Bamfield Inlet and open water that extends out from the coast.. | All | Summer: N/A | N/A | N/A |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 23 – Port Alberni | This area includes the coast of Vancouver Island from Mills Peninsula (included) to Macoah Passage (excluded). This area excludes Bamfield Inlet, and includes open water that extends out from the coast. | All | Summer: Jul 1 | Sept 1 | China Creek Estuary: Jul 1 - Aug 15 Ritherdon Creek Estuary: Jul 1 - Aug 15 Ward Creek Estuary: Jul 1 - Aug 15 Summer windows do not apply in either of the following estuaries: Coeur D'Alena Creek and Useless Creek. |
| | | | Winter: Nov 15 | Feb 15 | |
| Area 24 - Tofino | This area includes the coast of Vancouver Island from Macoah Passage (included) to Hesquiat Peninsula (Estevan Point included). This area extends out into open water from the coast. | All | Summer: Jul 1 | Sept 1 | Bedwell River Estuary: Jul 1 - Aug 1 Hootla Kootla River: Jul 1 - Aug 1 Hotsprings River Estuary: Jul 1 - Aug 1 Moyhea River Estuary: Jul 1 - Aug 1 Sydney River Estuary: Jul 1 - Aug 1 Tranquil Creek Estuary: Jul 1 - Aug 1 Summer windows do not apply in any of the following estuaries: Cypre River, Lower Kenedy River, Megin Creek, and Watta Ri |
| | | | Winter: Dec 1 | Feb 15 | |

Table 1 continued. Areas 25 – 29.

| Location | Description | Species | Timing window | | Exceptions |
|----------------------------|--|---------|--|--------|---|
| | | | Start | Finish | |
| Area 25 – Gold River | This area includes the coast of Vancouver Island from Hesquiat Peninsula (Estevan Point excluded) to Yellow Bluff (included). This area extends out into open water from the coast. | All | Summer: Jul 1 | Aug 15 | Summer windows do not apply in any of the following estuaries: Gold River, Kleeptee Creek, Leiner Creek, Moovah Bay Creek, Owossitsa Creek, Park River, Pt. Elisa Creek #1 and 2, Sucwoa River, Tahsis River, and Tlupana River |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 26 - Kyoquot | This area includes the coast of Vancouver Island from Yellow Bluff (excluded) to Brooks Peninsula (Banks Reef included). This area extends out into open water from the coast. | All | Summer: Jul 1 | Aug 15 | Summer windows do not apply in the following estuary: Jensen lake Creek |
| | | | Winter: Dec 1 | Feb 15 | |
| Area 27 – Quatsino Sound | This area includes the coast of Vancouver Island from Brooks Peninsula (Banks Reef excluded) to Nels Bight (Frederiksen Point excluded). This area extends out into open water from the coast. | All | Summer: Jun 15 | Aug 15 | Waukwaas Creek Estuary: Jun 15 - Jul 15 Summer windows do not apply in either of the following estuaries: Mahatta Creek and Marble River. |
| | | | Winter: Nov 15 | Feb 15 | |
| Area 28– Vancouver | This area includes all of Howe Sound and Burrard Inlet, from Fraser River North Arm Jetty (excluded) to Gibson's Landing (included). | All | Summer: N/A | N/A | Burrard Inlet (inland from Point Grey to Point Atkinson): Aug 16 - Feb 28 Fraser River Estuary (from mouth upstream to Oak Street Bridge and the George Massey Tunnel): Jul 16 - Feb 28 Fraser River Estuary (from Oak Street Bridge and George Massey Tunnel to Mission Bridge): Jun 16 - Feb 28 Howe Sound (inland from Point Atkinson to Gibson's Landing including islands): Aug 16 - Jan 31 |
| | | | Winter: Please see exceptions column | | |
| Area 29 – Steveston/Surrey | This area includes the coast of the lower mainland from the U.S. border (including Boundary Bay) to Sechelt (included) and the Trail Islands (excluded). It also includes the Lulu and Sea Islands. The area excludes all of Howe Sound and Burrard Inlet from Fraser River North Arm Jetty (included) to Gibson's Landing (excluded). | All | Summer: Vancouver Area Inlet (from US border to North Arm Jetty): N/A Robert's Creek Area (from Gibson's Landing to Sechelt): Jul 15 - Sept 15 | | Winter: Vancouver Area Inlet (from US border to North Arm Jetty): Aug 16 - Feb 28 Fraser River Estuary (from mouth upstream to Oak Street Bridge and the George Massey Tunnel): Jul 16 - Feb 28 Fraser River Estuary (from Oak Street Bridge and George Massey Tunnel to Mission Bridge): Jun 16 - Feb 28 Robert's Creek Area (from Gibson's Landing to Sechelt): Dec 1 - Feb 15 |
| | | | | | |