



Salmon Briefing

2016 Outlook and Management

- Pre-season outlook / expectations and early indications
- General overview of in-season management approach



Pacific Salmon Species

- Size and age at return varies by species:
 - Pink – smallest of 5 species at 2.2 to 5.5 kg, mature at 2 years, most abundant on odd years in southern BC;
 - Sockeye – most spend 2 years in the North Pacific before returning to spawn; mature at 3 to 5 years;
 - Coho – 1.3 to 14kg, mature at 3 to 4 years;
 - Chum – 4.5 to 6.5kg, mature at 3 to 5 years, also referred to as “dog” salmon;
 - Chinook –largest of the Pacific salmon at 1.5 to 30Kg, mature at 3 to 7 years; also referred to as “spring” (Canada) and “king” (US) salmon; chinook over 13.5kg are called *tyees*;



Enhanced origin salmon are also produced in hatcheries and spawning channels by the DFO Salmonid Enhancement Program and partners; Enhanced fish from US facilities are also caught in Canada. Many of these fish, particularly chinook and coho, are visually distinguishable from wild origin fish as they have had their adipose fin “clipped” or removed.



2016 Salmon Outlook

2016 salmon outlook has declined compared to 2015;

- increased uncertainty in returns due to a combination factors including number of parental spawners and impacts of environmental conditions on survival rates.
- Cumulative impacts of environmental conditions on salmon likely to result in highly variable but generally reduced returns for many species and populations

Salmon returning in 2016 may also be affected by:

- Low river discharge and high temps which caused widespread losses of migrating salmon adults and rearing juveniles in BC & WA State river and streams in 2015.
- 2016 snow packs are very low (particularly compared with 2015 at this time). Low snow packs increase susceptibility of freshwater systems to low flows and high water temperatures during the summer months.

Major B.C. sockeye Runs

Fraser River watershed



Distance: Fraser R mouth to Takla L = 1000km (as the fish swims)



Nass R

Skeena R

Fraser River

Okanagan L.
Columbia R.

Barkley Sound (Somass):
Great Central L., Sproat L.



Sockeye Salmon Outlook

- **Nass River:** Average return expected: Pre-season forecast range: 476,000 to 999,000. Fishing opportunities expected.
- **Skeena River:** 2016 forecast returns are expected to be below average; total returns to Canada of 1.3 million (range: 0.6 to 2.7 million). Fisheries opportunities expected; commercial fisheries possible if run exceeds 1.05 million.
- **Fraser River:** exhibit 4 year cycle of abundance. 2016 is an off-cycle year (i.e. much lower returns than dominant 2010, 2014 cycle) and returns are expected to be low. Forecast has high uncertainty with a range from 814,000 to 8.181 million. Median forecast is 2.27 million (i.e. 1 in 2 chance of lower return) which will likely permit only First Nations food, social and ceremonial fisheries unless run is stronger than expected.



Sockeye Salmon Outlook

- **Barkley Sound / Somass (Port Alberni area)**: Abundance expected to decline relative to record return of 2 million in 2015; pre-season management forecast of 1 million. Fishing opportunities have begun.
- **Okanagan**: reduced expectations for total return in 2016 of approx. 200,000 sockeye; about half of recent year returns. Concerns for en route mortalities of adults in the Columbia and Okanagan rivers if warm water temperatures encountered. Fisheries uncertain.
- Sockeye fisheries are based on in-season assessments of actual returns at test fisheries, hydro acoustics and other information.



Pink Salmon Outlook

- High variation in pink returns is not unusual
- Northern BC: Potential for good returns in some areas (e.g. Nass, Area 6, and possibly Haida Gwaii) based on parental spawners.
- Southern BC: Most abundant on odd numbered years when large Fraser River pink returns occur. Local pink abundances in other areas may provide opportunities for directed harvest.
- Opportunities to harvest pink salmon usually constrained by objectives for stocks of concern (e.g. coho, chum); fishing opportunities focus on selective methods.



Chinook Salmon Outlook

- returns expected to vary considerably by population due to on-going fluctuations in survival rates and parental spawner abundance.
- 2016 forecast ocean abundance (for US and CAN chinook) in offshore fisheries in Northern BC and West Coast of Vancouver Island has increased relative to 2015.
 - Northern British Columbia (NBC) allowable catch has increased over 50% compared to 2015.
 - West Coast of Vancouver Island (WCVI) allowable catch is similar to 2015 (approx. 5% higher).
- Northern BC: Recent average returns are expected in the Skeena and Nass Rivers. Variable returns in other systems with abundant returns expected in the Bella Coola.
- Southern BC: Many populations are stocks of concern or are expected to return at low levels due to low spawner abundance and persistent low survival rates. Fishery management actions remain in place to protect these stocks.



Coho Salmon Outlook

- Survival rates of coho remain variable and are still below historic highs in most areas, particularly Southern BC.
- Northern BC: Coho populations generally continue to exhibit higher productivity and returns than southern populations; however, returns are uncertain and will depend on survival rates of juveniles that went to sea in 2015. Opportunities for directed harvest expected.
- Southern BC: Coho populations, particularly Interior Fraser River coho, remain in a low productivity period with very low returns observed in many areas in 2015. Conservation measures and harvest restrictions will be required in southern fisheries to limit impacts on these populations.
- Cautious management approach for Southern fisheries to limit impacts on Interior Fraser River coho to very low levels; release requirements in place for most fisheries.



Chum Salmon Outlook

- Returns are highly uncertain.
- Northern BC: Chum stocks in the Skeena River, Nass River and parts of the Central Coast continue to be stocks of concern and management actions are taken to limit impacts on these stocks in fisheries for other species.
- Southern BC: Chum returns are expected to support fisheries. Fisheries are managed using a cautious harvest strategy that provides for harvest opportunities in mixed stock areas (e.g. Johnstone Strait); terminal opportunities considered subject to meeting spawner targets. Fraser River chum are expected to be abundant. Local opportunities may be considered for WCVI chum.



Transboundary Rivers Salmon

- Adult salmon migrate between marine waters in southeast Alaska and spawning grounds in northwestern B.C.
 - Alek, Stikine and Taku Rivers
- Chinook: Below average to poor returns anticipated; limited / no fishery opportunities.
- Sockeye: Above average to very good returns; fishery opportunities anticipated.
- Coho: Average returns with potentially for above average abundance; fishery opportunities anticipated.



Yukon Salmon Outlook

- Adult salmon travel over of 3,000 km up the Yukon River to reach their spawning grounds in Canada.
- Yukon River Chinook: The return is anticipated to remain well below the long-term average; limited / no fishery opportunities expected.
- Yukon River Chum: Slightly below average return, although sufficient abundance anticipated to support fishery opportunities.
- Porcupine River Chum: The return is expected to very poor, achieving minimum spawning escapement requirements uncertain; limited / no fishery opportunities.



Salmon Management -Overview

- While it is expected there will be a range of fishing opportunities coast-wide; conservation and sustainable use of the resource is the top priority in management of salmon;
- For 2016 season, anticipating continued impacts of warm ocean conditions and low river flows on salmon; a cautious management approach will be taken to ensure adequate numbers of fish migrate upriver to spawn.
- Management of fisheries is done to allow First Nations, commercial and recreational harvesters to fish in a sustainable manner without compromising the long term health of salmon populations
- Salmon fishery is highly dynamic and fisheries openings are often based on changing/uncertain in season conditions; actual harvest amounts, fishing times and locations for many stocks are confirmed based on inseason on returns.



Responses to Inseason information / environmental conditions

- Active in-season management contributes to achieving conservation objectives; information collected from a range of sources:
 - Test fisheries, hydroacoustics/sonar, counting fences, stock sampling programs (DNA), catch data, spawning ground assessments and environmental monitoring (e.g. flows, water temperatures)
- DFO in consultation with FN's and stakeholders may adjust fisheries plans to take into account information on actual returns, timing, migration routes, stock composition, and other biological data
 - E.g. management plans outline how harvest levels will be adjusted based on inseason abundance for many populations
- This approach takes into consideration the uncertainties that exist in terms of ocean survival and other variables that affect salmon returns.

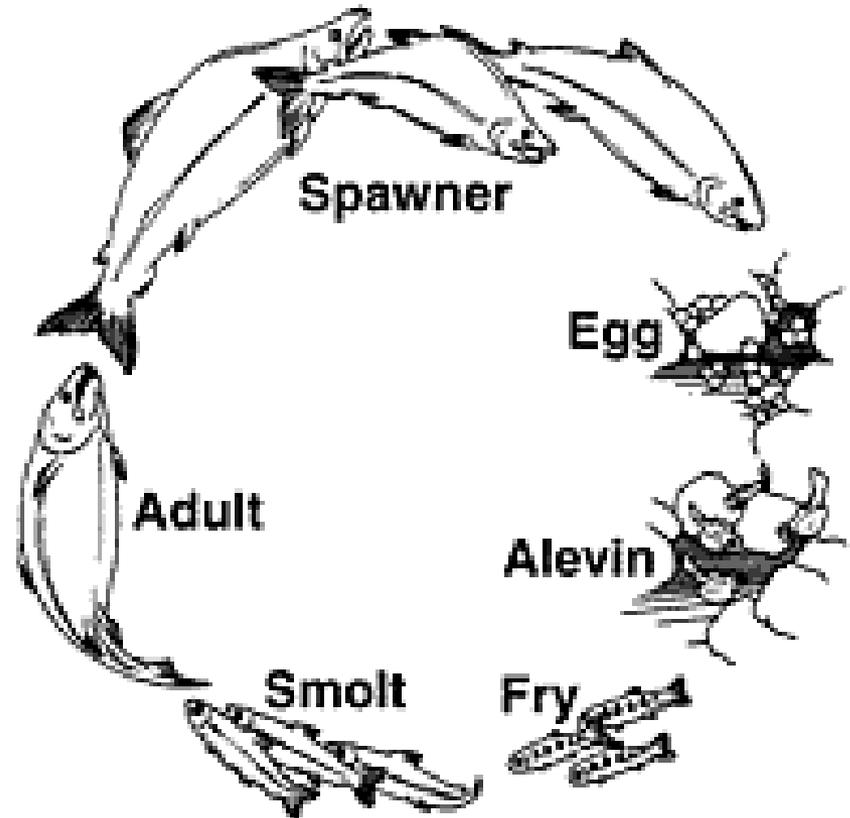


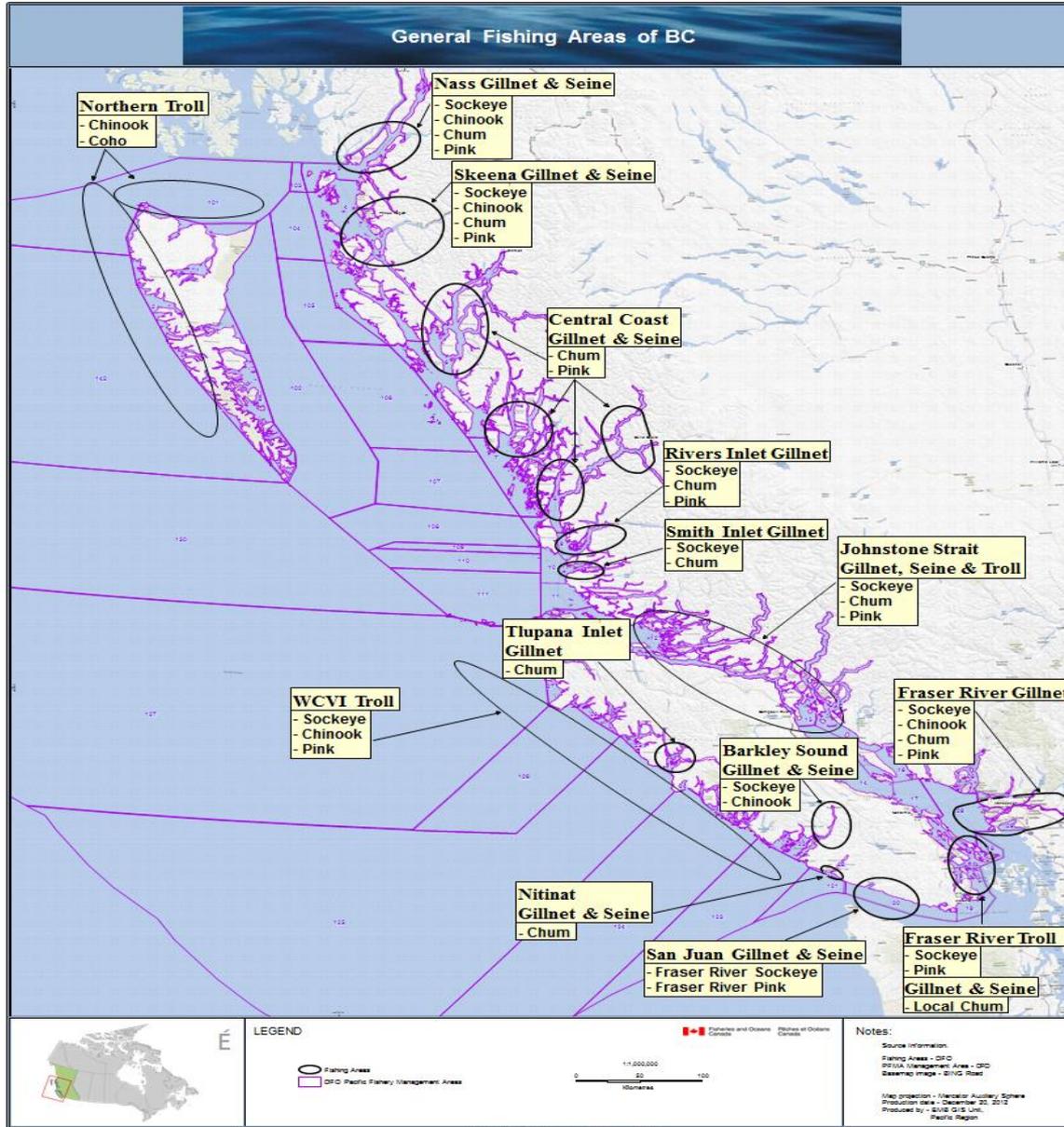
Background Information



Pacific Salmon

- 5 species of Pacific Salmon including *sockeye*, *pink*, *chinook*, *coho* and *chum* returning to British Columbia and Yukon rivers
- All salmon spend parts of their life cycle in freshwater and the ocean
 - Adult salmon return from the ocean and lay eggs in freshwater ; lengthy freshwater migrations for some species (e.g. Fraser river sockeye and Yukon River salmon migrate over 1000km). Salmon typically die after spawning.
 - Eggs hatch in the spring and juvenile salmon *fry* spend 1-3 years rearing in freshwater before migrating downstream to the ocean;
 - Juvenile salmon *smolts* spend 1-4 years rearing in the ocean where they put on the majority of their adult body weight; ocean migration and distribution is extensive with many travelling to the North Pacific / Gulf of Alaska to forage.

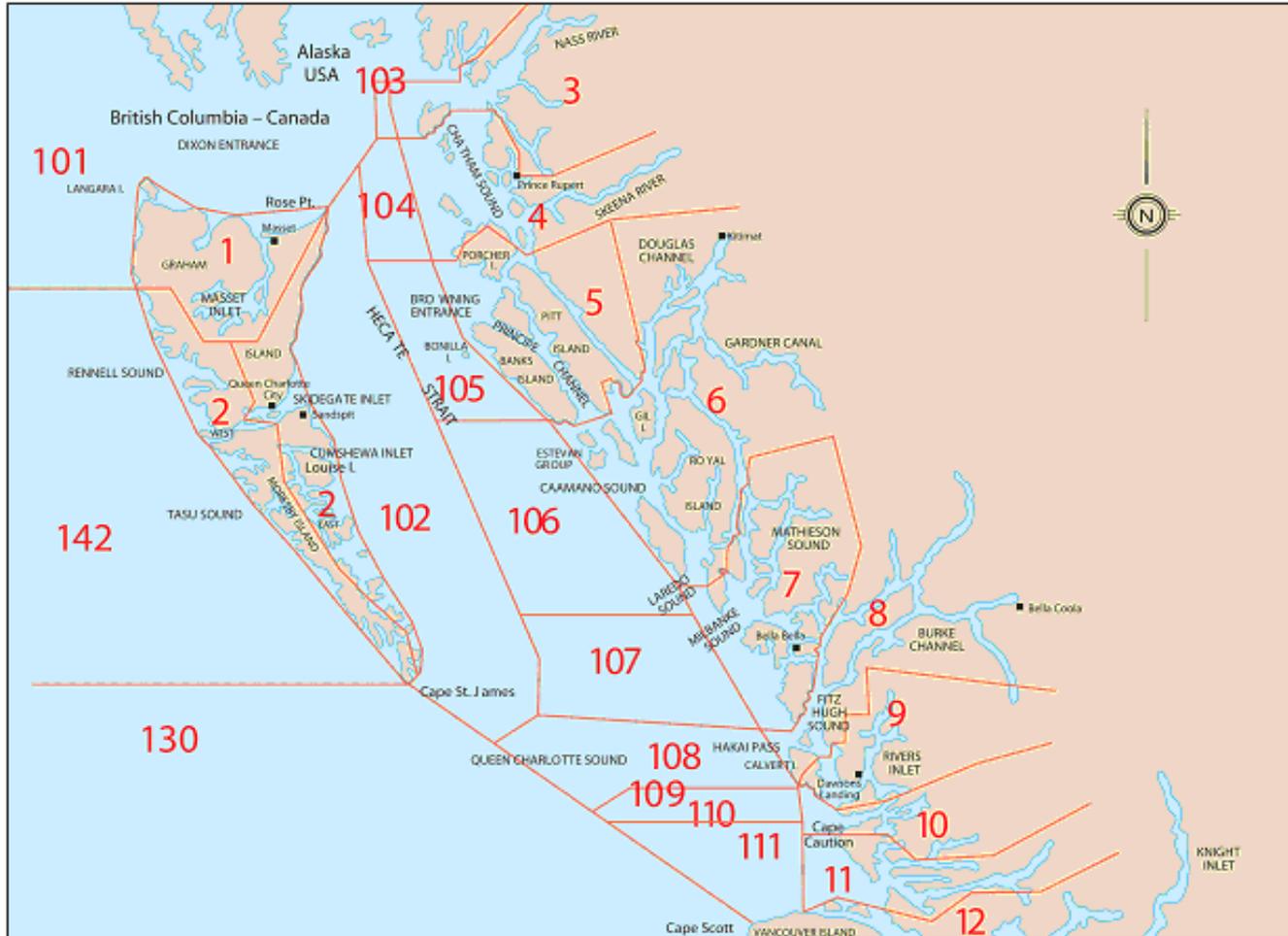




Map of
Commercial
fishery locations in
British Columbia



Management Areas for Northern BC





Looking for Fishery Information?

- DFO Pacific Region internet: <http://www.pac.dfo-mpo.gc.ca/index-eng.html>
- Information on BC Sport Fishing Opportunities: <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>
- Sign up to receive Fishery Notices for fisheries and areas of interest by e-mail: <http://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm>
- Fisheries in Pacific Region including Management Plans and other information: <http://www.pac.dfo-mpo.gc.ca/fm-gp/index-eng.html>
- In-season information on Fraser River sockeye: <http://www.psc.org/>



Examples of management actions to ensure adequate numbers of salmon travel upstream and successfully spawn

- Curtailing, delaying or closing fisheries:
 - Several areas on Vancouver Island and mainland had angling closures in 2015 to protect salmon encountering low water levels and warm temperatures
 - DFO works to co-ordinate angling closures with the Province of BC.
 - Consideration of closed areas to protect holding salmon that are waiting to migrate upstream
- Adjustment of harvest amounts based Fraser sockeye management adjustments (incorporating environmental condition information) to meet spawning targets.
- Cautious approach for Southern BC and Interior Fraser river coho as populations appear to be in a low productivity period.