Steelhead Stock Status British Columbia

OVERALL STATUS AND SIGNIFICANT CHANGES OR ISSUES

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Province of British Columbia

Pacific States Marine Fisheries Commission
2021 Pacific Coast Steelhead Management Meeting
March 16, 2021

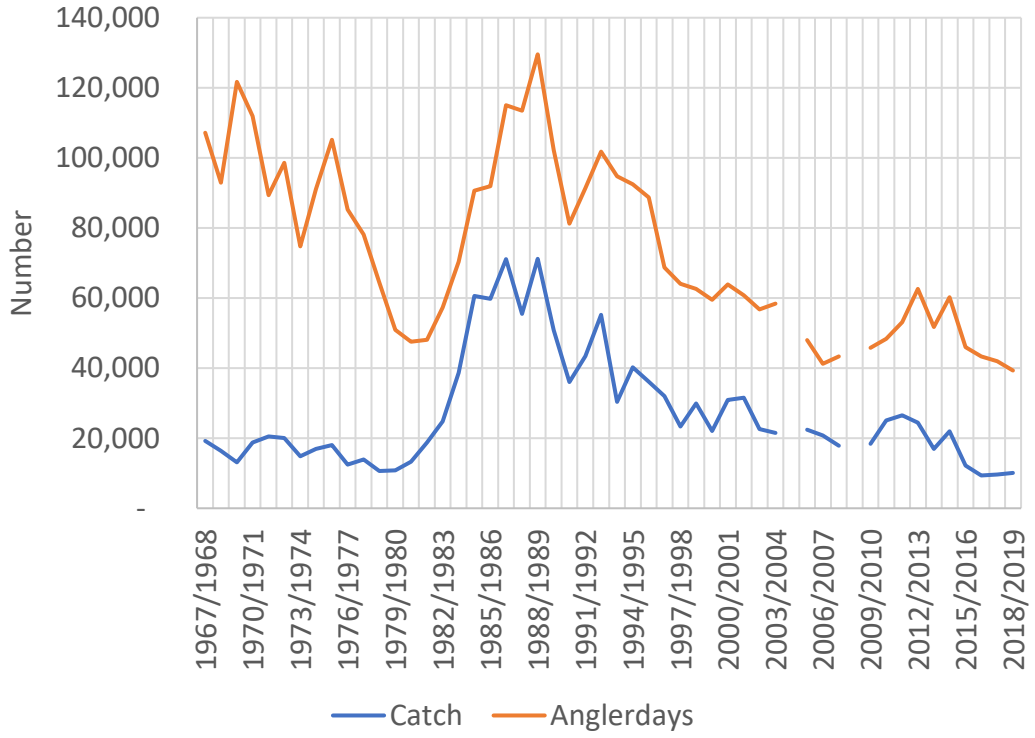
Steelhead Stock Status
British Columbia

- Presentation is divided into southern BC and northern BC
  - Sport fishery statistics
  - Fishery independent monitoring

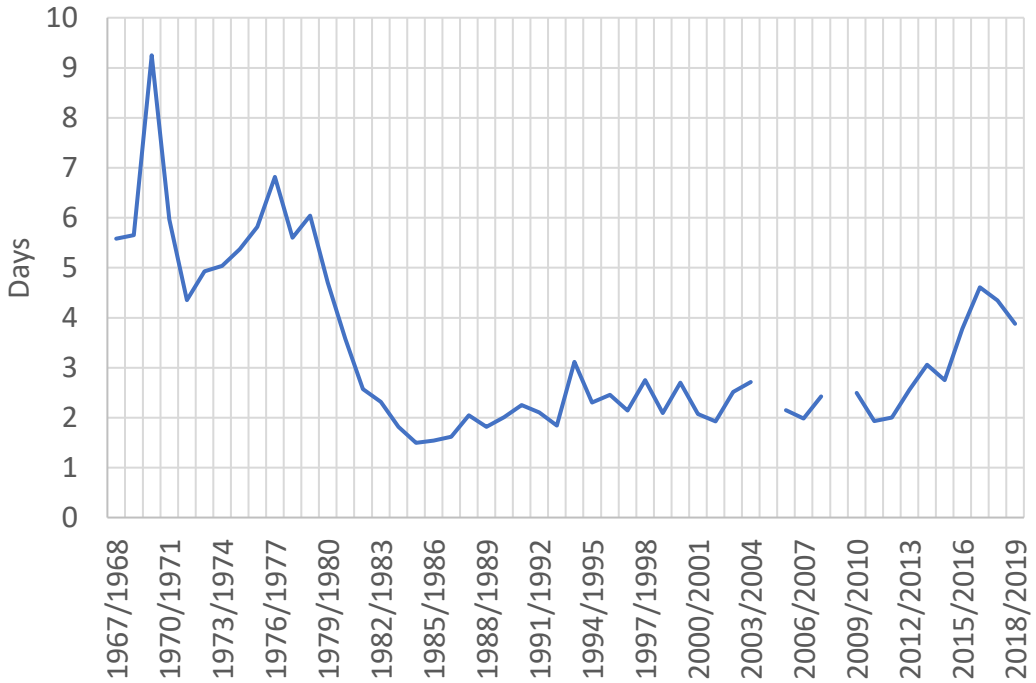
- Highlights of overall status
- Significant changes and issues

Southern British Columbia

Sport Catch and Anglerdays

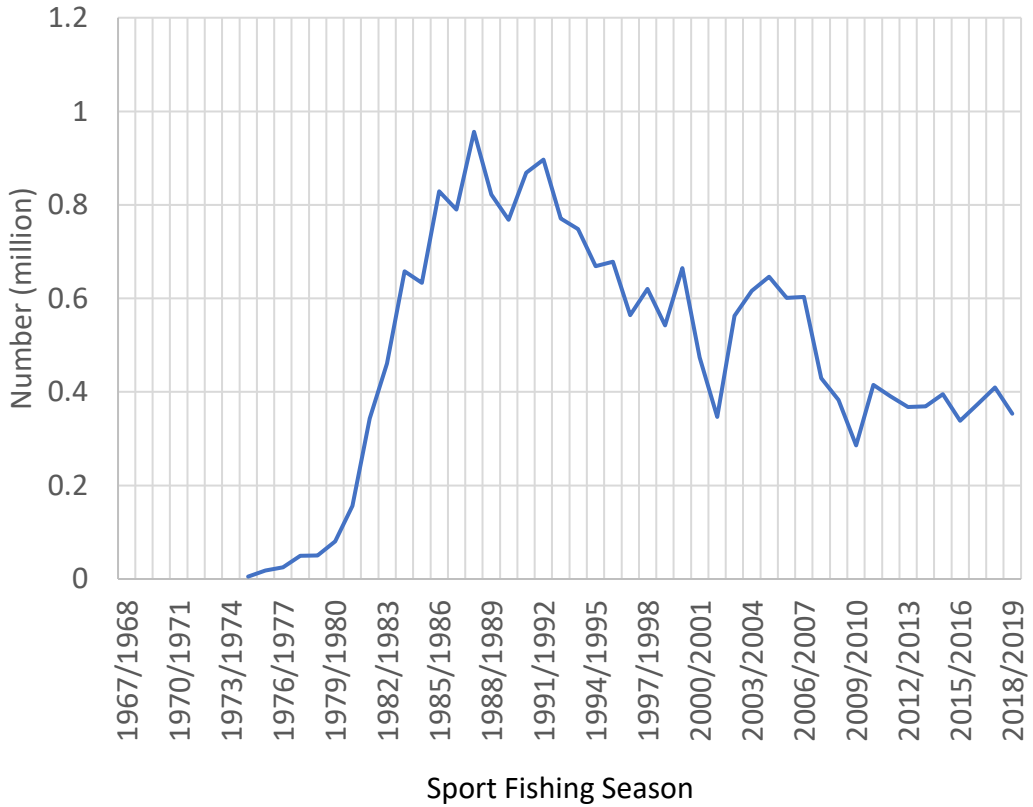


The average number of days to catch one steelhead

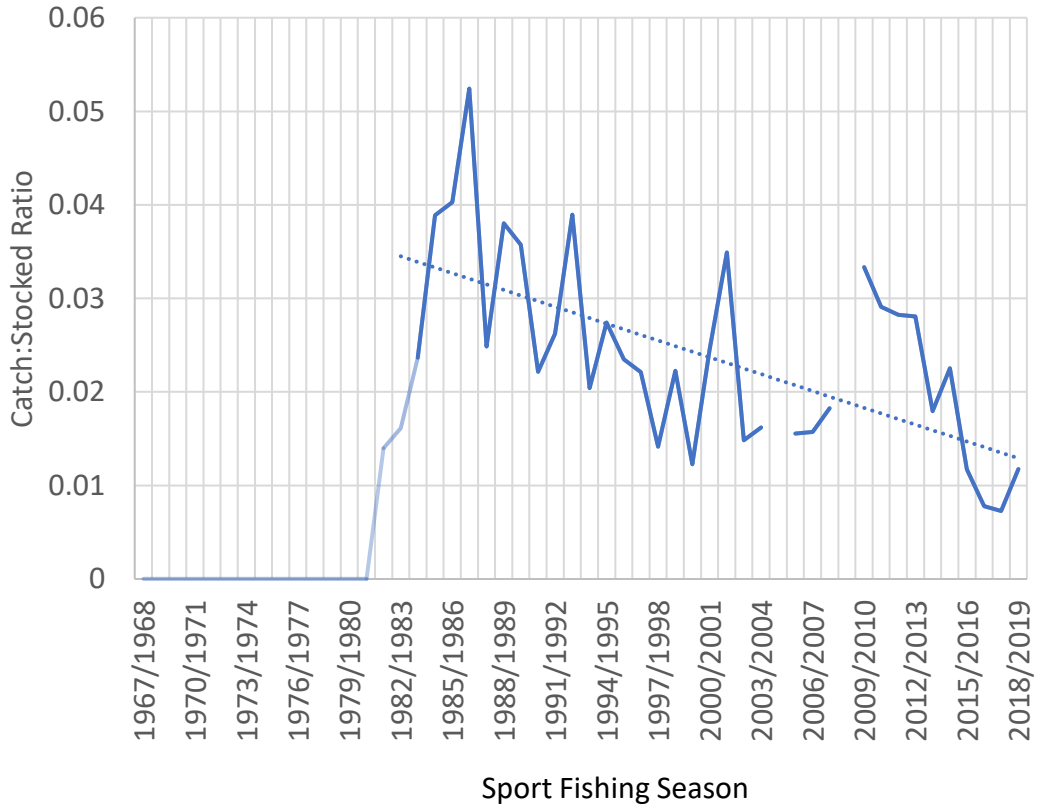


Southern British Columbia

Smolts Stocked

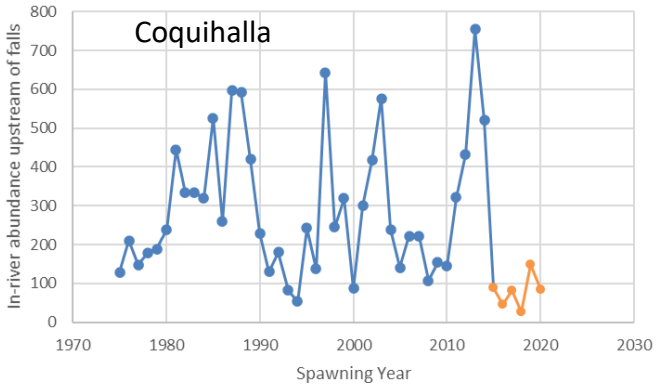


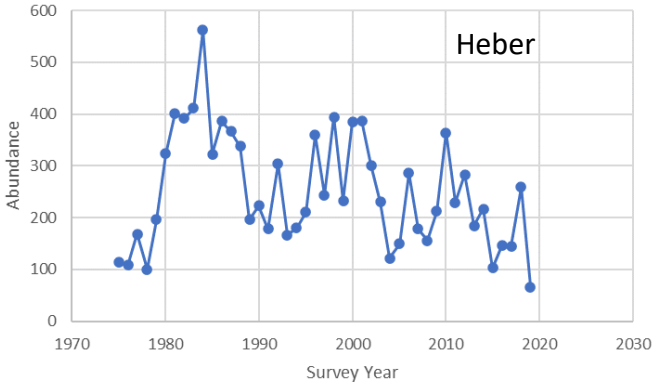
Hatchery Catch : Smolts Stocked

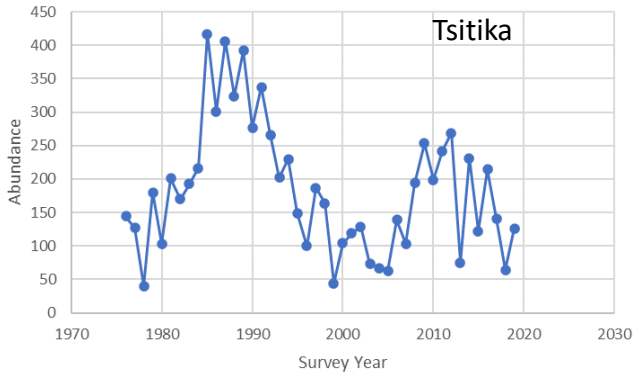


South Coast and South Interior (224 populations)

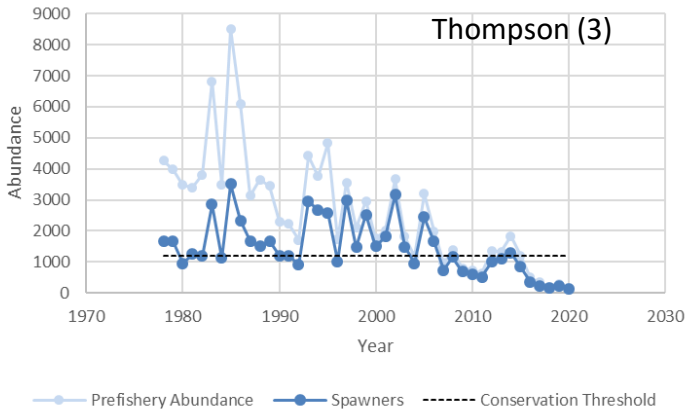
South Coast Summers (41)

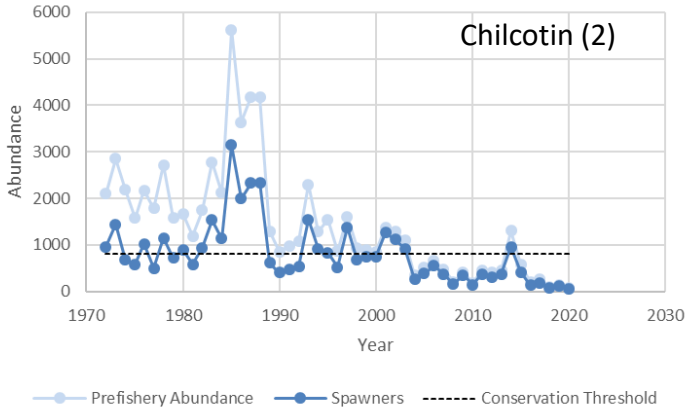




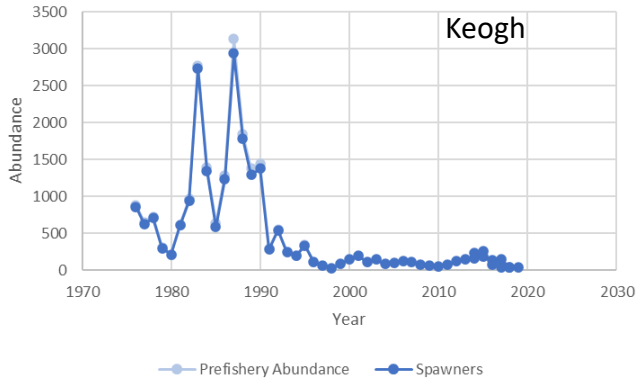


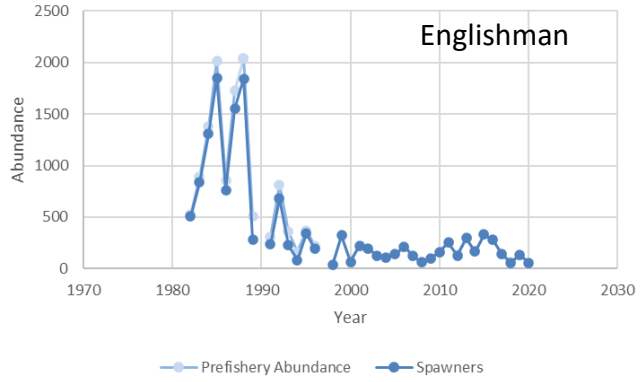
Interior Fraser Summers (10)

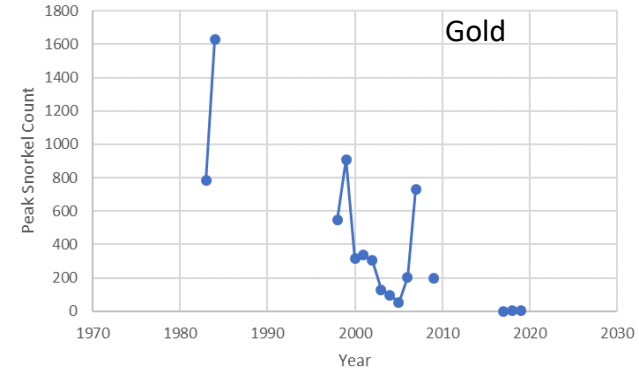




South Coast Winters (173)







Exploratory Analyses Thompson

$$R = Se^{(a+bS+cC)}$$

Results for brood years 1978 to 2012

Model	a	b	covariate coefficient	r2	p	Delta AICc	Support
Adult Predation	1.66	-0.619	-0.71	0.51	0.000013	0.0	strong
Smolt Predation	1.43	-0.553	-0.65	0.46	0.000048	3.3	moderate
Salmon Competition (sockeye pink and chum biomass)	1.44	-0.533	-0.66	0.34	0.001146	7.5	weak
Salmon Competition/Offshore Conditions (max weight)	1.32	-0.515	0.53	0.43	0.000125	8.9	weak
Salmon Competition (sockeye and pink biomass)	1.50	-0.606	-0.52	0.12	0.136749	11.2	weak
Base	1.14	-0.498	na	-0.06	na	12.9	weak
Ocean Conditions (PDO)	1.12	-0.494	0.16	0.04	0.530429	14.6	weak
Freshwater Conditions (Summer low flow affecting fry)	1.13	-0.496	0.13	-0.01	0.484268	14.8	weak
Freshwater Conditions (Summer low flow affecting parr)	1.04	-0.441	0.13	-0.04	na	14.9	weak
Freshwater Conditions (Winter high flow affecting fry).	1.14	-0.501	0.05	-0.05	na	15.4	weak

Exploratory Analyses Chilcotin

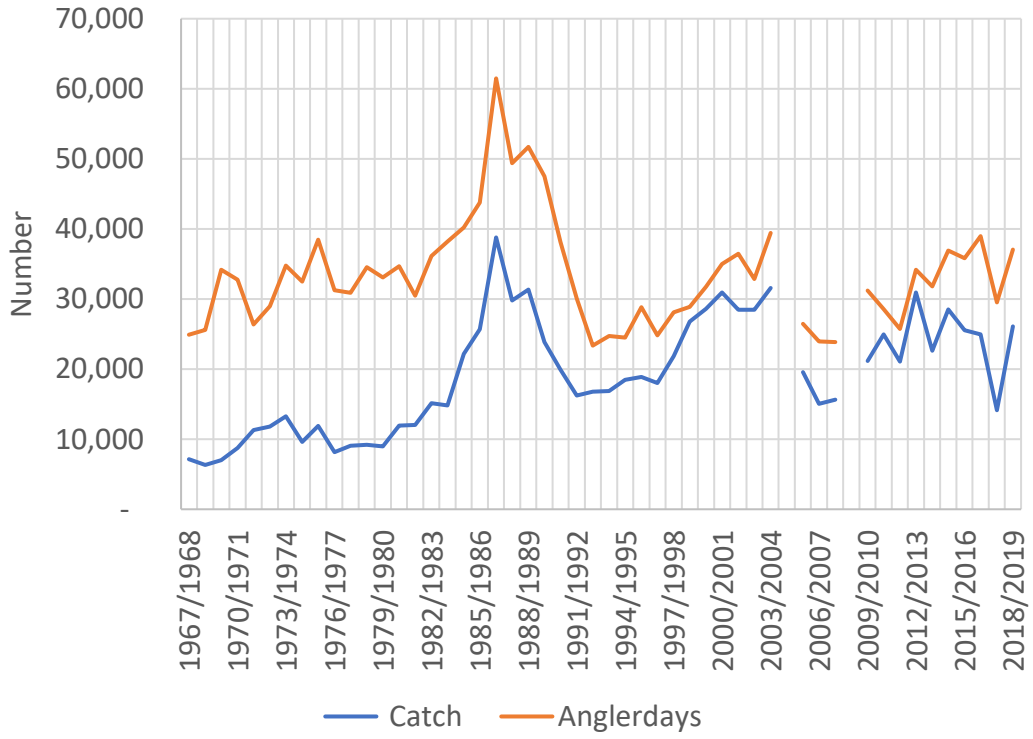
$$R = Se^{(a+bS+cC)}$$

Results for brood years 1978 to 2011

Model	a	b	covariate coefficient	r2	p	Delta AICc	Support
Smolt Predation	1.53	-1.022	-0.89	0.77	<0.00001	0.0	strong
Adult Predation	1.70	-1.076	-0.88	0.79	<0.00001	0.9	strong
Salmon Competition (sockeye pink and chum biomass)	1.46	-0.921	-0.84	0.58	<0.00001	7.0	moderate
Salmon Competition/Offshore Conditions (max weight)	1.01	-0.659	0.48	0.55	<0.00001	11.5	weak
Salmon Competition (sockeye and pink biomass)	1.15	-0.732	-0.56	0.26	0.009323	11.7	weak
Base	0.86	-0.647	na	0.00	0.701099	13.6	weak
Freshwater Conditions (Summer low flow affecting parr)	0.75	-0.523	0.28	0.19	0.035848	13.8	weak
Ocean Conditions (PDO)	0.82	-0.615	0.21	0.15	0.086853	14.7	weak
Freshwater Conditions (Summer low flow affecting fry)	0.82	-0.599	0.15	0.06	0.361684	15.5	weak
Freshwater Conditions (Winter high flow affecting fry).	0.83	-0.624	0.09	0.05	0.475922	15.9	weak

Northern British Columbia

Sport Catch and Anglerdays



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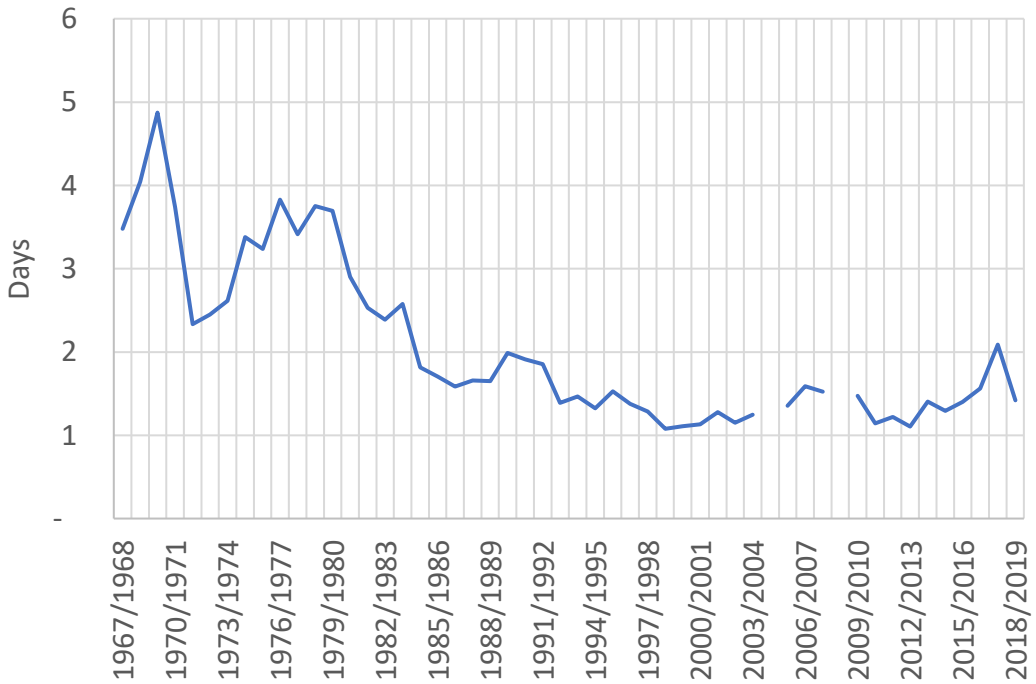
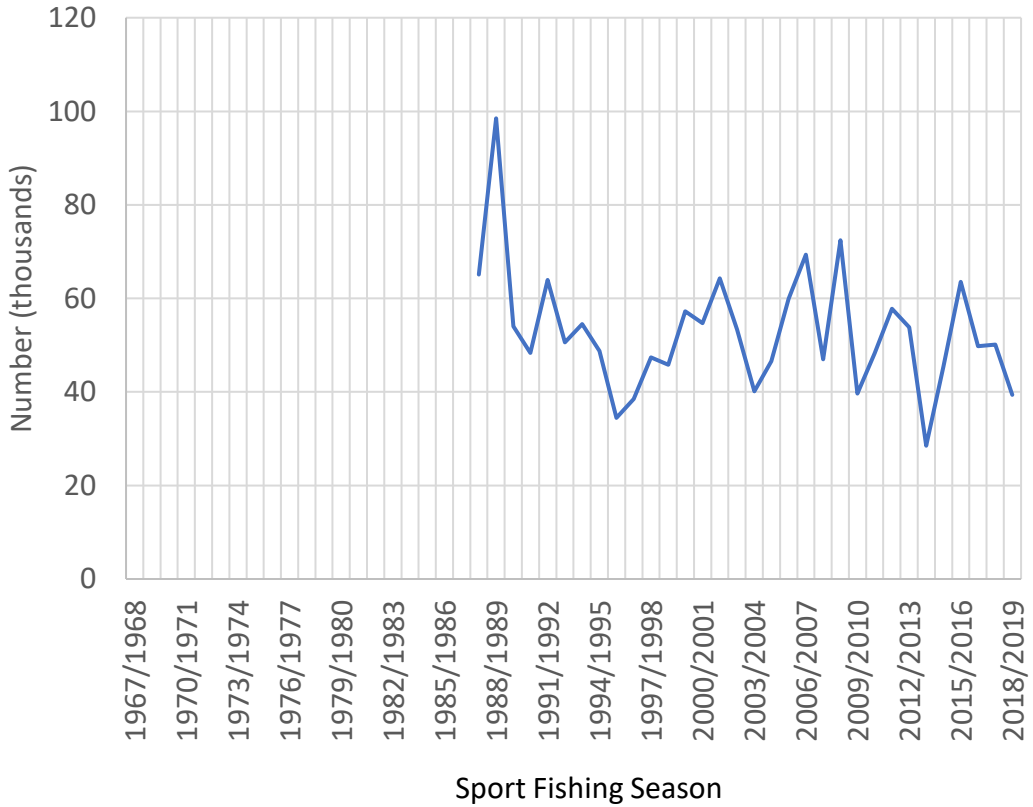
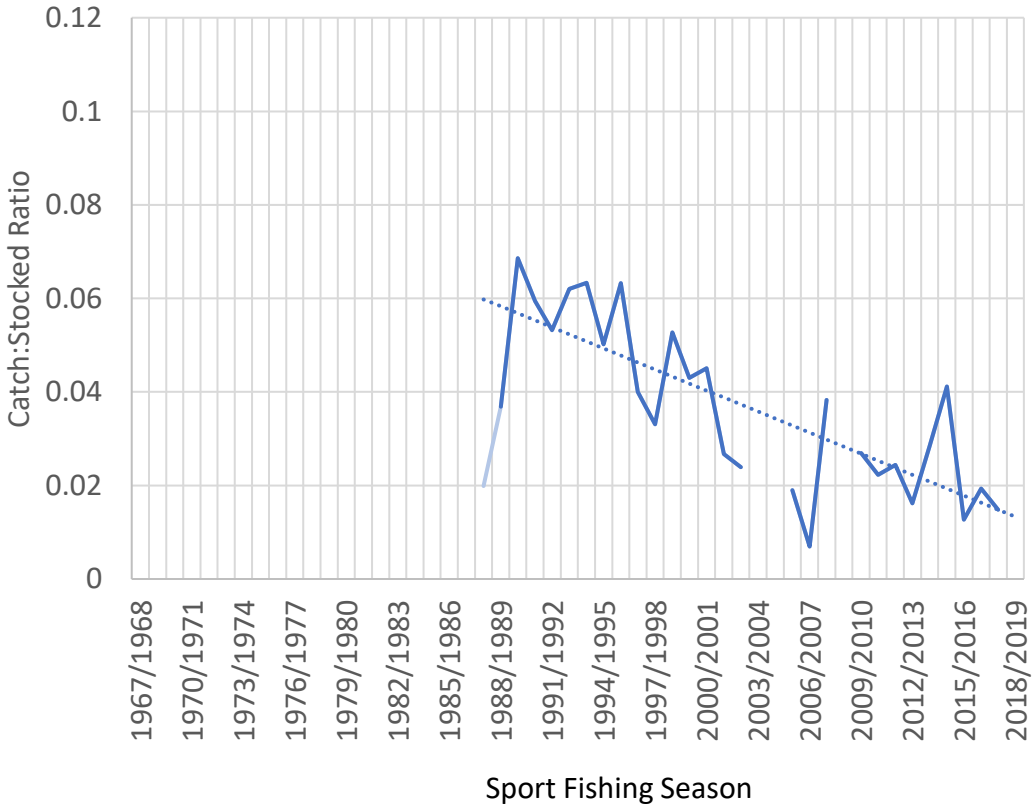


Northern British Columbia

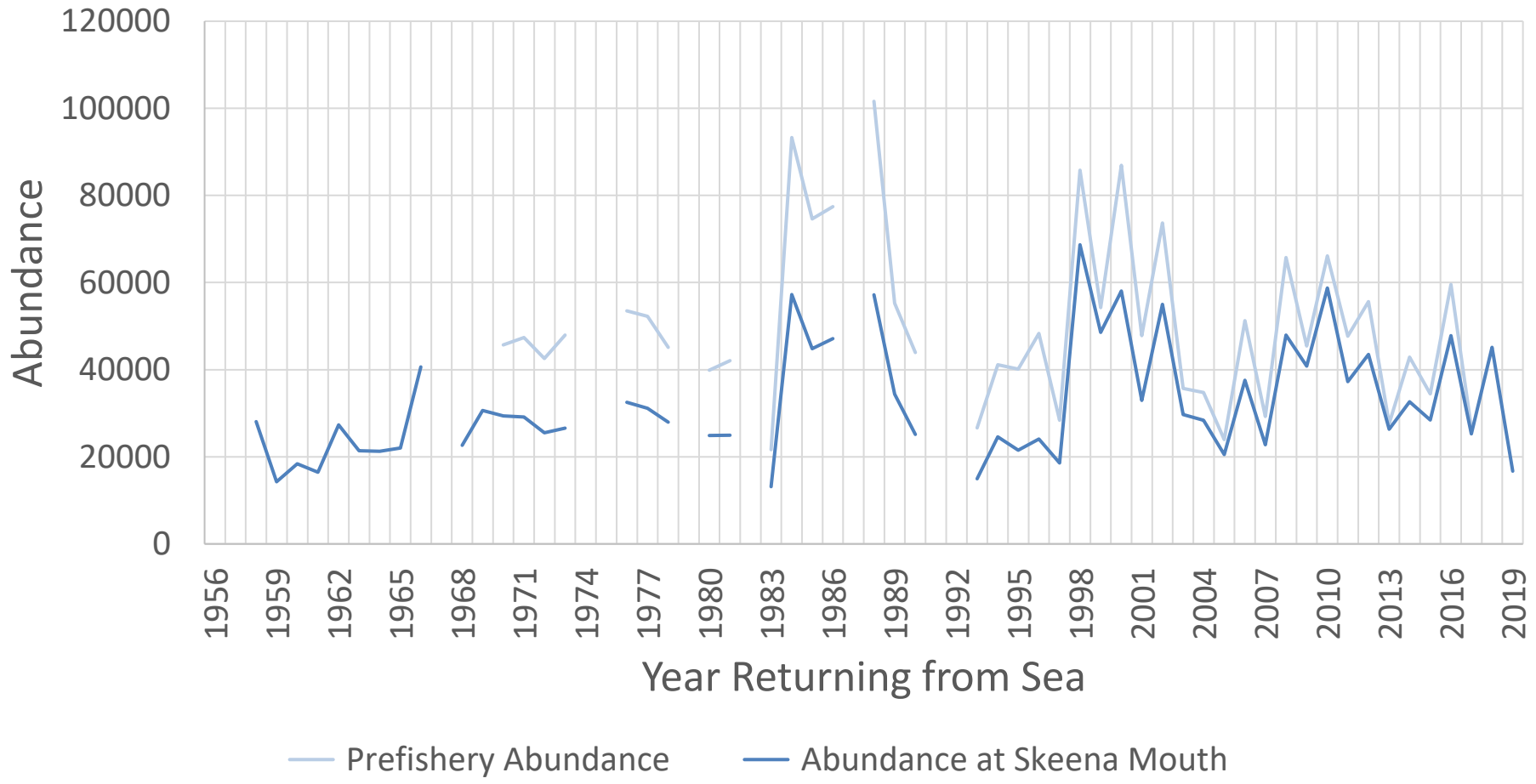
Smolts Stocked



Hatchery Catch : Smolts Stocked



Skeena River Summer Run



Steelhead Stock Status
British Columbia

- HIGHLIGHT OVERALL STATUS
  - Declining abundance due to decline in marine survival in Southern BC
  - Evidence of more stable abundance in Northern BC
    - Unknown status in BC/SEAK transboundary Rivers

- SIGNIFICANT CHANGES OR ISSUES
  - Many steelhead and salmon populations are declining in status, most notably the stream-type and lake-type populations which are those that produce larger bodied smolts.
  - Thompson and Chilcotin Steelhead are classified as Endangered but are not listed under Canada's endangered species legislation.
  - Complete and partial fishery closures relating to status of Fraser River late-run summer Steelhead.
  - Diminishing returns from stocking; 3 programs recently terminated.
  - Increasing evidence that pinniped predation may be a large factor accounting for much of the steelhead decline in southern BC.

Acknowledgements

- Province of BC
  - Russell Bobrowski
  - Joe De Gisi
  - Trevor Davies
  - Michael McCulloch
  - Kenji Miyazaki
  - Michael Willcox
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