2017 Fraser Sockeye & Pink draft escapement options

presented to: First Nations JTWG & Forum
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Presentation Outline

- Total Allowable Mortality Rule Explained
- How to read FR SK and PK escapement option tables in the IFMP
- 2017 draft escapement table options
  - FR SK escapement options tables (Option 1 and 2)
  - Comparison of options by run timing group
  - Expected spawning escapement outcomes
- 2017 draft escapement table for FR PK

Total Allowable Mortality Rule Explained

Esc. Goal = 1-TAM = 40K fish

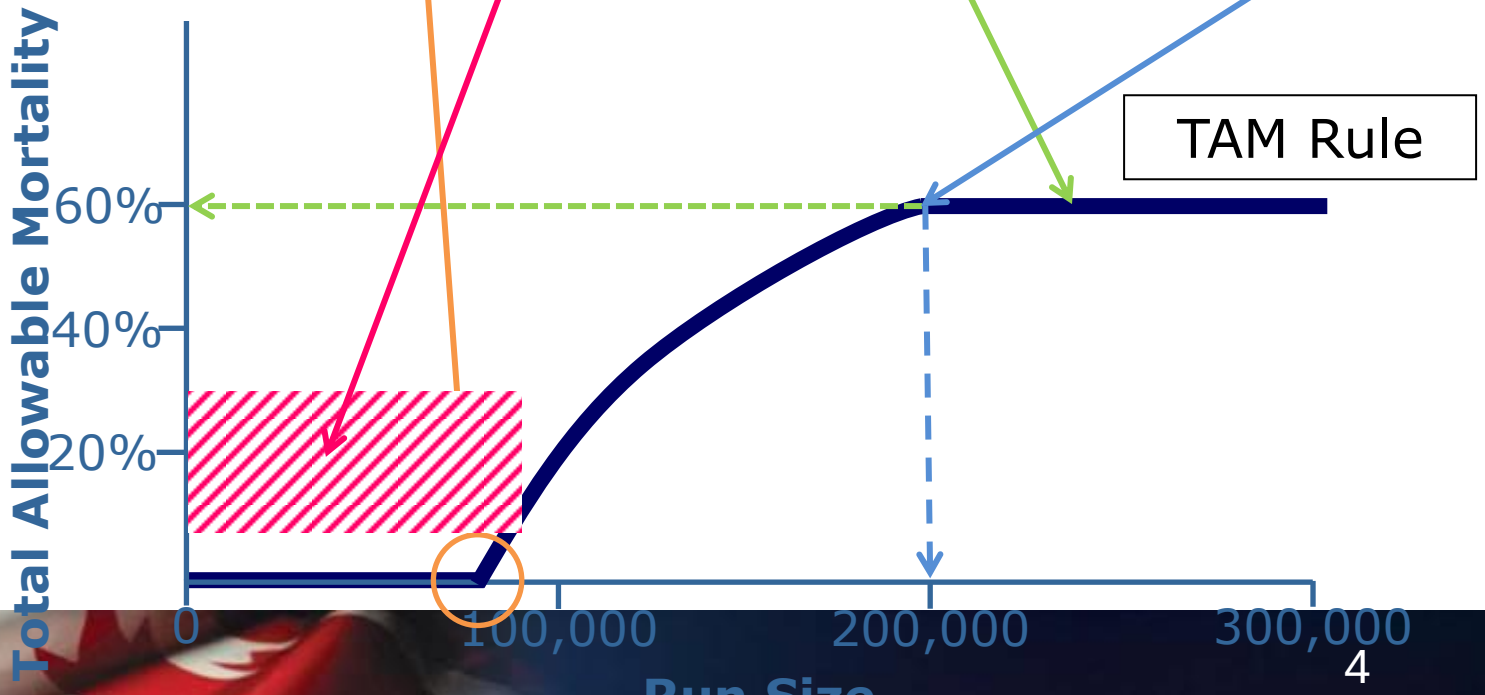
Run Size = 100K

pMA = 30% = esc.goal*30% = 12K fish

TAM = 60% = 60K fish

ER = run size – (esc. goal + MA) = 48K fish = 48%

Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point
Early Stuart	10%	60%	108,000	270,000
Early Summer (w/o misc)	10%	60%	100,000	250,000
Summer (w/o misc)	10%	60%	1,250,000	3,125,000
Late (w/o misc)	20%-30%	60%	300,000	750,000



How to Read FR SK and PK Tables in the IFMP

Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point
Early Stuart	10%	60%	108,000	270,000
Early Summer (w/o misc)	10%	60%	100,000	250,000
Summer (w/o misc)	10%	60%	1,000,000	2,500,000
Late (w/o misc)	20%-30%	60%	300,000	750,000

Management Unit		Pre-season Forecast Return p10	p25	**p50**	p75	p90
Early Summer (w/o RNT)	*lower ref. pt. (w misc)*	137,000	137,000	137,000	137,000	137,000
	upper ref. pt. (w misc)	342,500	342,500	342,500	342,500	342,500
	forecast (incl. misc)	95,100	166,300	342,500	791,900	1,971,000
	TAM Rule (%)	0%	18%	**60%**	60%	60%
	Escapement Target	95,100	137,000	**137,000**	316,760	788,400
	pMA	0.42	0.45	**0.49**	0.53	0.56
	MA	40,300	61,900	**67,400**	167,300	439,200
	Esc. Target + MA	135,400	198,900	**204,400**	484,060	1,227,600
	LAER	10%	10%	**10%**	10%	10%
	ER at Return	0%	0%	**40%**	39%	38%
	Allowable ER	10%	10%	**40%**	39%	38%
	available harvest	9,500	16,600	**138,100**	307,800	743,400
	2016 Performance					
	Projected S (after MA	60,100	103,100	**137,000**	316,800	788,400
	BY Spawners	210,690	210,690	**210,690**	210,690	210,690
	Proj. S as % BY S	29%	49%	**65%**	150%	374%
	cycle avg S	81,685	81,685	**81,685**	81,685	81,685
	Proj. S as % cycle S	74%	126%	**168%**	388%	965%

2017 Escapement Tables

FR SK: Option 1

Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point
Early Stuart	10%	60%	108,000	270,000
Early Summer (w/o misc)	10%	60%	100,000	250,000
Summer (w/o misc)	10%	60%	1,250,000	3,125,000
Late (w/o misc)	20%-30%	60%	300,000	750,000

FR SK: Option 2

Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point
Early Stuart	10%	60%	108,000	270,000
Early Summer (w/o misc)	10%	60%	100,000	250,000
Summer (w/o misc)	10%	60%	1,000,000	2,500,000
Late (w/o misc)	20%-30%	60%	300,000	750,000

Early Stuart Options Comparison

Early Stuart	forecast	p10 42,000	p25 64,000	p50 99,000	p75 158,000	p90 253,000
Option 1	Allowable ER	10%	10%	10%	10%	30%
	Projected S (after MA)	23,100	35,100	54,400	86,700	108,000
	Proj. S as % BY S	27%	41%	63%	100%	125%
	Proj. S as % cycle S	11%	17%	26%	41%	51%
Option 2	*same as option 1*					

forecast p-level is below lower fisheries reference point

forecast p-level is between lower & upper fisheries reference point

forecast p-level is above upper fisheries reference point

Early Summer Options Comparison

Early Summer	forecast (incl. misc)	p10 95,100	p25 166,300	p50 342,500	p75 791,900	p90 1,971,000
Option 1	Allowable ER	10%	10%	40%	39%	38%
	Projected S (after MA)	60,100	103,100	137,000	316,800	788,400
	Proj. S as % BY S	29%	49%	65%	150%	374%
	Proj. S as % cycle S	74%	126%	168%	388%	965%
Option 2	*same as option 1*					

forecast p-level is below lower fisheries reference point

forecast p-level is between lower & upper fisheries reference point

forecast p-level is above upper fisheries reference point

Summers Options Comparison

Summer	forecast (incl. misc)	p10 1,065,000	p25 1,861,000	p50 3,407,000	p75 6,631,000	p90 12,560,000
Option 1	Allowable ER	10%	18%	55%	55%	55%
	Projected S (after MA)	863,300	1,375,100	1,375,100	2,652,400	5,024,000
	Proj. S as % BY S	45%	71%	71%	138%	261%
	Proj. S as % cycle S	55%	87%	87%	168%	318%
Option 2	Allowable ER	10%	34%	55%	55%	55%
	Projected S (after MA)	863,300	1,100,100	1,362,800	2,652,400	5,024,000
	Proj. S as % BY S	45%	57%	71%	138%	261%
	Proj. S as % cycle S	55%	70%	86%	168%	318%

forecast p-level is below lower fisheries reference point

forecast p-level is between lower & upper fisheries reference point

forecast p-level is above upper fisheries reference point

Lates Options Comparison

Lates	forecast (incl. misc)	p10 113,000	p25 247,000	p50 583,000	p75 1,292,000	p90 2,849,000
Option 1	Allowable ER	20%	20%	20%	30%	30%
	Projected S (after MA)	52,200	107,800	246,500	461,500	999,900
	Proj. S as % BY S	16%	34%	77%	144%	311%
	Proj. S as % cycle S	29%	61%	139%	260%	564%
Option 2	*same as option 1*					

forecast p-level is below lower fisheries reference point

forecast p-level is between lower & upper fisheries reference point

forecast p-level is above upper fisheries reference point

Key Points

- Draft options are the same except for the Summer Run
- Early Stuart & Lates are in a LAER (20% or 20-30%) situation over the forecast range
- At the p25 forecast all groups except the Summer Run (for both options) are in a LAER situation
- At the p50 forecast the Early Summer and Summer Runs are not in an LAER situation
- The main difference between the Summer Run options is that at the p25 there is more allowable harvest if the run is actually closer to the p25 (34% exp rate vs 18%)
- The allowable harvest at the p25, given pre-season assumptions, is approximately 400,000-700,000 sockeye depending on what Summer Run option is chosen

FR SK "expected" outcomes

Assumptions….

- These are the "expected" spawners to the grounds assuming:
  - perfect implementation of the "allowable ER" in the options tables
  - all stocks within a management group return at the same p-level (or nearly)
  - all stocks are subject to the same ER
  - the pMA is as shown in options 1 & 2 *and* is applied to all stocks within an aggregate equally

FR SK: option 1

Run timing group / Stocks	Total Escapement cycle yr	Total Escapement brood year	Projected esc. across range of run size forecasts at specified TAM + MA 10%	25%	50%	75%	90%	comparisons @p50 to cycle	to BY
Early Stuart	210,606	86,311	23,100	35,100	54,400	86,700	108,000	26%	63%
Early Summer									
Bowron	5,613	3,306	1,100	2,300	2,600	4,600	8,200	46%	79%
Fennell (cycle avg since 1961)	3,050	3,513	2,800	4,500	5,300	9,600	16,900	174%	151%
Gates (cycle avg since 1945)	6,114	57,326	8,500	14,200	18,400	37,000	77,300	301%	32%
Nadina	21,652	13,493	10,800	19,800	25,200	49,700	91,000	116%	187%
Pitt	26,780	59,279	26,800	39,800	42,600	72,700	120,200	159%	72%
Scotch (cycle avg since 1983)	5,120	24,708	0	600	3,400	34,700	209,100	66%	14%
Seymour	6,287	23,429	1,100	4,000	7,500	27,300	74,900	119%	32%
misc (Chilliwack)	2,563	11,705	7,200	14,400	26,500	66,600	153,000	1034%	226%
Summer									
Chilko	244,789	1,235,234	543,000	873,700	878,000	1,667,600	3,107,000	359%	71%
Quesnel	839,358	184,038	36,900	68,100	78,700	190,000	389,400	9%	43%
Late Stuart	379,176	132,603	81,900	142,100	153,700	321,700	639,200	41%	116%
Stellako	57,183	110,196	142,500	184,800	145,500	205,100	300,500	254%	132%
Harrison	49,588	250,117	33,700	64,500	81,400	194,500	450,300	164%	33%
Raft	7,606	16,394	11,500	15,700	13,500	23,200	36,000	177%	82%
Late									
Cultus (high hatchery contribut	5,673	3,312	300	300	1,000	1,800	3,900	18%	30%
Late Shuswap	65,125	185,245	4,100	20,000	59,900	133,600	309,100	92%	32%
Portage	4,621	7,509	2,800	6,900	17,500	41,800	99,600	379%	233%
Weaver	31,336	36,077	14,800	28,900	64,000	119,800	264,900	204%	177%
Birkenhead	68,237	80,120	25,900	43,700	88,100	138,500	277,000	129%	110%

= or > 125%
< 125%
< 75%
< 25%

FR SK: option 2

Run timing group / Stocks	Total Escapement		Projected esc. across range of run size forecasts at specified TAM + MA					comparisons @p50	
	cycle yr	brood year	10%	25%	50%	75%	90%	to cycle	to BY
Early Stuart	210,606	86,311	23,100	35,100	54,400	86,700	108,000	26%	63%
Early Summer									
Bowron	5,613	3,306	1,100	2,300	2,600	4,600	8,200	46%	79%
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misc (Chilliwack)	2,563	11,705	7,200	14,400	26,500	66,600	153,000	1034%	226%
Summer									
Chilko	244,789	1,235,234	543,000	699,000	870,200	1,667,600	3,107,000	355%	70%
Quesnel	839,358	184,038	36,900	54,500	78,000	190,000	389,400	9%	42%
Late Stuart	379,176	132,603	81,900	113,700	152,300	321,700	639,200	40%	115%
Stellako	57,183	110,196	142,500	147,800	144,200	205,100	300,500	252%	131%
Harrison	49,588	250,117	33,700	51,600	80,700	194,500	450,300	163%	32%
Raft	7,606	16,394	11,500	12,600	13,400	23,200	36,000	176%	82%
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Birkenhead	68,237	80,120	25,900	43,700	88,100	138,500	277,000	129%	110%

= or > 125%
< 125%
< 75%
< 25%

FR PK: Option

7,059,000	lower FRP
20,000,000	upper FRP
70%	ER cap

	Pre-season Forecast Return				
	p10	p25	**p50**	p75	p90
forecast	4,447,000	6,177,000	8,693,000	12,353,000	16,682,000
escapement target	4,027,000	5,366,000	6,000,000	6,000,000	6,000,000
allowable ER	9%	13%	31%	51%	64%
available harvest	420,000	811,000	2,693,000	6,353,000	10,682,000