

# Cowichan Water Use Plan


## Public Advisory Group Meeting # 2

February 1, 2018



### ARTSG: members


Group	Participants
Catalyst Paper	Brian Houle
Cowichan Tribes	Tim Kulchyski
Cowichan Watershed Board	Tom Rutherford
Cowichan Lake and River Stewardship Society	Heather Pritchard, Parker Jefferson
Fisheries and Oceans Canada	Kevin Pellet
Ministry of FLNRORD	Mike McCulloch, Jaroslaw Szczot
BCCF	James Craig
Independent advisor	Dave Preikshot



### ARTSG: progress summary

- Three meetings completed (Nov 10, Dec 5, Jan 16)
- Performance measures listed and screened (near-final)
- Cowichan River: six PM categories (several PMs and metrics within)
- Cowichan Lake: three PM categories (several within)

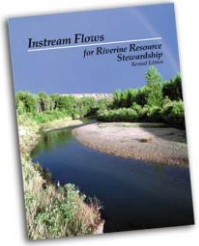

Status	# of PMs
PM info sheets finalized	6
Draft PM Info-Sheet prepared and reviewed by ARTSG; addressing review comments/awaiting data	2
Draft PM Info-Sheet prepared and under review by ARTSG	2



### Performance Measures

5 riverine components

- Geomorphology
- Connectivity
- Hydrology
- Water quality
- Biology

### Performance Measures

**River**

- Geomorphology
- Connectivity
- Hydrology
- Water quality
- Biology

**Lake**

- Connectivity
- Water quality
- Biology



### Performance Measures

**Questions**


- What are the species and life stages of interest? What is their periodicity?
- Given the alternatives under consideration, what is the pathway that links operations to the interest?
- Do we think a desktop approach (e.g., a flow-based metric) is sufficient, or do we need a detailed PM?
- Are there substantive data gaps that inhibit the development of a PM?
- If there are substantive data gaps, can we use an interim approach?
- Is anything missing from our list?

**River**

- Geomorphology
- Connectivity
- Hydrology
- Water quality
- Biology

**Lake**

- Connectivity
- Water quality
- Biology



### River PMs

River/Lake Component	Name	Species	Description	Info Sheet Status
<b>Cowichan River Performance Measures</b>				
Water Quality	n/a	All	Water temperature	PM1 scoped out
Geomorphology	PM1a: # yrs exceeding median peak flow	All	Channel maintenance	
	PM1b: mean # days/yr exceeding median peak flow	All	Channel maintenance	
	PM2: mean # days/yr > 200% MMD	All	Flushing flow	
Connectivity (fish)	PM1a: side channel connectivity	Chinook/Coho	Sidechannel connectivity with minimum	
	PM1b: side channel connectivity	Multiple	Sidechannel connectivity with minimum	
	PM2a: relative side channel discharge	Chinook/Coho	Sidechannel discharge	
Biology - fish passage	PM1a: CH smolt outmigration	Chinook	Fish passage - Chinook	
	PM1b: CH adult summer-run	Chinook	Fish passage - Chinook	
	PM1c: CH adult fall-run	Chinook	Fish passage - Chinook	
	PM2a: CO smolt outmigration	Coho	Fish passage - Coho	
	PM2b: CO adult	Coho	Fish passage - Coho	
	PM3a: CM fry outmigration	Cham	Fish passage - Cham	
	PM3b: CM adult	Cham	Fish passage - Cham	
Biology - salmon rearing	PM1a: ST fry	Steelhead	Fish habitat - juvenile rearing habitat	
	PM1b: ST parr	Steelhead	Fish habitat - juvenile rearing habitat	
	PM2: CH fry	Chinook	Fish habitat - juvenile rearing habitat	
	PM3a: CO emergent fry	Coho	Fish habitat - juvenile rearing habitat	
	PM3b: CO rearing fry	Coho	Fish habitat - juvenile rearing habitat	
	PM4: invertebrates	Invertebrates	Insect habitat - rearing habitat PM uses IIS hab. status metric	
	PM5: early spawning	Steelhead	Fish habitat - spawning habitat	
Biology - wildlife and riparian	TBD	Wildlife/riparian	Terrestrial species - wildlife and vegetation	

### Lake PMs

River/Lake Component	Name	Species	Description	Info Sheet Status
<b>Cowichan Lake Performance Measures</b>				
Connectivity (lake n/a tributaries)	n/a	All	Tributary connections to lake	PM1 scoped out
Water quality	PM1a: # yrs with drawdown below zero	All	General lake WQ indicator	
	PM1b: annual mean WQ risk score	All	General lake WQ indicator	
Biology - Vanouuver	PM1a: annual loss of lamprey rearing habitat	Lamprey	Vanouuver Lamprey rearing habitat	
	PM1b: annual availability of lamprey rearing habitat (%)	Lamprey	Vanouuver Lamprey rearing habitat	
	PM1c: annual availability of lamprey rearing habitat (ha)	Lamprey	Vanouuver Lamprey rearing habitat	
Biology - lake limnoral habitat	PM1a: annual loss of limnoral rearing habitat	Fish	Limnoral habitat	
	PM1b: annual availability of limnoral rearing habitat (%)	Fish	Limnoral habitat	
	PM1c: annual availability of limnoral rearing habitat (ha)	Fish	Limnoral habitat	
Biology - wildlife and riparian	TBD	Wildlife/riparian	Terrestrial species - wildlife and vegetation	

### Winning

too many PMs - need a subset for decision making

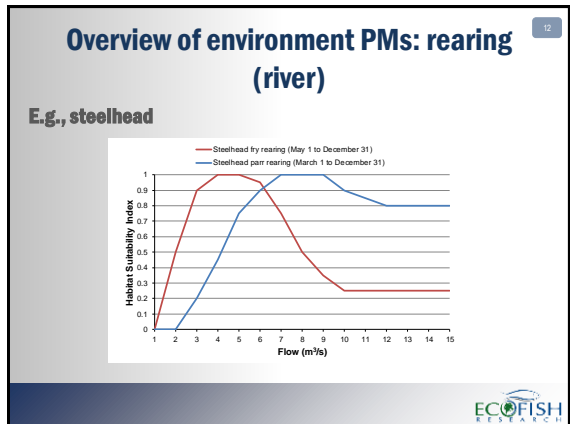
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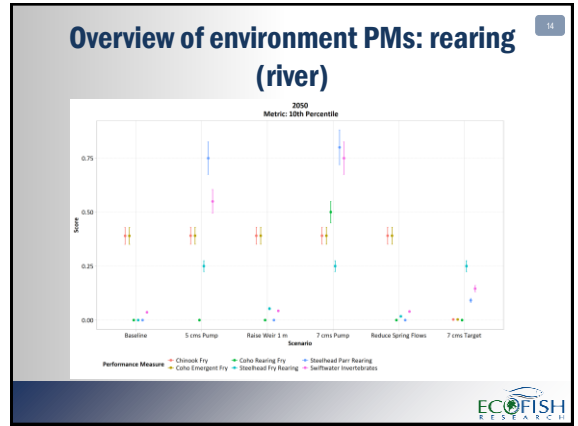
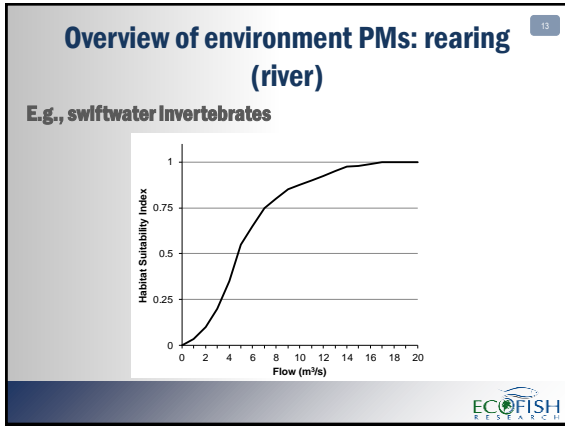
### Overview of environment PMs

**Determining Cowichan River Flows for Fish in 2017 and Beyond**  
 Produced for the Cowichan Watershed Board, River and Fish Working Group with partial funding from the CWDB  
 May, 2017  
 For Review by the Fish Flow Working Group  
 Authors: Cheryl Arsen, Steve Bullis, Tom Rutherford, James Craig, Tom Barkley, Mike McCallum, Jane Soren, Parker Jefferson, Kessie Colthart and Ian Saywell

### Overview of environment PMs: rearing (river)

Component	Performance Measure	Life Stage	Applicable Timing	MSIC
Rearing habitat (steelhead)	PM1a	Steelhead fry	May 1–Dec 31	10%
	PM1b	Steelhead parr	March 1– Dec 31	10%
Rearing habitat (Chinook)	PM2	Chinook Salmon fry	March 1 – April 30	10%
Rearing habitat (Coho)	PM3a	Coho Salmon emergent fry	March 1– April 30	10%
	PM3b	Coho Salmon rearing fry	May 1 – Dec 31	10%
Rearing habitat (swiftwater invertebrates)	PM4	Predominantly larval	March 1 to Dec 31	10%





### Overview of environment PMs: fish passage (river)

Component	Performance Measure	Life Stage	Applicable Timing	MSIC
Fish Passage (Chinook)	PM1a	Chinook Salmon smolt outmigration	May 1–July 15	10%
	PM1b	Adult summer-run Chinook Salmon migration	April 1–July 31	10%
	PM1c	Adult fall-run Chinook Salmon migration	Sept 1–Nov 30	10%
Fish Passage (Coho)	PM2a	Coho Salmon smolt outmigration	April 1–May 30	10%
	PM2b	Coho Salmon adult migration	Oct 1–Dec 31	10%
Fish Passage (Chum)	PM3a	Chum Salmon fry outmigration	March 1–April 30	10%
	PM3b	Chum Salmon adult migration	Oct 1–Dec 15	10%

ECOFISH RESEARCH

