

# Update on Ecosystem Function Performance Measures Update

**CBRAC May 2022**

Bill Green, on behalf of the CRT Ecosystem  
Function Sub-Committee



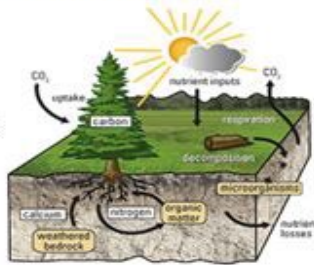
# What are Ecosystems? What is Ecosystem Function?

It's complicated!!

## Ecosystem Function Examples

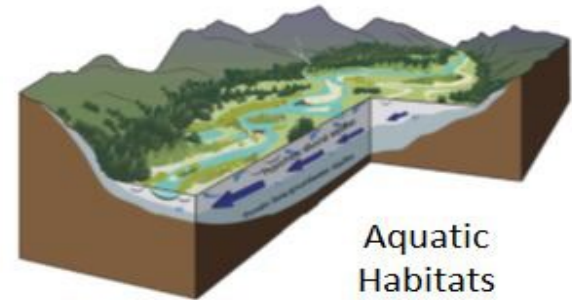
### Terrestrial Habitats

- Water
- Carbon
- Nitrogen
- Phosphorus
- Sulfur



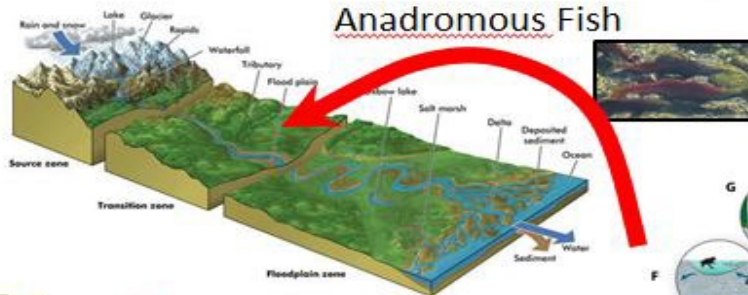
### Trophic Levels

A Food Web in the Coniferous Forest Biome

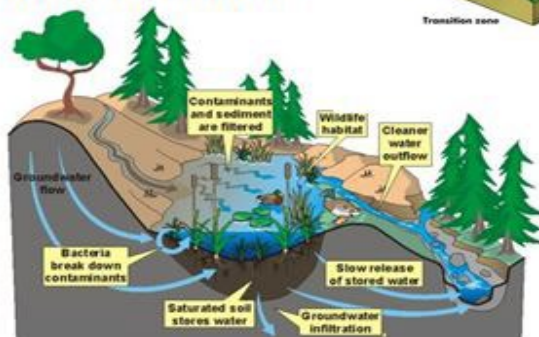


Aquatic Habitats

### Anadromous Fish

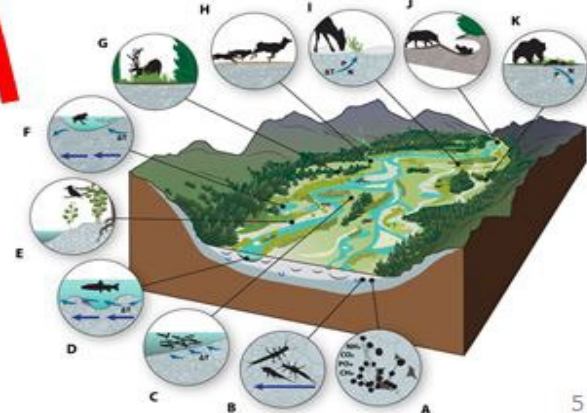


### Wetland Habitats



Nutrient Transfers

### Riparian Habitats

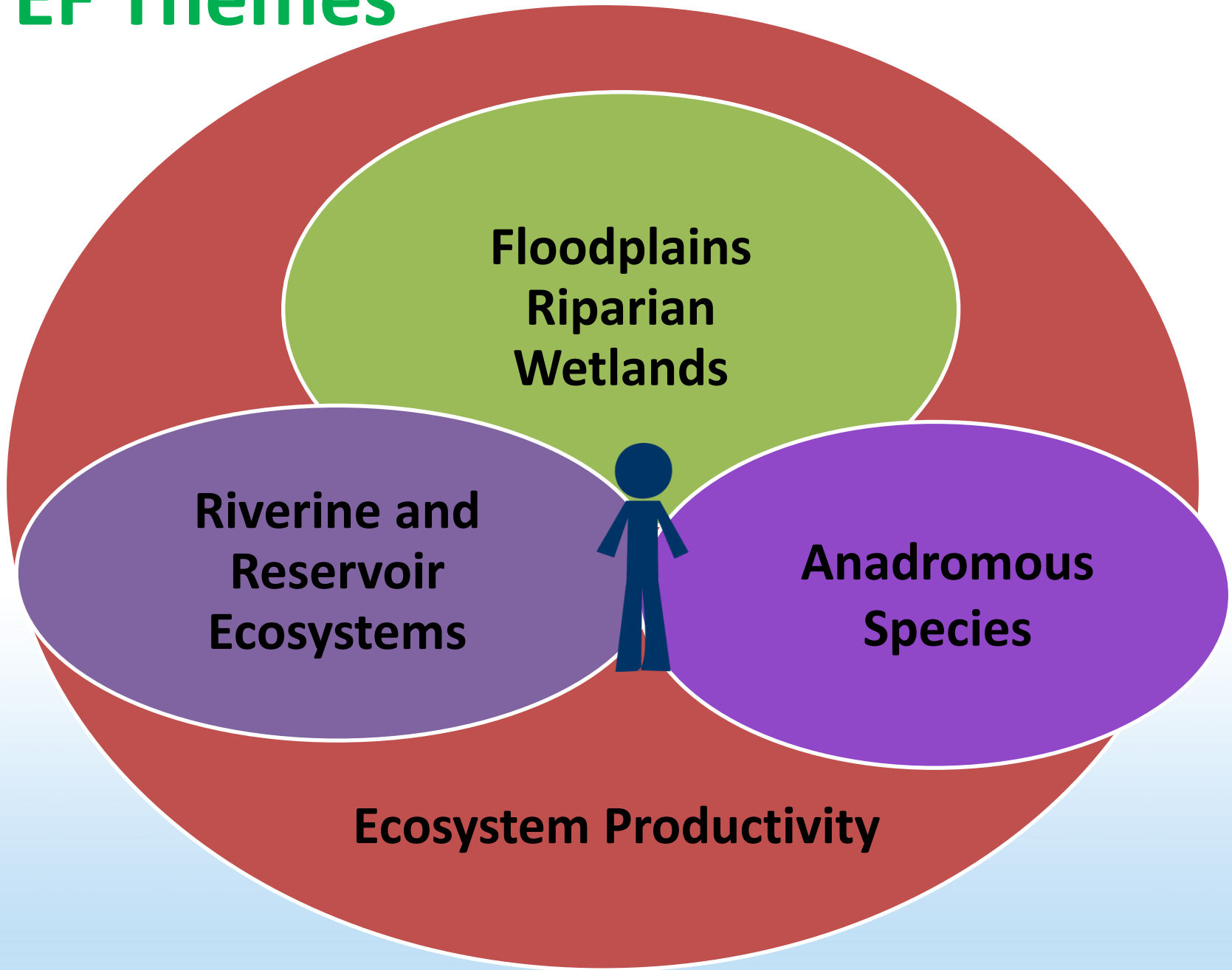


# General EF Goals

- ***Improved ecosystem function*** to support Indigenous cultures (including responsibility, access and uses) and Basin resident values
- ***Flexibility in reservoir operations*** to facilitate active adaptive management
- Reservoir operations that ***balance*** achievement of the range of ecosystem function objectives



# EF Themes

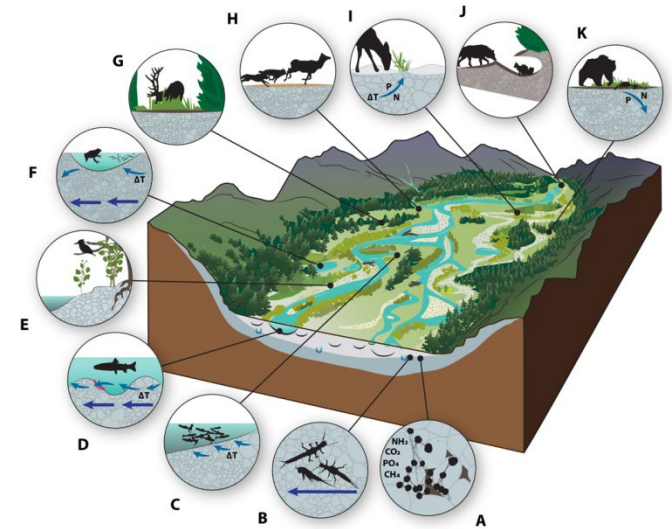


# EF PM Studies



**Ecosystem Productivity** – changes in primary productivity from modified flows and reservoir levels

- terrestrial
- riverine
- reservoir



## Floodplain/Riparian /Wetlands

- Hydroperiod – additional hectares of revegetation from modified seasonal reservoir level fluctuations



# EF PM Studies



## Riverine and reservoir ecosystems

- Functional flow – flows that meet biological needs
- Mainstem/side-channel/low gradient tributary habitats – for fish species
- Tributary access for fish
- Fish stranding



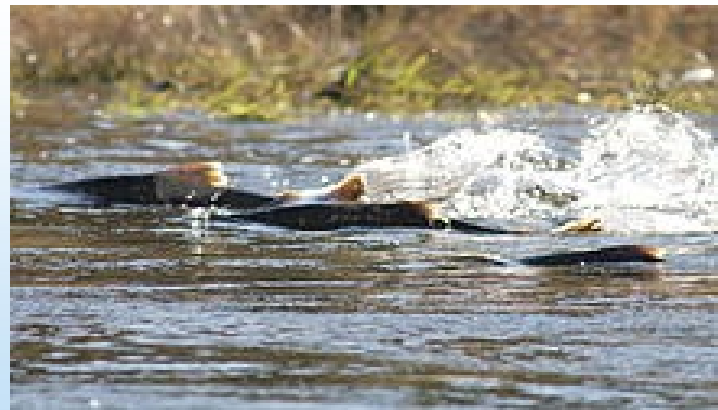


# EF PM Studies



## Anadromous Species

- Anadromous salmon performance metrics for juveniles and adults from spawning to the ocean and back
- Okanagan focus with capacity to include river from Okanagan River/Columbia confluence to Arrow dam



# Ecosystem Productivity PMs - Progress

- **Reservoirs:** Report completed and PM in CRTPM for Arrow . Awaiting WUP study reports for Kinbasket and Duncan. Koocanusa study started
- **Riverine:** Additional field data collected, PM approved by Joint Steering Team (JST). PMs in CRT PM.
- **Terrestrial:** Draft report completed, PM approved. Awaiting coding into CRTPM



# Floodplain, wetland and riparian (FRW) PMs - Progress

- Arrow, Duncan and Kinbasket PMs approved and coding underway (complicated)
- Koocanusa – field work completed, PMs developed – awaiting completion of DEM
- Kootenay Lake wetlands – background information gathered



# Aquatic PMs - Progress

- **Functional flows** – draft report and PMs completed and approved. PMs coded into CRTPM
- **Mainstem, side channel and tributary habitats** – draft report completed. PMs coded into CRTPM
- **Tributary stream access** – draft report near completion
- **Fish stranding** – draft report near completion. Select interim PMs recommended.



# Salmon/anadromous PMs - Progress

- Juvenile model development and testing continues. Additional refinement. Juvenile survival PM approved and included in CRT PM
- Adult migration model in progress



# EF Scenario modelling

- Workshops to explore possible optimum ecosystem function operating scenarios: April 2021 and January, February and April 2022



# Current Priorities

- Complete studies and coding of all EF PMs
- Refine PMs based on workshop learnings
- June 15 [CRT Ecosystem Function Info Session](#) – invite public response
- Complete initial CRTPM model development
- Then further scenario workshops
- Strategic planning session