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**Presentation Title: Using demographic rates to estimate freshwater productivity of anadromous *Oncorhynchus mykiss* (steelhead) in the Skagit River, Washington.**

Abstract for the 2018 Pacific Coast Steelhead Management Meeting

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Anadromy in *Oncorhynchus mykiss* has been linked to individual decisions that are conditional to survival and growth during freshwater rearing. Both survival and growth can be influenced by environmental factors (e.g. temperature, flow, prey availability), and inter and intraspecific competition relative to genetic thresholds. Estimating changes in freshwater survival and growth can be important to tease out different factors selecting for anadromy and residency in *O. mykiss*, yet estimating *O. mykiss* survival through traditional Cormack-Jolley-Seber models can be complicated by the continuous emigration.  I parameterized a Barker model, which estimates movement directly to estimate survival and emigration rates from two Skagit River tributaries. I used captures from summertime electrofishing surveys and subsequent resights and recovery from a stationary PIT antenna and season mobile PIT telemetry surveys. Freshwater productivity estimates from the Barker model were significantly lower and more precise than those attained by count estimates (adult to smolt ratios from spawn ground surveys and smolt trapping).  Survival and emigration rates differed by stream and reach where survival was lower in reaches with warmer temperatures and emigration rates were higher in reaches with warmer temperatures and lower gradients.  Even though this approach is not new, it is underutilized in steelhead monitoring. Over time, these demographic estimates may provide insight on reach and tributary scale influences on *O. mykiss* populations and can feed into demographic models for recovery planning.