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**Presentation Title: Columbia River Basin Steelhead Kelt Reconditioning Physiology Research**

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Columbia River Basin Steelhead Kelt Reconditioning Physiology Research

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Every spring, large numbers of post-spawning steelhead kelts migrate downstream throughout the Columbia River Basin (CRB), but few return as repeat spawners. Reconditioning of female kelts is being implemented as a recovery measure for ESA-listed CRB steelhead stocks. Downstream migrating kelts are captured, held in tanks and fed, and then released in the fall to migrate upstream and spawn again. Research on the physiology of kelt reconditioning has shown that fish divide into consecutive and skip spawners (1 and 2 year spawning interval). Fish can be screened for maturation status using plasma estradiol level by mid-August, enabling separate management of consecutive and skip spawners. Consecutive maturation rates range widely, with typical rates near 60%. Maturation decisions appear to be made early, as significant differences in growth are found within 10 weeks after spawning. Rematuring consecutive spawners are larger and have greater energy reserves compared with maiden spawners in the fall, and have similar or higher plasma estradiol and vitellogenin levels. Studies using a hatchery kelt model have shown that reconditioned consecutive spawners are more fecund and produce larger eggs than maidens, with an additional increase for skip spawners, and that spawn timing is not substantially altered by reconditioning. Steelhead kelt reconditioning has the potential to contribute to recovery by increasing the stability, diversity, and productivity of listed populations.

Keywords: life history, physiology, endocrinology, conservation, fish culture