Mid Klamath Tributary Creek Mouth Assessment
The Bella Vista Mid Klamath Creek Mouth Assessment Project

Since 2001, the Mid Klamath Watershed Council has been coordinating volunteer creek mouth enhancement workdays on Mid Klamath tributaries, with the support of the Karuk Tribe Department of Natural Resources and the USFS. In 2006, MKWC was funded by the Bella Vista Foundation to identify and implement restoration projects that enhance access and habitat at cold water refugia for both adult and juvenile salmonid use along the Klamath River from Scott River to the Trinity. Partnerships between tribes, agencies, adjacent landowners and area residents are being formed to focus restoration efforts on these critical habitats. Recent scientific studies in the Klamath River by the Karuk and Yurok Tribes, Mid Klamath Watershed Council, the Bureau of Reclamation, and US Fish and Wildlife Service have shown the critical importance of thermal refugia associated with creek mouths during the summer months when mainstem Klamath temperatures exceed the lethal levels for salmonids. By understanding the dynamic relationships between the mainstem Klamath and these tributaries through historic photo analysis, data collection and organization, synthesis of existing related research, and strategic fieldwork aimed at filling data gaps, we can identify opportunities to improve these refugial habitats, and access to them from the Klamath River.
Tom Martin Creek is a small tributary to the Klamath River located about 1/2 mile downstream of the Scott River mouth. Tom Martin Creek watershed is located on the north side of Tom Martin Peak reaching an elevation of over 6000 feet. The combination of high elevation, north facing slope and deep snow pack make water temperatures in Tom Martin Creek extremely cold all year. Tom Martin Creek is the first cold water tributary downstream of the Scott River where many young-of-the-year Coho salmon are emigrating downstream during early summer into the warm Klamath River.

Anadromous habitat up Tom Martin Creek is limited because of a migration barrier due to a Hwy 96 culvert and series of waterfalls a short distance upstream from the mouth. During an intensive study of thermal refugia at Tom Martin Creek (2005), Karuk fisheries biologist observed significant numbers (> 600 coho juveniles) utilizing the accessible reach and confluence area. Juvenile coho were observed migrating into the Tom Martin Creek refugia on a diel basis as mainstem temperatures increased. A 2006 thermal refugia study by the Karuk Tribe at Tom Martin Creek showed similar behavior of juvenile coho, but recent winter storm effects reconfigured the creek mouth and fish usage was limited. There is a potential to manually or mechanically design and construct off channel habitat features at Tom Martin Creek to increase its thermal refugia value to juvenile Coho salmon.
O’Neil Creek is a small tributary to the Klamath River, located a few miles downstream of the Scott River confluence. The O’Neil Creek watershed is located on the north side of Tom Martin Peak and has good summer base flow and very cold water. A bridge is being constructed at the Hwy 96 crossing of O’Neil Creek, replacing an undersized culvert and fish barrier. The bridge replacement will open up considerable anadromous habitat, but may not result in expected benefits if a potential alluvial blockage below the bridge is not addressed. After the alluvial blockage, the stream spreads out extensively over the Klamath River floodplain before entering the mainstem at four separate locations. Manual or minor mechanical manipulations in the flood plain could enhance the off-channel habitat features and increase thermal refugia values, specifically for juvenile Coho salmon emigrating from the Scott River.
Seiad Creek is an ideal coho spawning stream with about six miles of very low gradient habitat from the mouth up. There are four diversions on this lower section which are awaiting grant funding to be repaired and upgraded from damage done by last winters flood. Diversions in the summer months contribute to low flows and resulting high temperatures which force juveniles upstream or into the Klamath River.
China Creek provides more than a mile of low gradient habitat for oversummering coho along one of the hottest reaches of the Klamath mainstem. The value and role of refugial areas may be related to their spatial distribution along the mainstem of the Klamath River.
Little Horse Creek enters the Klamath in a section known to have the highest summer temperatures, providing key oversummering habitat for juvenile salmonids, including coho. A culvert on a County road approx. 80 m upstream is currently 85% plugged. The Five Counties Prop. 50 working group is currently addressing this barrier.
Indian Creek is one of the most productive tributaries in the Mid Klamath for salmonids, despite past logging and roading, the Noranda Mine Superfund site, as well as diversions and nutrient input along the settled lower reach. This creek also has some of the best potential for restoration efforts that could increase production of the fisheries.
Aptly named, Clear Creek contributes large quantities of cold, clear water to the Klamath River, highlighting the role tributaries in the Mid Klamath subbasin play in maintaining fish passage in the mainstem Klamath. Large populations of summer and winter steelhead, as well as Fall Chinook and coho spawn, rear, and oversummer in Clear Creek.
Independence Creek after this last flood has a series of side channel pools that were utilized by both juvenile and adult salmonids, including adult Fall Chinook seeking thermal refugia. In the future, manual modification could improve access to this unique habitat.
Dillon Creek supports the largest summer run steelhead population in California, due in large part to its rugged topography and inaccessibility. This season, a large alluvial fan had to be breached by USFS fisheries technicians in September to allow for Fall Chinook passage.
MKWC conducted two workdays on Ti Creek in 2006 to improve adult and juvenile fish passage. A step-and-pool fishway was created that reduced gradient at the mouth from 19% to 11%, decreased velocity in half, and tripled average pool depth in the first 30 meters. This work was done primarily through volunteerism under the supervision of a fisheries biologist. Historic low gradient habitat in the lower half mile of Ti Creek has been significantly degraded by extensive clearcutting and roading prior to the '64 Flood. After the flood, the channel was locked in by construction of Hwy 96 to a straight, high gradient path with decreased value to the fishery.
Rock Creek is a large tributary to the Klamath River with summer base flows ranging from 15-25 cfs. Roads, including a bridge built in the lower mile of Rock Creek prior to the 1964 flood, failed during the flood. This created a large boulder debris jam and barrier to fish migration approximately 0.75 miles up the creek. The lower 0.75 miles of stream was rerouted and now follows a steep, straight channel, meeting the Klamath River well downstream of its former entry point. The barrier consists of a series of high waterfalls created by large boulders, wood and other flood debris, including failed culverts and bridge parts. Habitat above the barrier is suitable for all life stages of Steelhead, Coho, and Chinook salmon. Approximately 8 miles of high quality, low gradient spawning and rearing habitat exist upstream of the barrier. Interviews with tribal elders indicate that Chinook, Coho, and steelhead all used Rock Creek prior to the formation of the barrier after the 1964 flood event.
Sandy Bar Creek has a large side channel pool maintained by Klamath River flood flows that is consistently used by oversummering coho. Juvenile access through the summer months to this side channel pool is blocked by a seasonal shelf at the creek mouth (32% slope in 2006 – photo above). Also, temperatures have increased in past years more than 6 degrees Celsius as Sandy Bar Creek flows across the Klamath floodplain. Previous MKWC workdays have focused on concentrating the creek's flow in this flat stretch to decrease thermal heating and increase fish access.
Stanshaw Creek has a large side channel pool used by hundreds of oversummering coho. Access to this pool is regulated both by the gradient at the mouth, as well as flows, which are dependent upon a 1.5-3 cfs diversion upstream. Yearly manual modification at the creek mouth has decreased the gradient into the refugial pool, concentrated flow into the pool, and concentrated flow out of the pool into the Klamath River.
Boise Creek historically had a large side channel pool which is now disconnected, but could potentially be connected through manual manipulation. Also, manual channelization of the multiple mouths could improve fish passage over the shelf that forms at the mouth at low flows.
Red Cap Creek is a large cold water contributor to the mainstem, and has extensive low gradient habitat. The refugial area at the mouth is also used by adult and juvenile salmonids throughout the summer months.
Aikens Creek is unique in that it was once a tributary to Bluff Creek above its confluence with the Klamath, but in 1964, Bluff Creek rerouted through a roadcut and established a new channel a half-mile up the Klamath. Aikens Creek runs through a portion of this ghost channel, providing ideal low gradient habitat for oversummering salmonids. A side channel pool at the mouth is currently underutilized due to lack of cover. In the coming years, inexpensive experiments manually adding vegetation and logs to these pools will be conducted.