

2025 ANNUAL REPORT

Project Title

Walleye Management in the Upper Colorado River Basin

Bureau of Reclamation Agreement Numbers and Grant Periods:

Utah Division of Wildlife Resources, R24AP00262-02 (5/28/2024- 9/30/2028)

U.S. Fish and Wildlife Service, O2501-014-014-064326 (10/01/2024- 9/30/2029)

Colorado Parks and Wildlife, R23AP00309 (6/05/2023 to 9/30/2027)

CSU Larval Fish Laboratory, R24AP00237 (10/1/2023 to 9/30/2027)

Principal Investigators:

Anna R. Amidon, Utah Division of Wildlife Resources- Moab Field Station
aamidon@utah.gov

Travis Francis, U.S. Fish and Wildlife Service Grand Junction FWCO
travis_francis@fws.gov

Saidee J. Hyder, Utah Division of Wildlife Resources - Vernal
shyder@utah.gov

Michael S. Partlow, Utah Division of Wildlife Resources – Vernal
mpartlow@utah.gov

Katherine Lawry, U.S. Fish and Wildlife Service Green River Basin FWCO
katherine_lawry@fws.gov

Christian Smith, U.S. Fish and Wildlife Service Green River Basin FWCO
christian_t_smith@fws.gov

Edward Kluender, Colorado State University Larval Fish Laboratory
edward.kluender@colostate.edu

Kevin R. Bestgen, Colorado State University Larval Fish Laboratory
kbestgen@colostate.edu

Tyler Swarr, Colorado Parks and Wildlife
tyler.swarr@state.co.us

Abstract:

This annual report provides a summary of walleye (*Sander vitreus*) removal conducted in the Upper Colorado River Basin in the year 2025. The United States Fish and Wildlife Service, Colorado Parks and Wildlife, Utah Division of Wildlife Resources, and the Colorado State University's Larval Fish Lab worked to control non-native walleye in the mainstem Colorado River, Green River, and tributaries by removing this invasive predator whenever they were captured. During the 2025 field season 345 walleye were removed from the basin during targeted and non-targeted projects 98a, 98b, 98c, 110, 123a, 123b, 123d, 125, 126, 128a, 130, 131, 167, C-4bGVP, C-4bRED, FR-115, and UT- 3SP. This report recommends continued monitoring of populations and removal of walleye when captured.

Study Schedule:

2014-Ongoing

Relationship to RAP:

[Recovery Action Plan \(RAP\) | Upper Colorado Website \(coloradoriverrecovery.org\)](#)

- Element: Reduce Impacts
 - Focus Area: Walleye
 - Objective: Reduce the densities of walleye populations within the range of the listed species.

Accomplishment of 2025 Tasks and Deliverables, Discussion of Findings and Shortcomings:

Colorado River Sub-Basin

Colorado River Mainstem

Researchers from the United States Fish and Wildlife Service Grand Junction Fish and Wildlife Conservation Office (FWS-GJ), Colorado Parks and Wildlife (CPW), and Utah Division of Wildlife Resources-Moab (UDWR-M) conducted sampling in the Colorado River mainstem in 2025. Removal occurred during both targeted and non-targeted projects 123d, 126, 127, and C-4bGVP from 31 March through 6 November in 2025.

Colorado River stream flow and temperature for the sampled river section are measured at Cisco, UT, at USGS gauge # 09180500, river mile 96.7. During the 2025 sampling season (3/31 - 11/6), recorded water temperatures ranged from 7.3°C - 27.4°C, with an average temperature of 18.6°C. On 8 April, water temperature increased to greater than 10°C, the temperature threshold required for successful walleye spawning (Barton, 1994). At the Cisco gauge, the Colorado river reached a peak flow of 13,200 cubic feet per second (ft³/s) on 5 June and subsequently declined to a low of 1720 ft³/s on 23 August, representing the year-to-date minimum discharge for the river ([Figure 1](#)). In 2025, the summer monsoon season did not produce substantial rainfall across the Upper Colorado River Basin (henceforth UCRB); however, late-summer and fall moisture events resulted in several pronounced spikes in river discharge and associated increased turbidity. Notably, over a two-day period from 10 to 12 October, the river rose from 3,000 ft³/s to 7,720 ft³/s, a late-season peak representing approximately 58% of the spring discharge peak of 13,200 ft³/s. Storm events that result in elevated mainstem turbidity have previously been associated with increased catch rates in this reach (Francis & Ryden, 2015).

Sampling was conducted on the mainstem Colorado River from RM 242.9 near Rifle, Colorado downstream to RM 0 at the confluence with the Green River, with the majority of effort concentrated downstream of RM 193.7. The river in this section flows from the urban and agricultural Rifle and Grand Valleys in western Colorado, moving downstream through deep canyon gorges into eastern Utah. It then meets the confluence with the Dolores River before transitioning into the rapids and riffles typical of the 'Moab Daily' recreational boating area. Finally, the river flows through the sandy-bottom and steep walled Meander Canyon to the Green River confluence. Removal efforts were distributed throughout, and representative of the entire sampled river reach with the exception of RM 124.8 – RM 114, where rapids and hydrologic conditions in Westwater Canyon make sampling difficult. These efforts varied temporally and across different reaches, determined by the phenology of the most abundant and problematic target species in relation to annual hydrology and historical catch rate success.

During the 2025 field season, crews removed 207 walleye from the mainstem Colorado ([Table 1](#)). This encounter total is fewer than the 5-year average for this reach (n=223), but greater than the -10, -15 and -25 year averages (n=179, 165, and 102, respectively) ([Figure 2](#)). Shoreline electrofishing was the primary removal method (effort = 1219.4 hours), accounting for all walleye removed and yielding an average catch per unit of effort (CPUE) of 0.17 walleye captures per hour. Additional effort included angling, 30' x 6' x 1" mesh seine, and fish trap sampling gears but yielded no walleye. All walleye captures occurred between Lower Westwater and the Green River confluence (RM 114 - RM 0) during 543.2 hours of fishing (0.38 fish/hour) ([Figure 3](#)).

The lower Westwater Canyon to Potash Boat Ramp (RM 114 – 47.2) section of the mainstem Colorado continues to be a hot spot for walleye ([Figure 4](#)). Consistent with recent sample data (2021- present), the majority (87%) of 2025 walleye captures (n = 182) occurred in this 67-mile section (CPUE= 0.41 fish/hr). Multiple factors may influence this pattern. First, this section features a meandering channel with a low-gradient planform, consisting of pool-drop rapids and riffles (Rosgen, 1994). The riverbed is made up of fine sands and coarse cobbles, which provide favorable conditions for adult walleye during various life cycle stages (Barton, 2011). Second, at the upstream end of this section is Westwater Canyon, a steep-walled, narrow canyon with high gradient that most years likely discourages further upstream migration and acts as a partial barrier for walleye.

Concentrations within RM 114–47.2 also exhibited elevated CPUE during 2025 sampling; within the smaller 50-mile reach from lower Westwater Canyon to Moab Bridge Boat Ramp (RM 114–64.2), three sub-reaches further illustrate the distribution of walleye ([Figure 3](#)). Beginning upstream from lower Westwater Canyon to Dewey Bridge (RM 114 – 94.5), over 19.5 miles field crews removed 97 walleye resulting in a CPUE of 0.25 fish/hr. From Dewey Bridge to Takeout Beach (RM 94.5 – 74.2) crews encountered and removed 55 walleye, resulting in a CPUE of 0.4 fish/hr for the 20-mile reach. Finally, and most notably, during 2025 sampling field crews removed 77 walleye between Takeout Beach and Moab Bridge (RM 74.5 – 64.2), reporting a CPUE of 1.1 fish/hr in just 10 miles. These reach-specific distribution patterns establish a spatial framework that informs interpretation of the size structure and demographic composition of walleye captured during 2025 monitoring.

Walleye in the upper Colorado River Basin are classified as juvenile fish at <300 mm total length (TL), adult fish at >300 mm TL, and a piscivore at >375 mm TL. All walleye captured in the Colorado River Sub-Basin were adults (n = 207), ranging from 326 mm to 690 mm with an average TL of 480 mm ([Figure 5](#)). A total of 201 fish were identified as piscivorous based on the TL classification. Weights ranged from 364 – 4290 grams (g) with a mean of 1236 g. Of total captures, 44% (n = 91) were female, 23% were male (n = 48), and 32% (n = 68) were undetermined. No ripe fish were collected. All walleye captured in the Colorado River Sub-Basin were scanned for Passive Integrated Transponder (PIT tags) and had their stomach contents analyzed in the field. PIT tags found in the stomach of invasive walleye are a clear indicator of piscivory; however, no PIT tags were detected during the 2025 season. Although many walleye were found to have non-native and unidentifiable fish in their stomach, five native roundtail chub (*Gila robusta*) and one Colorado pikeminnow (*Ptychocheilus lucius*) were identified.

A 2025 bioenergetics model performed by researchers at Colorado State University estimated that under current, baseline hydrologic and environmental conditions of the lower Colorado River, an individual

female walleye consumes 32.5 kg of prey and a male 14.6 kg of prey over a 10-year lifespan (Thibedeau, 2025). Native fish identified in the stomachs of walleye during 2025 sampling further demonstrate this finding; as aggressive and opportunistic piscivores, walleye pose a significant threat to native fish of the UCRB. Because numerous taxa native to the UCRB are listed threatened or endangered, with very low population abundances, the occurrence of any native fish in walleye diets represents a notable conservation concern.

Additional sample effort on the mainstem Colorado River included The Grand Valley Water Users (GVWU) Fish Passage (project C4b-GVP). Located at RM 193.7, the GVWU roller dam is used for agricultural irrigation in the Grand Valley and power generation. During the 2025 field season the fish passage was operated from 15 April to 3 July, and no walleye were collected through these efforts ([Table 1](#)).

Cataract Canyon

In 2025, researchers from UDWR-M conducted non-targeted walleye removal during project 130, Cataract Canyon humpback chub population monitoring. Cataract Canyon is below the Colorado-Green River confluence and is uniquely positioned as the first riverine habitat upstream from Lake Powell reservoir. From 8 October to 16 October field crews conducted 667.2 hours of trammel net fishing over five sites within the canyon, and from this effort five walleye were encountered (CPUE= 0.007 fish/hr) ([Table 1](#)).

Gunnison River

In 2025, FWS-GJ researchers conducted sampling on the Gunnison River, a tributary of the Colorado River in western Colorado, during projects C-4bRED- Redlands Fish Passage and 126- Non-Native Fish Removal CO. The Redlands Fish Passage is located at RM 3.0 on the Gunnison River upstream of the confluence with the mainstem Colorado River. The Redlands Diversion Dam is a low head irrigation and power generating dam that has a fish passage and trap which is operated by FWS-GJ for native fish passage and non-native fish removal. From 15 April to 17 October in 2025, field crews removed zero walleye at the fish passage and trap from continual passive trap effort.

Additional effort on the Gunnison River included electrofishing during projects 126 and 127 from 7 April through 20 October. Field crews conducted electrofishing sampling from RM 3 to RM 0, both right and left shorelines down the sample reach, resulting in 45.6 hours of effort. Zero walleye were captured during this sampling effort.

Off Channel Ponds

In 2025, researchers from FWS-GJ and conducted non- targeted sampling for project 126 at Beswick's Pond, Butch Craig Pond, CDOT Pond in western Colorado. Work was completed between 11 June and 24 September. A total of 116 hours of effort was completed during the 2025 field season, combining the use of cast nets, dip nets, electrofishing, fyke nets, hoop nets, and trammel net gears. No walleye were encountered or removed from ponds during the field season.

Lake Powell- Colorado Arm

In 2025 field crews from FWS-GJ conducted non-targeted walleye removal during Lake Powell, Colorado Arm Razorback Sucker (*Xyrauchen texanus*) monitoring between 5 May and 3 June. Removal efforts took

place between RM -65.4 and -72.3 on the reservoir. A total of 176 walleye were encountered over 1,426.3 hours of trammel net sampling.

Walleye encountered during these efforts were not necessarily removed because they are managed as a sportfish and abundant in Lake Powell. Walleye removal in the reservoir is not part of recovery program activities. However, they are relevant to include in this discussion of walleye in the UCRB as Lake Powell is presumed to be where walleye originate from when migrants are encountered upstream in the mainstem Green and Colorado Rivers. See the ‘additional noteworthy observations section’ of this report for further discussion.

Green River Sub-Basin

Green River Mainstem

Researchers from the United States Fish and Wildlife Service Vernal Fish and Wildlife Conservation Office (FWS-V), Utah Division of Wildlife Resources Vernal (UDWR-V), Utah Division of Wildlife Resources Moab (UDWR-M), and the Colorado State University Larval Fish Lab (CSU-LFL) conducted sampling in the Green River mainstem in 2025. Removal occurred during both targeted and non-targeted projects 123a, 123b, 123d, FR-115, 169, UT- 3SP from 12 March through 18 September in 2025. All targeted removal effort occurred during project 123d from 12 March to 17 June in 2025.

Green River discharge and temperature for the sampled river section are measured at Green River State Park (GRSP), in Green River, UT, at USGS gauge #09315000, river mile 120. During the sampling season, water temperatures were recorded from 6.4°C - 28.6°C. Water temperatures reached the 10°C threshold for successful spawning on 7 April and remained above that threshold for the duration of the sampling season. At the GRSP gauge the Green River experienced three significant discharge peaks during spring snowmelt runoff, with the greatest peak of 10,600 ft³/s occurring 19 May 2025, and two subsequent peaks on 7 June and 21 June (8,610 ft³/s and 6,860 ft³/s respectfully) ([Figure 6](#)). The river dropped precipitously following those discharge peaks to remain at baseflow below 2,200 for the summer sampling season (7/1 – 8/26) and did not experience any discharge increases due to monsoonal rain events during that time. However, on 13 September significant rainfall resulted in a temporary discharge spike at the GRSP. During the six-hour period between 16:30 and 20:30, discharge spiked above 3,000 ft³/s to peak at 7,420 ft³/s, returning to 3,000 ft³/s that same day. This late-summer discharge spike represented approximately 56% of the magnitude of the 2025 spring runoff peak (13,200 ft³/s). Although no targeted removal occurred on this reach of the lower Green River at that time, discharge events such as these impact habitat availability and fish distribution in the mainstem river.

Sampling was conducted on the mainstem Green River from RM 381 to 124. Starting in Lodore Canyon, the most upstream section of the sampled Green River, the Green River flows through a series of narrow, steep-walled canyons with high gradient. It then meanders through the Uinta Basin, characterized by low-velocity alluvial deposits and floodplain environments, before picking up gradient through Desolation and Gray Canyons. Finally, the river passes through the confined, steep-walled, low-velocity meandering Stillwater and Labyrinth Canyons, eventually reaching the confluence with the Colorado River. Although removal efforts were discontinuous, they were spatially distributed across the Green River from RM 381 to RM 124 and are considered representative of the sampled reach. In 2025, no removal effort occurred from

below GRSP (RM 120) to the Colorado River confluence (RM 0); consequently, zero encounters reflect an absence of effort rather than walleye absence (Figure 6).

During the 2025 field season, crews removed 68 walleye from the mainstem Green River ([Table 2](#)). This encounter total is fewer than the -5, -10, -15 and -25 year averages for the reach (n=125, 180, 225, and 156 respectively) ([Figure 2](#)). Combined targeted and non-targeted efforts totaled 905.9 hours and included the use of angling, electrofishing, trammel nets, and fyke nets gears. Of the total effort, electrofishing accounted for 705.3 hours and resulted in the removal of 66 walleye, yielding an average of 0.09 walleye CPUE. A total of 179.1 hours of fyke net effort captured two walleye (CPUE = 0.01). Trammel net and angling made up the remainder of effort (21.5 hours) and produced no captures.

In the Green River sub-basin, all walleye encountered (n= 68) in 2025 were adult fish, with the exception of one juvenile (TL= 244) captured at RM 265.8. Adult walleye ranged from 306 mm to 712 mm in length, with an average of 457 mm ([Figure 5](#)). Of those fish, 44 were weighed ranging from 482 – 3,193 g and an average weight of 882.7 g. Of total captures, 6% were female (n = 4), 24% were male (n = 16), and 69% were undetermined (n = 47). Every walleye captured in the Green River mainstem was scanned for a PIT tag however no tags were detected during the 2025 season. Stomach contents were not analyzed for Green River walleye.

In 2025, walleye were generally encountered in one of two concentrated areas; between the Split Mountain Boat Ramp (RM 319.8) and Sand Wash Boat Ramp (RM 215.8) on the middle Green River (n = 18), and below the Tusher Diversion Dam (n = 48) (RM 128 – 120) ([Figure 7](#)). Between 12 March and 17 June 2025, field crews conducted 73 hours of targeted walleye removal using electrofishing and fyke net gears. Although this targeted removal accounted for only 8% of total effort, it produced 85% of all walleye removed from the Green River in 2025 (n = 58, CPUE= 0.79 fish/hr). Overall, these findings demonstrate that strategically targeted removal efforts, using appropriate gear and in suitable walleye habitats, can efficiently contribute to reduced walleye numbers in the UCRB.

Middle Green River Reach

On the middle Green River (RM 319.8 – 215.8), crews conducted 370.4 hours of combined targeted and non-targeted walleye removal from 4 April to 18 September. At flooded tributaries Brush Creek and Ashley Creek, fyke net gear accounted for 116.4 hours of total effort resulting in two walleye captures. The remainder and the majority of effort on the middle Green occurred during 254 hours of john boat electrofishing, resulting in the removal of 16 walleye. Of the total removal effort, just 10% of effort (37.5 hours) was dedicated targeted removal but resulted in 50% of walleye captures in the middle Green River reach (n= 9). No ripe walleye were encountered in the middle Green River in 2025.

Recent sampling efforts (2020 – present) indicate an increase in walleye numbers within a 10-mile reach of the middle Green River, from Bonanza Bridge downstream through the first half of Horseshoe Bend (RM 290 – 281) ([Figure 8](#)). In the middle of Horseshoe Bend, a known riffle and gravel bar at Baeser Wash (RM 280.8) could serve as a potential spawning location for walleye. However, there is currently no evidence of spawning—only speculation based on observed potential habitat conditions and an elevated presence of walleye. During 2025 sampling, the two largest walleye captured in the UCRB (TL= 712 mm and 690 mm) were encountered on 2 April in this same reach, both within 5 miles of RM 285. Although anecdotal, these

field observations and elevated walleye encounter rates warrant increased attention and continued monitoring.

Tusher Diversion Dam to GRSP Reach

Additional targeted removal efforts focused on the Tusher Diversion to GRSP reach (RM 128 – 120), where elevated walleye abundance, ripe individuals, and environmental conditions favorable to spawning have been consistently documented since the species began appearing in higher numbers in the UCRB around 2010. In this 8-mile reach, 26.7 hours of targeted effort resulted in the removal of 48 walleye (CPUE 1.8 fish/ hr) ([Figure 9](#)). Furthermore, within the one-mile sub-reach beginning immediately downstream of the dam (RM 128 - 127), 18.6 hours of electrofishing effort resulted in the removal of 39 walleye, yielding a CPUE of 2.1 walleye, the highest of the sub-basin for 2025. These trends align with historic observations (2017–present), demonstrating persistently elevated CPUE throughout this reach.

All ripe walleye encountered in the Green River sub-basin occurred at the Tusher Diversion and were consistently encountered during sampling until 1 May. Of those encounters, 21 individuals expressed gametes, including five females and 16 males. During sampling on 26 March and 28 April both male and female walleye were captured. This overlap of reproductive-condition fish supports the hypothesis that walleye migrating from Lake Powell find sufficient forage and spawning habitat at the diversion. The Tusher Diversion is also a man-made irrigation diversion that forms an in-river high-gradient and velocity barrier that may inhibit upstream fish movement. Managers monitor water temperatures at the USGS GRSP gauge to time targeted removal efforts when river temperatures exceed 10 °C, coinciding with the walleye spawning temperature trigger (Barton, 2011). Appropriately timed removal efforts not only target elevated concentrations of fish at the diversion structure but also remove ripe individuals in spawning condition.

These hydrologic and geomorphic conditions at the Tusher Diversion have similar potential impacts to native and endangered species of the UCRB. During 2025 sampling encounters with Colorado pikeminnow at the Tusher Diversion were notable. During 2025 sampling, 23 Colorado pikeminnow were encountered in the 8-mile reach from the diversion to GRSP, with 21 individuals within one mile of the diversion (RM 128–127), resulting in 1.1 Colorado pikeminnow encountered per hour of effort. In comparison, walleye CPUE in the same sub-reach was 2.1 fish/hr. These findings are particularly problematic, as it is widely recognized that Colorado pikeminnow share an overlapping niche with walleye, exhibit similar physiological and morphologic traits, and compete for shared food resources (Bestgen et al., 2018; U.S.FWS, 2020; Thibedeau, 2025). As walleye predation on young pikeminnow has been documented (Francis and Ryden 2015; Thibedeau, 2025), expansion of walleye into Colorado pikeminnow nursery habitat may contribute to declines in age-0 and juvenile pikeminnow, limiting recruitment success and therefore adult abundance (Bestgen et al., 2018).

The Tusher Diversion Dam is uniquely positioned between known Colorado pikeminnow spawning habitat in Gray Canyon and downstream age-0 nursery habitat in Labyrinth and Stillwater canyons of the lower Green River. The spatial and temporal overlap of pikeminnow and walleye at the Tusher Diversion Dam is concerning, as evidenced by the high CPUE of both species during 2025 sampling ([Figure 10](#)). The structure may act as a bottleneck for passage, resulting in prolonged exposure and increased interaction between the species. In 2025, walleye encounters at the diversion during early- summer sampling coincide with appropriate water temperatures for pikeminnow spawning and subsequent larval drift from upstream

spawning habitat to downstream nursery habitat. Pikeminnow initiate spawning at approximately 16 °C (Bestgen et al., 2006; Bestgen et al., 2018; U.S.FWS, 2023), triggering movement from over-winter habitats to spawning habitats in Gray Canyon. As the terminus of Gray Canyon (Rm 157- 140) is only about 12 miles upstream of the Tusher Diversion (RM 128), migration of pikeminnow through the Tusher reach is likely. Heightened removal vigilance during this critical period—specifically when river temperatures exceed 10 °C for walleye and trigger spawning activity at 16 °C for Colorado pikeminnow—helps refine and narrow the operational window for effective targeted walleye removal.

Yampa River

Researchers from FWS-V, CPW, and CSU-LFL conducted sampling in the Yampa River in 2025. Removal occurred during non-targeted projects 98a, 98b, 98c, 110, and 125 from 30 March to 30 June. The Yampa River is a free-flowing river, sampling took place intermittently throughout the entire season of navigable flows for whitewater rafts.

Yampa River discharge and temperature for the sampled river section are measured at Maybell, CO, at USGS gauge #09251000. During the sampling season water temperatures were recorded from 3.9°C - 23.4°C. Water temperatures increased above the 10°C threshold for successful spawning on 7 April, prior to that date the mean temperature was 6.5°C and included significant daily fluctuation (Barton, 2011). At the Maybell gauge the river reached peak flow of 5,900 ft³/s on 2 June in 2025 and sampling concluded at 476 ft³/s.

Crews sampled from RM 194.1 on the Yampa River to the confluence with the Green River at RM 0. Although sampling was distributed and representative of the entire section, not all the Yampa River was sampled due to geologic and hydrologic conditions making sampling difficult and ineffective. All removal effort on the Yampa River was non-targeted and included electroshock fishing (666.9 hrs.), gill net gears (11,305.3 hrs.), and seining (1 hr.) ([Table 3](#)). During all sampling efforts no walleye were encountered.

White River Sub- Basin

Researchers from FWS-V, UDWR-V and CPW conducted non-targeted sampling in the White River sub-basin for project 167- White River Smallmouth Bass Removal. Work was completed between 20 May and 19 June. A total of 149 hours of electrofishing effort was completed on the White River. No walleye were encountered during these efforts ([Table 4](#)).

In 2025 researchers from CPW conducted non-targeted removal on Kenney Reservoir from 8 April to 9 April. During that time 103.2 hours of gill net sampling produced no walleye ([Table 4](#)).

Additional noteworthy observations:

- Evaluating catch rates between the Green and Colorado Rivers warrants careful consideration, as trends are likely influenced by sampling variability that prevents a direct comparison. In 2025, sampling on the mainstem Colorado River occurred during early-season project 127 Colorado Pikeminnow Abundance Estimate and then during late-season non-native removal efforts. Conversely, the Green River was heavily sampled during spring targeted removal projects but little to no effort occurred late-summer into fall. For example, a metric such as reproductive condition is difficult to evaluate between rivers; the reproductive cycle of walleye is influenced by seasonal

hydrology so comparing this metric across seasons (early v. late-season sampling) may obscure annual and long-term trends. Comparing the Green River to the Colorado River is important for assessing basin-wide trends, however, these metrics do not necessarily directly correspond and should be exercised with caution.

- Below the confluence of the Green and Colorado Rivers, Lake Powell supports a robust walleye population. Non-targeted sampling conducted in 2025 as part of the Colorado Arm Lake Powell Razorback Sucker Monitoring project highlighted the high abundance of walleye in the reservoir. Researchers speculate that adult fish migrate upstream from Lake Powell in search of spawning or foraging habitat. Both the lower Green and lower Colorado Rivers share a common geomorphic transition—from steep-walled canyons with sandy substrates to meandering, braided systems with complex channel features. These systems are characterized by pools and riffles with rocky, cobble substrates that create diverse habitat types which enhance productivity, supporting a more robust and diverse community of invertebrates and fish. Such conditions may support walleye migrating upstream from Lake Powell.
- Ripe walleye have been documented at and below the Tusher Diversion on the Green River and at and below the terminus of lower Westwater Canyon on the Colorado River. Both river sections contain habitats suitable for walleye spawning and are bound upstream by geomorphic features that likely limit further upstream movement (Barton, 2011). The analogous geomorphology of these systems suggests similar influences on walleye spawning behavior and movement patterns.
- From 28 April to 1 May 2025, during spring walleye spawning activity, researchers from UDWR-V and UDWR-M conducted an intensified targeted removal effort on the Green River between Nefertiti Boat Ramp (RM 140.3) and GRSP (RM 120). Crews in catarafts sampled continuously along both river right and river left from Nefertiti Boat Ramp downstream to GRSP, while simultaneously, crews in john boats ran upstream from GRSP to the Tusher Diversion Dam to sample the reach downstream of the diversion. Over the four-day period, field crews completed a combined 24.3 hours of electrofishing and removed 24 walleye (CPUE = 0.99 fish/hr).
- Although the primary objective was to remove spawning walleye, this concentrated four-day effort also provided a valuable snapshot of walleye distribution, revealing where fish were concentrated above versus below the Tusher Diversion. Across all field crews and boat types, every walleye encountered during this period was located below the diversion structure. While the absence of encounters above the diversion does not necessarily indicate that walleye are absent from that reach, this snapshot-in-time sampling supports two related hypotheses: (1) walleye migrating upstream from Lake Powell encounter suitable spawning habitat at and below the diversion, and (2) hydrologic conditions at the diversion may limit walleye's ability to move farther upstream.
- During spring targeted walleye removal field crews encountered pods of razorback sucker in spawning condition on the Green River just below the Price River confluence (RM 138). Field observations suggest that razorback suckers respond differently when electrofishing occurs on top of an active spawning pod. In this scenario, crews observed that effected razorbacks rise in tight groups to the surface, and instead of normal stun and roll electricity response behavior, exhibit erratic swimming and display abnormal caudal fin positioning (they shake their keel at you). This erratic response has been seen when shocking on or around Razorback Bar, known razorback

spawning habitat at RM 311 just below the Split Mountain Boat Ramp on the middle Green River. This same response was noted in the aforementioned areas below the Price River confluence, causing crews to immediately stop shocking so that spawning would hopefully continue.

- Burbot (*Lota lota*) are rarely encountered outside of reservoirs in the Upper Colorado River Basin; however, over the past 15 years they have been intermittently detected in the mainstem Green River, generally between RM 340 and RM 310 ([Table 5](#)). These low encounter rates may reflect the species' limited distribution outside reservoirs or may indicate that electrofishing—widely used during targeted and non-targeted walleye removal efforts—is not the most effective gear type for capturing burbot (Klein et al., 2015).

In 2025 two burbot were encountered during walleye removal efforts. On 24 September during non-targeted walleye removal effort field crews from CSU-LFL and FWS-V encountered a burbot at RM 344.5 on the Green River that was 478 mm TL and 500 g weight. Earlier, on 26 April, during targeted walleye removal effort crews from UDWR-M encountered a burbot at the Tusher Diversion Dam (RM 128) that was 570 mm TL and weighed 900 g. This encounter at the Tusher Diversion is notable as it is the second consecutive year that a burbot has been encountered at the diversion structure; the 2024 and 2025 captures remain the furthest downstream burbot captures on the Green River to date. Although burbot encounters in the UCRB are rare, repeated detections more than 200 miles downstream from known reservoir sources warrant continued monitoring and possible further investigation.

- Despite low catch rates during 2025 sampling, the presence of juvenile walleye in the Upper Colorado River Basin warrant consideration as annual catch numbers could potentially indicate broader patterns. From 2010–2025, annual captures of juveniles have ranged between 0–6 except in 2022 (n=15) and 2024 (n=17) ([Figure 11](#)). Although zero walleye <300 mm were captured from 2019–2021 and 2023, captures from 2022 and 2024 represented a noteworthy increase compared to annual catch numbers from the past 15 years.

Recommendations:

Operational – continue doing

- Non-targeted walleye removal as a component of existing projects, especially those which utilize similar fishing techniques to those targeted towards walleye.
- Targeted walleye removal during periods of significant catch rates and in reaches that have historically produced the highest catch rates of walleye; lower Green River in the Tusher Diversion reach; Colorado River between lower Westwater Canyon and Potash; and lower Duchesne River, during spring peak flows when passage is possible. Targeted removal efforts should be carried out from spring through early summer, with particular attention to the 10–16 °C temperature window that captures the overlap of walleye and Colorado pikeminnow spawning and migration activity. Additionally, target removal efforts during periods of significant catch rates, such as those associated with turbidity events (Francis & Ryden, 2015).
- Regulate sterile walleye stocking in UCRB reservoirs in accordance with the 2009 Nonnative Fish Stocking Agreement (UCREFRP 2009). While reduced sterility can be lab-verified for a population of walleye, reproductive success is not the only threat that these aggressive predators pose to native

and endangered fishes of the UCRB. A 2025 bioenergetics model assessing walleye in the basin estimated that a single female walleye could consume 32.5 kg of prey over a 10-year lifespan (Thibedeau, 2025). This level of predation poses a threat regardless of whether the walleye is sterile, and therefore the requirement to install or develop escapement prevention structures should also continue to be an integral part of the nonnative fish stocking agreement.

- Continue preserving all walleye encountered < 300 mm in length.

Strategic – items that need definition or standardization

- Define a viable performance target for walleye in the UCRB. Although standards exist for other invasive piscivores, no quantifiable target currently exists to assess the effectiveness of walleye control or eradication efforts. The 2014 *Upper Colorado River Basin Nonnative and Invasive Aquatic Species Prevention and Control Strategy* describes multiple management actions, but does not establish a measurable metric (e.g., a numeric catch-rate benchmark) needed to evaluate progress toward walleye suppression (Martinez et al., 2014).
- Establish comparable monitoring reaches for both the Colorado and Green Rivers, with emphasis on sections where ripe walleye or consistently elevated encounter rates are documented. Inter-annual, spatial, and temporal variance in sampling effort creates challenges for year-to-year or reach-to-reach encounter rate comparisons. Monitoring reaches would allow for tracking management efforts over time, allow for analysis and modeling walleye population dynamics in the UCRB, and evaluating environmental conditions that influence walleye spawning movements and behavior.

Investigate – warrants further attention

- Consider recording total length and weight for all walleye encountered in the UCRB as a standard operating procedure. Collecting these metrics consistently would improve the ability to assess the condition of walleye captured throughout the basin. Short of a more time consuming and costly diet composition study, simple length and weight metrics could reveal physiological trends amongst different hotspot populations encountered in the basin.
- Investigate potential sources of juvenile walleye within the Upper Colorado River basin, specifically in the Green River sub-basin where they have been encountered at elevated levels in recent years (see Upper Colorado River Basin Endangered Fish Recovery Program 2025 report for Utah Reservoir and Screen Management, project 180).

Project Status:

On track, ongoing.

Status of Data Submission:

Data will be submitted to the recovery program database coordinator by January 2026

References:

Barton, B. A., editor. 2011. Biology, management, and culture of walleye and sauger. American Fisheries Society, Bethesda, Maryland.

Bestgen, K. R., D. W. Beyers, G. B. Haines, and J. A. Rice. 2006. Factors affecting recruitment of young Colorado pikeminnow: synthesis of predation experiments, field studies, and individual-based modeling. *Transactions of the American Fisheries Society* 135:1722-1742 DOI: 10.1577/T05-171.1

Bestgen, K. R., Walford, C. D., White, G. C., Hawkins, J. A., Jones, M. T., Webber, P. A., Breen, M., Skorupski, J., Howard, J., Creighton, K., Logan, J., Battige, K., & Wright, F. B. 2018. Population status of Colorado Pikeminnow in the Green River sub-basin, Colorado and Utah, 2000–2013 (Final Report). Endangered Fish Recovery Program, Denver, Colorado. Larval Fish Laboratory Contribution 200.

Francis, T. and Ryden, D. 2015. Removal of smallmouth bass in the upper Colorado river between Price-Stubb dam near Palisade, Colorado, and Westwater, Utah. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Klein, Z. B., Quist, M. C., Rhea, D. T., & Senecal, A. C. (2015). Habitat use of non-native burbot in a western river. *Hydrobiologia*, 757, 61–71. <https://doi.org/10.1007/s10750-015-2176-6>

Martinez, P., Wilson, K., Cavalli, P., Crockett, H., Speas, D., Trammell, M., Albrecht, B., & Ryden, D. 2014. Upper Colorado River Basin nonnative and invasive aquatic species prevention and control strategy. Final Report to the Upper Colorado River Endangered Fish Recovery Program, February 2014.

Rosgen, D. L. 1994. A classification of natural rivers. *CATENA* 22(3):169-199. ISSN 0341-8162, [https://doi.org/10.1016/0341-8162\(94\)90001-9](https://doi.org/10.1016/0341-8162(94)90001-9).

Thibedeau, I. A. 2025. Invasive walleye demographics and predation on rare native fish in the Upper Colorado River Basin (Master's thesis, Colorado State University, Fort Collins, CO). Colorado State University ScholarWorks. In Review.

UCREFRP (Upper Colorado River Endangered Fish Recovery Program). 2009. Procedures for stocking nonnative fish species in the Upper Colorado River Basin. Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado. Available: https://coloradoriverrecovery.org/uc/wp-content/uploads/sites/2/2022/02/NonnativeFishManagement_NNFStockingProcedures-2009.pdf.

U.S. Fish and Wildlife Service. 2020. 5-year status review for Colorado pikeminnow (*Ptychocheilus lucius*). U.S. Fish and Wildlife Service, Mountain-Prairie Region. <https://www.fws.gov/node/65820>

U.S. Fish and Wildlife Service. 2023. Recovery plan for Colorado pikeminnow (*Ptychocheilus lucius*). September 2023. U.S. Fish and Wildlife Service, Mountain-Prairie Region, Denver, Colorado. 28 pp.

Signed

Anna R. Amidon
Principal Investigator
12/16/2025

Table 1. Total effort for all sample gear types for the Colorado River during 2025 sampling.

Date	Project	Sampling Gear	Sampling River Mile Range	Total Effort (Hours)	Number of Walleye Encountered	Fish/ Hour (CPUE)
March 31 - Sept 19	All Projects	Electrofishing	242.9 – 0	1,219.4	207	0.17
Aug 22	126	Angling	175.5	1.5	0	0.00
Aug 22	126	Seine 30'x6', 1" mesh	176.2	n/a	0	0.00
April 15 – July 3	C-4bGVP	Fish Trap	193.7	n/a	0	0.00
October 8 – October 16	Cataract Cyn 130	Trammel Net	-4.5 - -30.6	667.2	5	0.007

Table 2. Total effort for all sample gear types for the Green River during 2025 sampling.

Date	Project	Sampling Gear	Sampling River Mile Range	Total Effort (Hours)	Number of Walleye Encountered	Fish/ Hour (CPUE)
March 12- Sept 25	All Projects	Electrofishing	364 – 120	705.3	66	0.09
April 14 – May 17	123b FR-115	Fyke Net	380.4 – 299	179.1	2	0.01
May 15 – May 15	FR-115	Trammel Net	381 – 380.2	21.5	0	0.00

Table 3. Total effort for all sample gear types for the Yampa River during 2025 sampling.

Date	Project	Sampling Gear	Sampling River Mile Range	Total Effort (Hours)	Number of Walleye Encountered	Fish/ Hour (CPUE)
April 1 – June 30	98a, 98b, 98c, 110, 125	Electrofishing	189.3 - 0	666.3	0	0.00
March 30 – May 13	98c	Gill Net	194.1 – 103.4	11,305.3	0	0.00
June 15 – June 17	98c	Seine	194.1	1	0	0.00

Table 4. Total effort for all sample gear types for the White River sub-basin during 2025 sampling.

Date	Project	Sampling Gear	Sampling River Mile Range	Total Effort (Hours)	Number of Walleye Encountered	Fish/ Hour (CPUE)
May 20 – June 19	White River 167	Electrofishing	189.3 - 0	149	0	0.00
April 8 – April 9	Kenney Reservoir	Gill Net	n/a	103.2	0	0.00

Table 5. Burbot encounters in the Green River sub-basin from 2010 to present.

Species	River	Year	River Mile	Sex
Burbot	Green River	2010	n/a	n/a
Burbot	Green River	2012	n/a	n/a
Burbot	Green River	2016	210.8	n/a
Burbot	White River	2016	n/a	n/a
Burbot	White River	2016	n/a	n/a
Burbot	White River	2016	n/a	n/a
Burbot	Green River	2018	339.3	n/a
Burbot	Green River	2019	340.1	n/a
Burbot	Green River	2019	315.8	Female
Burbot	Green River	2020	326.7	n/a
Burbot	Green River	2020	326.7	n/a
Burbot	Green River	2021	315.8	n/a
Burbot	Green River	2022	310.8	n/a
Burbot	Green River	2024	252.8	n/a
Burbot	Green River	2024	127.9	n/a
Burbot	Green River	2025	127	n/a
Burbot	Green River	2025	343.1	n/a

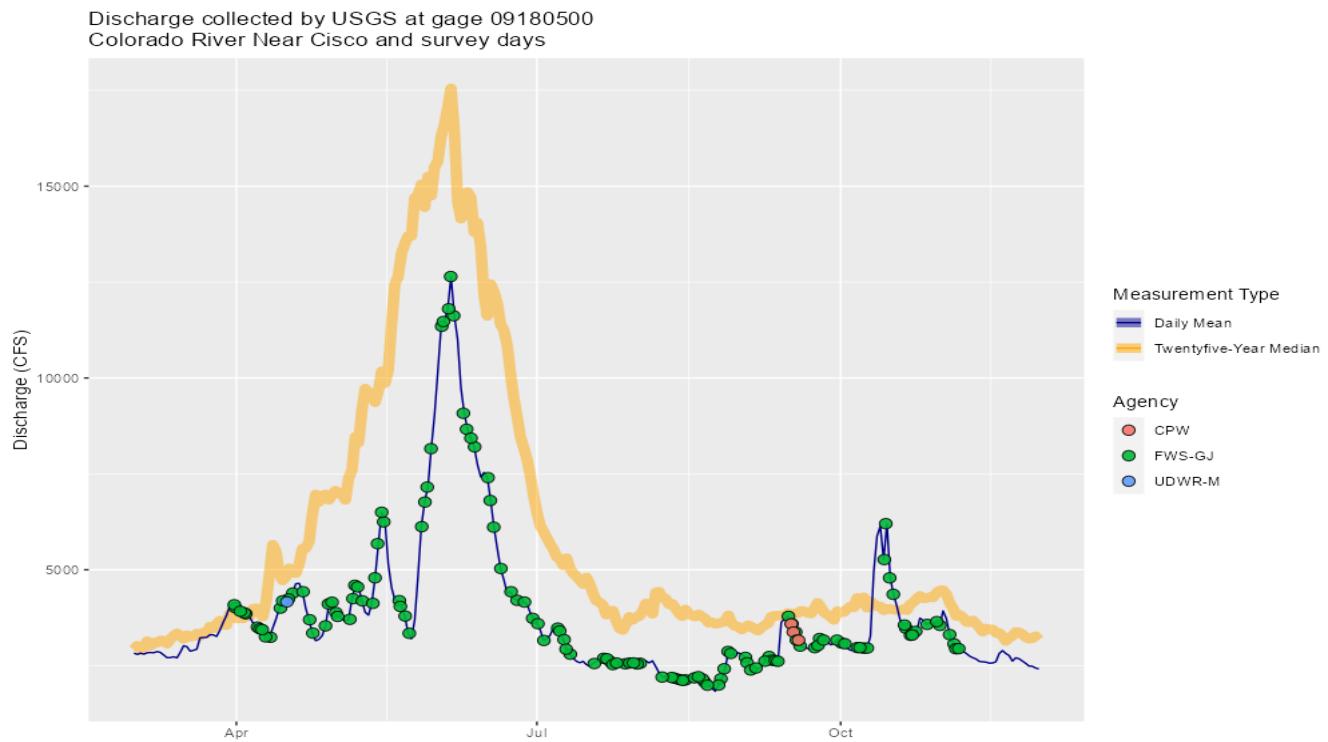


Figure 1. Hydrograph depicting general Colorado River hydrologic conditions at USGS gauge 09180500 at Cisco, Utah and associated sampling events by agency in 2025.

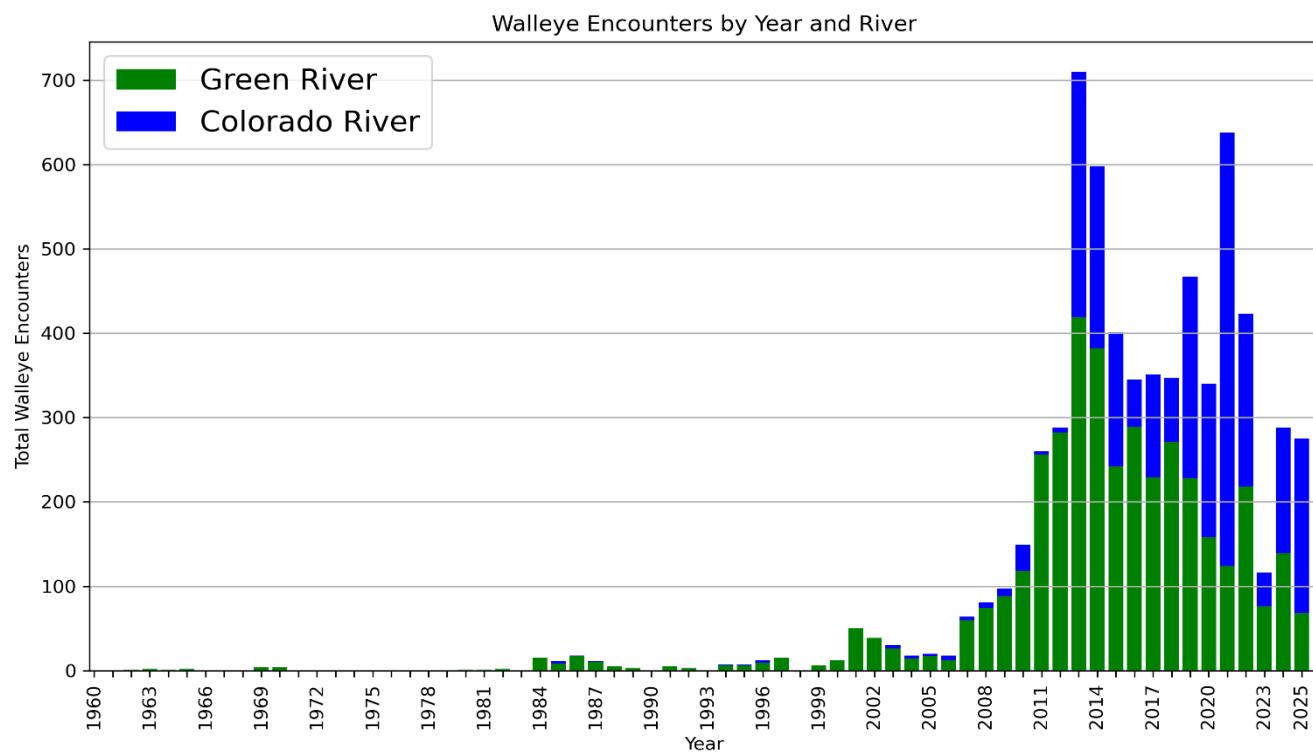


Figure 2. Historic walleye encounters in the UCRB for the Green and Colorado Rivers. A marked captures uptick occurred around 2008-2020, prompting increased management actions.

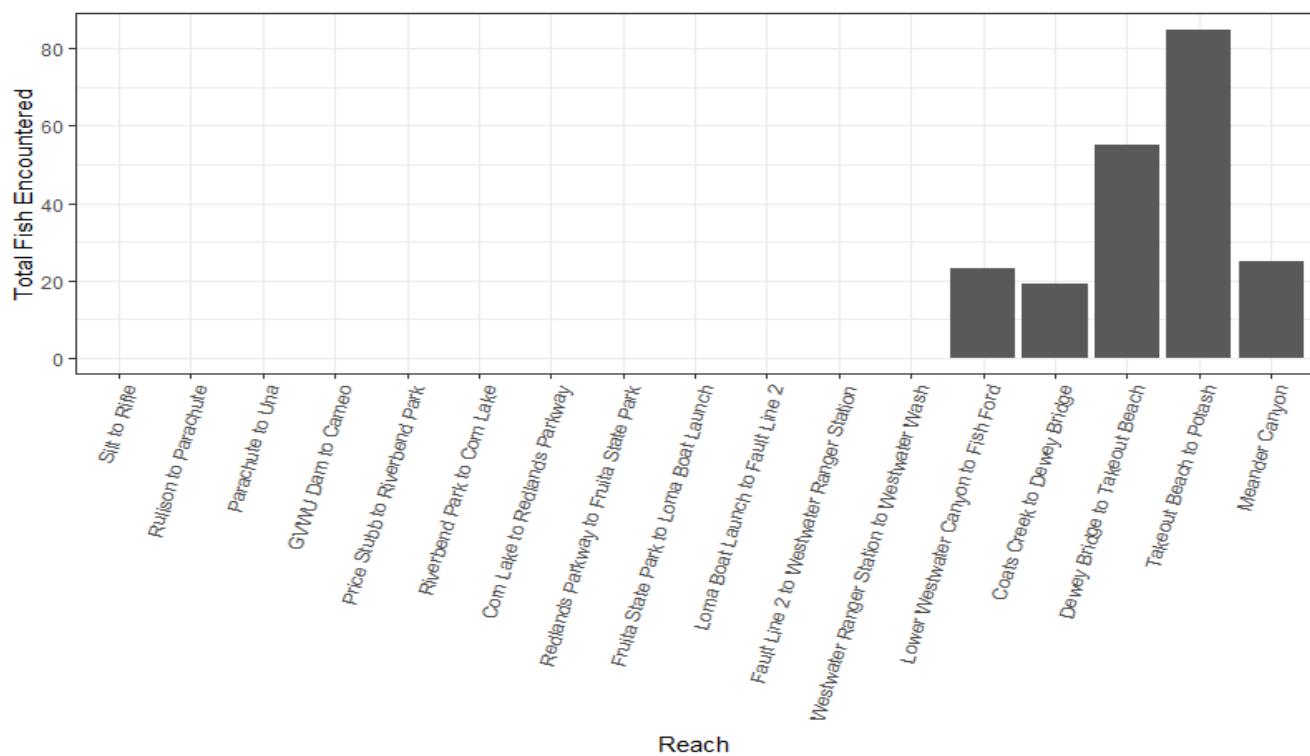


Figure 3. Total walleye encounters by reach for the Colorado River during 2025 sampling.

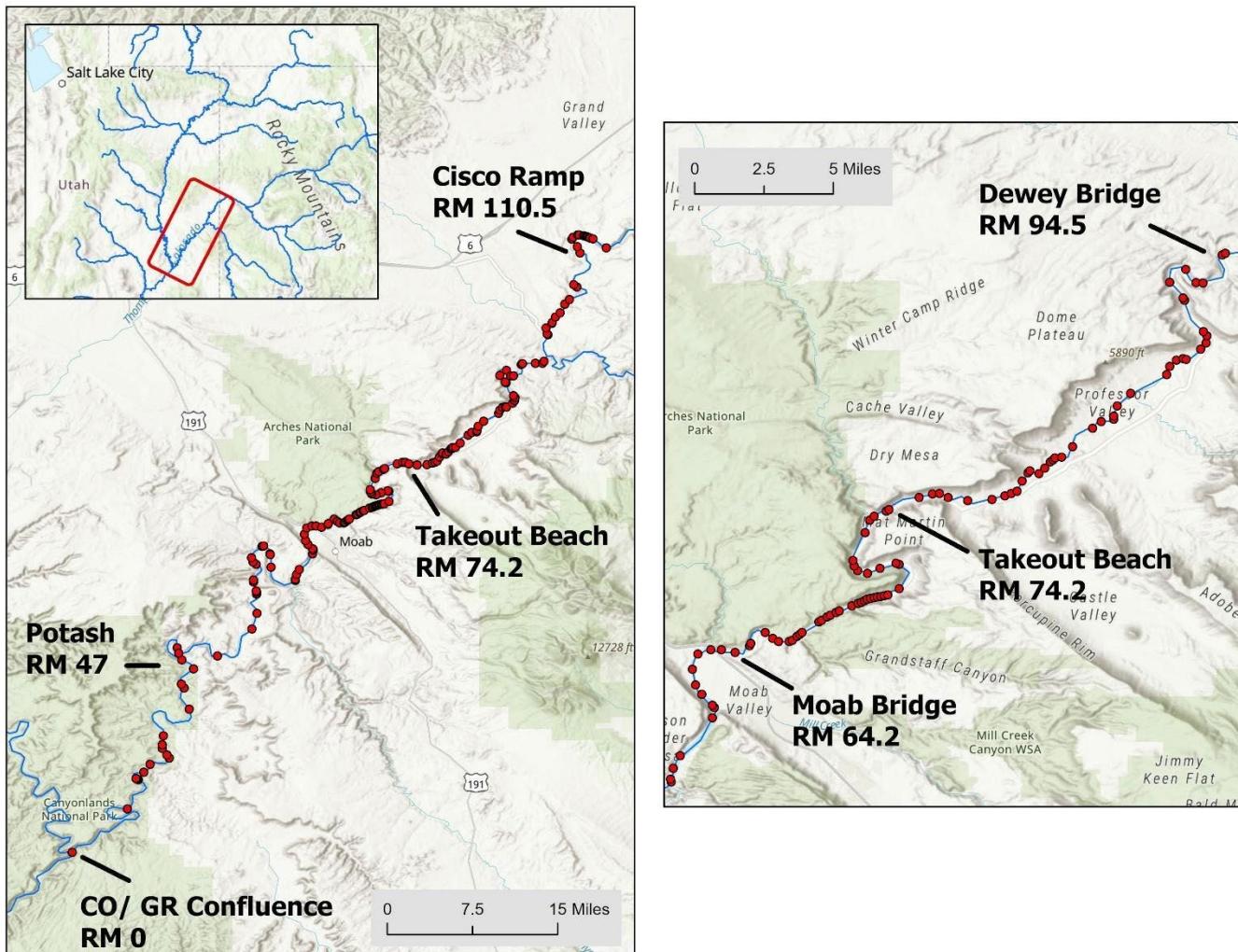


Figure 4. Hotspot walleye encounters on the Colorado River during 2025 sampling. Map on the left depicts lower Westwater Canyon to the confluence with the Green river (RM 114 – 0), map on the right depicts Dewey Bridge to Potash (RM 94.5 – 64.2).

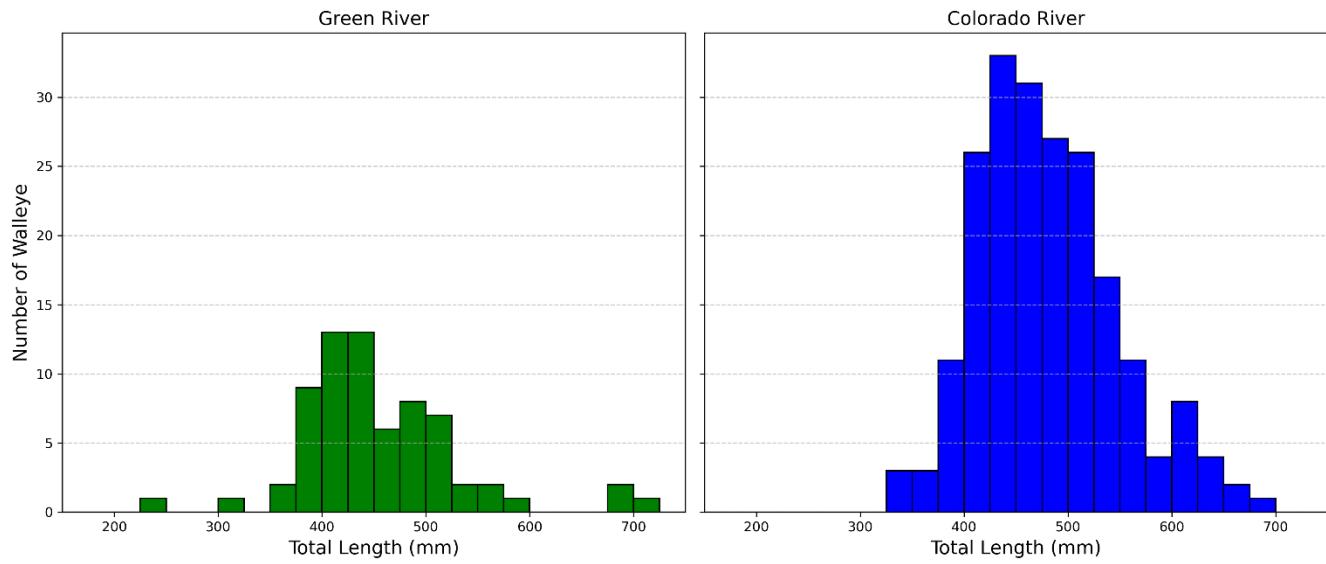


Figure 5. Length frequency histogram depicting all total lengths of walleye encountered in the Colorado River and Green River during 2025 sampling.

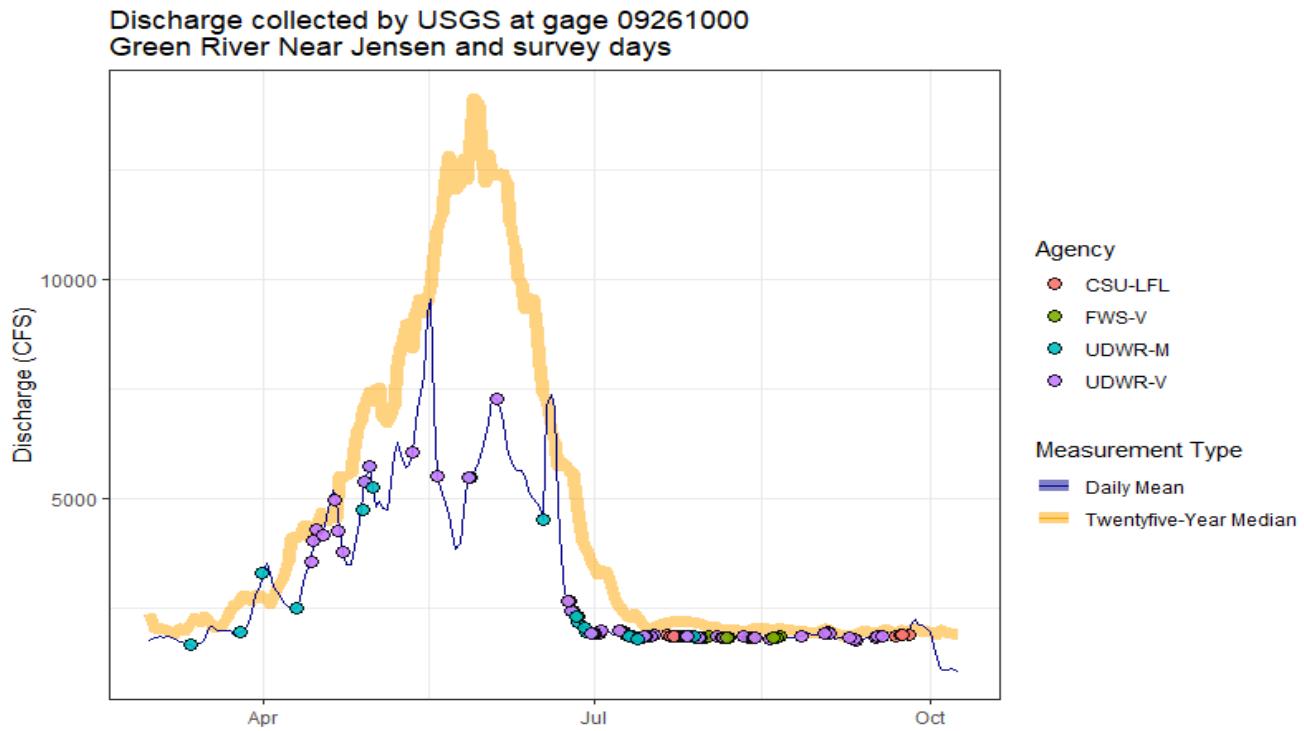


Figure 6. Hydrograph depicting general Green River hydrologic conditions at USGS gauge 09261000 in Jensen, UT and individual sampling events by agency in 2025.

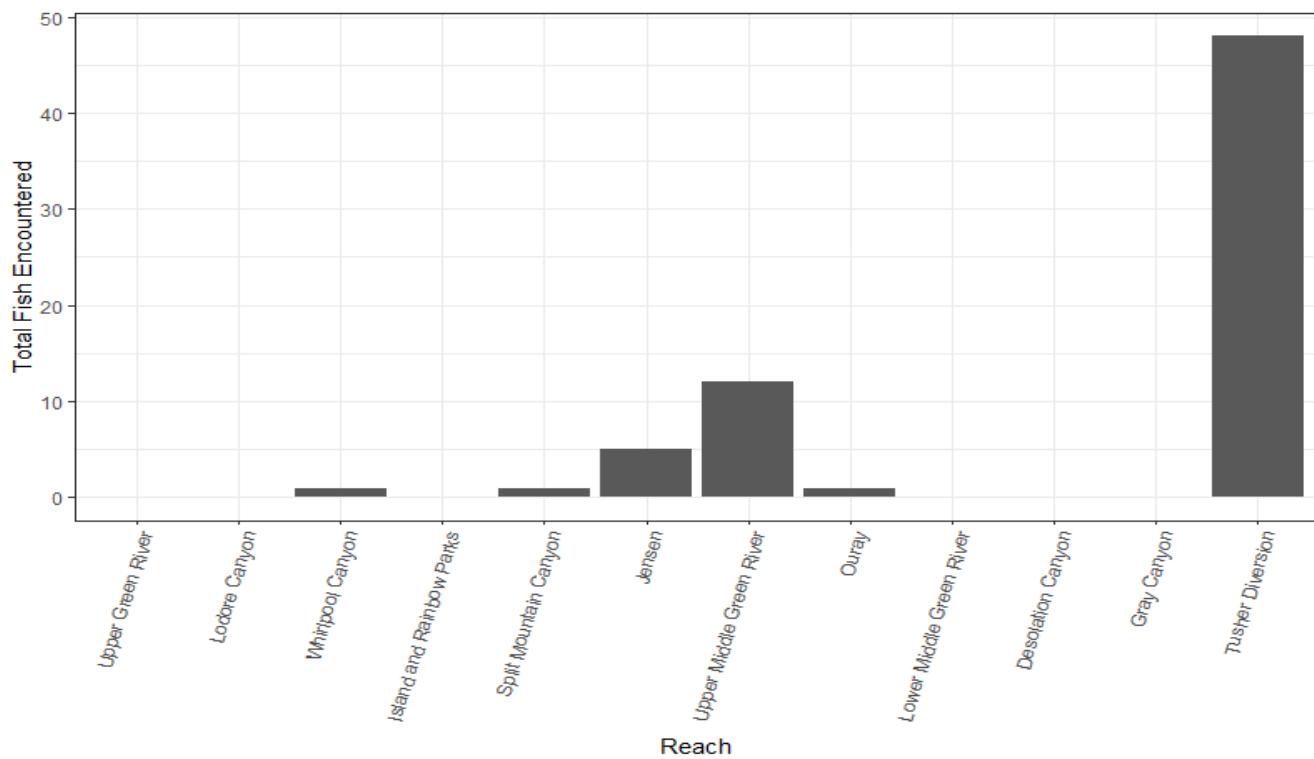


Figure 7. Green River walleye encounters in 2025 by reach. Notably, the middle Green River reach (RM 290 – 280) and the Tusher Diversion reach (RM 128 – 120) reported the highest walleye catch for the sub-basin. In 2025, no removal effort occurred from below GRSP (RM 120) to the Colorado River confluence (RM 0); consequently, zero encounters reflect an absence of effort rather than walleye absence.

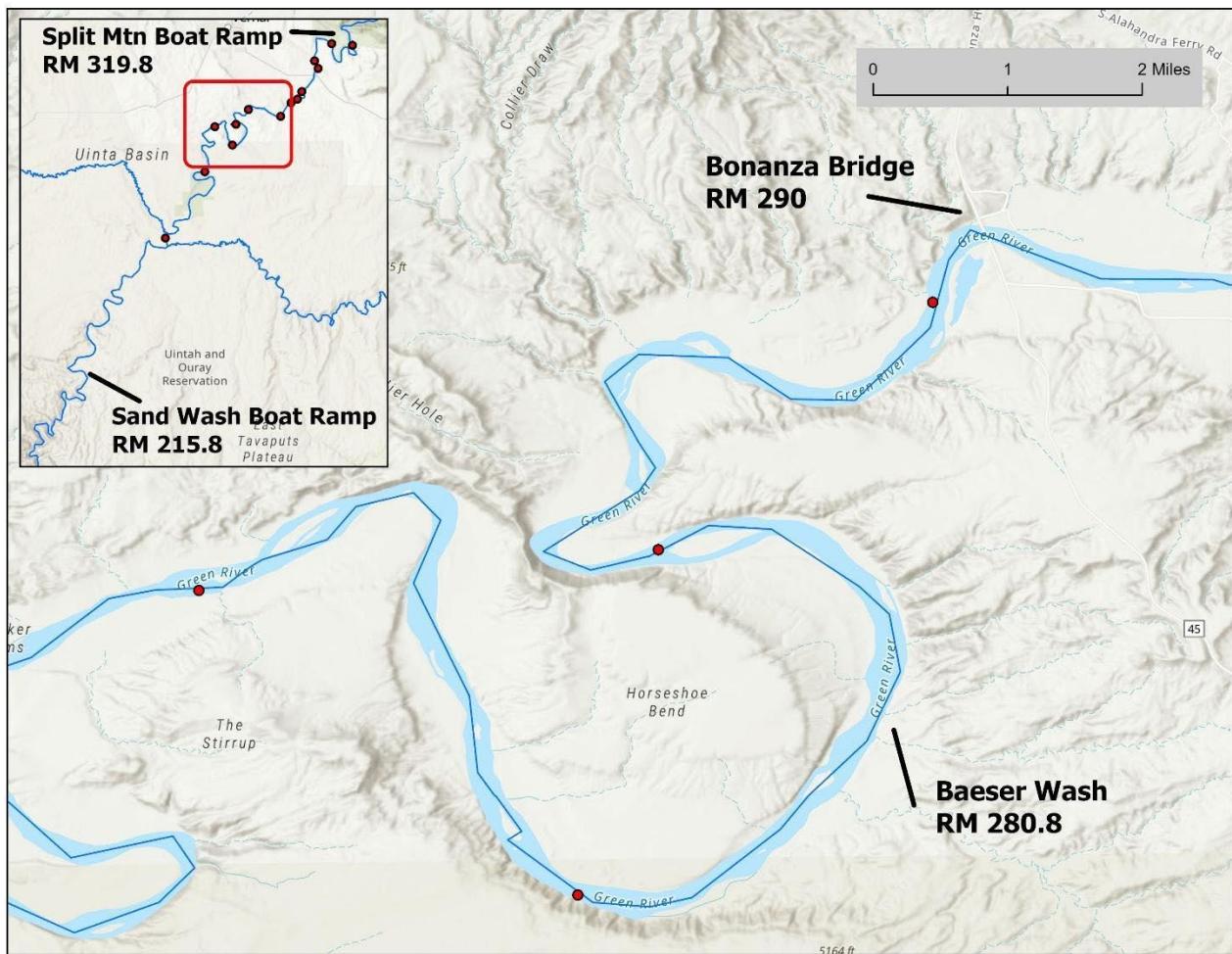


Figure 8. Walleye encounters on the middle Green River between Split Mountain Boat Ramp and Sand Wash Boat Ramp. Below Bonanza Bridge, at Horseshoe Bend, field crews encounter elevated levels of walleye near suspected spawning bar at Baeser Wash.

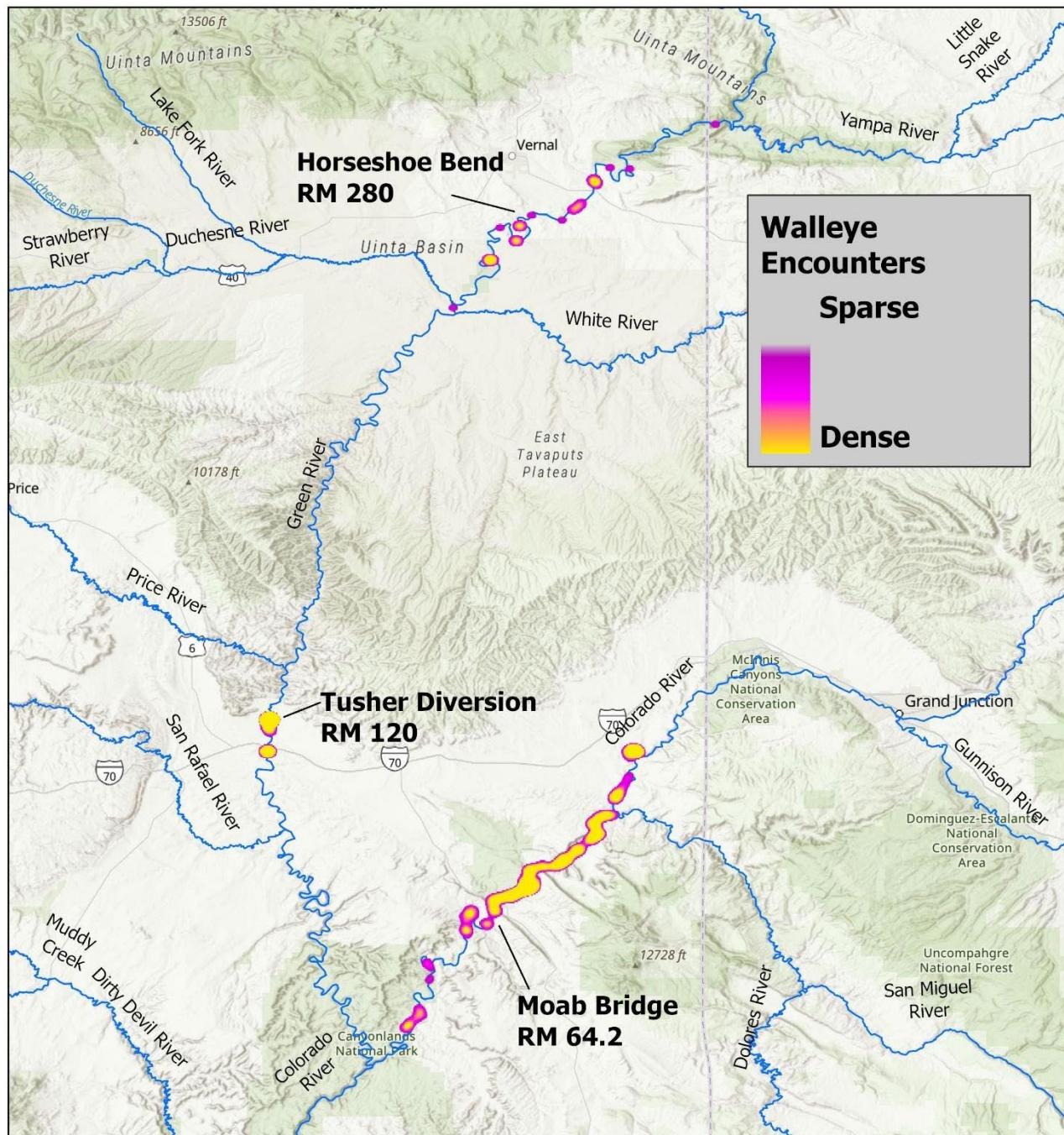


Figure 9. Overview map of all walleye encounters in the UCRB in 2025. Distinct 'hotspots' are visualized on the middle Green River, at the Tusher Diversion, and on the lower Colorado River.

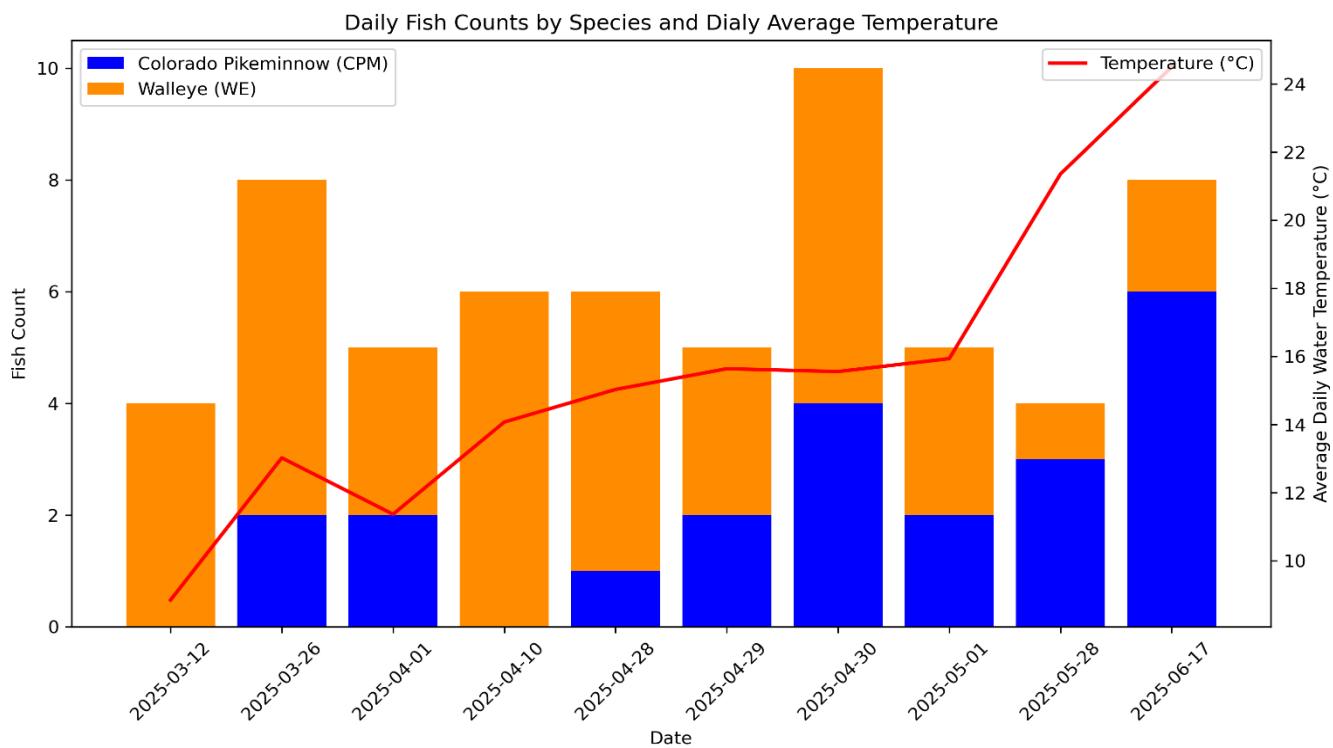


Figure 10. Walleye and Colorado pikeminnow encounters below the Tusher Diversion Dam (RM 128 – 127) during 2025 sampling. Note that sample dates are discontinuous. Temperature is an important abiotic driver initiating spawning activity by both piscivores, thresholds that could refine and support targeted removal efforts in known walleye hotspots.

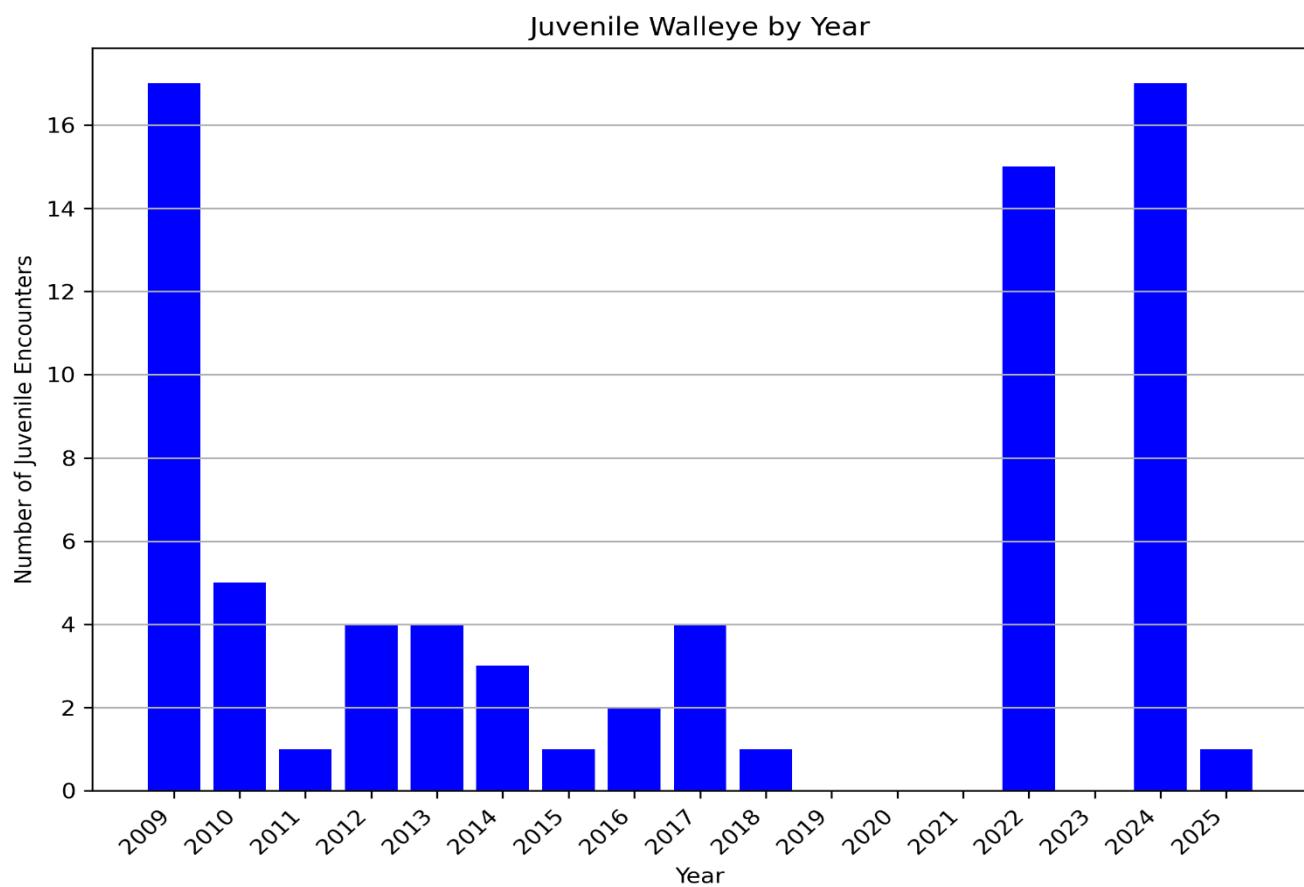


Figure 11. Juvenile walleye captures by year for the UCRB. All juvenile walleye encounters in 2025, as well as during the period of record, occurred in the mainstem Green River.