30th Annual Researchers Meeting

of the

Upper Colorado River Endangered Fish Recovery Program
and
San Juan River Basin Recovery Implementation Program

January 13–14, 2009

Double Tree Hotel
Horizon Room
743 Horizon Drive
Grand Junction, Colorado

January 13, 2009

TUESDAY MORNING SESSION

9:00 Logistics/Announcements (Colorado Division of Wildlife)

9:10 Program Coordination

Instream Flow (Jana Mohrman)

Habitat and Nonnative Fish Management (Tom Chart)

Habitat Development, Propagation, Monitoring and Research (Tom Czapla)

San Juan Program, Overview (Sharon Whitmore)

10:10 Break

10:30 Contaminants

10:30 **Field assessment of mercury exposure to Colorado pikeminnow within designated critical habitat.** Barb Osmundson

10:40 John Isanhart

11:10 Open Discussion on Contaminant Issues

11:30—1:00 Lunch

TUESDAY AFTERNOON SESSION — CONTRIBUTED PAPERS

1:00 **Survival rate estimation of hatchery-reared razorback suckers *Xyrauchen texanus* in the Upper Colorado River Basin, Utah and Colorado.** *Koreen A. Zelasko*, Kevin R. Bestgen, and Gary C. White.

1:20 **Successful spawning by stocked razorback suckers in the Gunnison and Colorado rivers, as evidenced by larval fish collections, 2002-2007.** *Doug Osmundson* and Sean Seal.

1:40 **Closed Population Estimates of Humpback Chub (*Gila cypha*) in the Little Colorado River, Grand Canyon, Arizona.** *David R. Van Haverbeke*.

2:00 **Yampa Canyon Humpback Chub Pilot Study.** *Mike Montagne*.

2:20 **Habitat preferences and movement of three desert fishes in a highly altered stream: implications for maintaining viable populations.** *Jared Bottcher*, Phaedra Budy, and Gary Thiede.

2:40 Break

3:00 **Development of an Autonomous Backwater Identification System to Predict the Effects of Flow on Physical Backwater Characteristics in the Middle Green River, Utah.** *Lee Walston*, Kirk LaGory, Cory Weber, John Hayse, and Brian Cantwell

3:20 **Status of Tamarisk Control & Riparian Restoration in the Upper Colorado River BasinStatus of Tamarisk Control & Riparian Restoration in the Upper Colorado River Basin.** *Tim Carlson*.

3:40 **Basin-wide examination of trace element chemistry of nonnative fish otoliths.** *Brett Johnson*, Brian Wolff, Pat Martinez, and Dana Winkelman

4:00 **Use of a floating weir for nonnative fish removal.** *Leisa Monroe*, Utah Division of Wildlife Resources, Vernal, Utah

4:20 **Smallmouth bass otolith microstructure analyses and implications for Green River Basin fish and flow management.** *Kevin R. Bestgen* and Angela A. Hill

5:30 EVENING POSTER SESSION AND SOCIAL

A Family-level Computer-interactive Key to the Larvae of Freshwater Fishes in the United States and Canada. Darrel E. Snyder.

Larvae and Early Juveniles of Three Small, Non-native Cyprinids Common to the Upper Colorado River System: *Cyprinella lutrensis, Notropis stramineus,* and *Pimephales promelas.* Darrel E. Snyder, C. Lynn Bjork, and Sean C. Seal.

January 14, 2008

WEDNESDAY MORNING SESSION — NONNATIVE FISH

8:30—12:00 with a Break

Smallmouth bass: A preliminary synthesis of removal efforts (2003-2008). Tom Chart, Upper Colorado River Recovery Program, U.S. Fish and Wildlife Service, Lakewood, Colorado and 15 Contributors.

Northern pike: A preliminary synthesis of removal efforts (2003-2008). F. Boyd Wright, Colorado Division of Wildlife, Meeker, Colorado), Aaron Weber, Sam Finney (U.S. Fish and Wildlife Service, Vernal, Utah), John Hawkins (Larval Fish Laboratory, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, Colorado), Trina Hedrick and Leisa Monroe (Utah Division of Wildlife Resources, Vernal, Utah).

Response of the Native Fish Community of the Yampa River to Removal of Non-native Piscivores: Results From 2003-2008. K. Bestgen, C. Walford, A. Hill, T. Wilcox, J. Hawkins (Larval Fish Laboratory, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, Colorado), Trina Hedrick, Leisa Monroe, and Matt Breen (Utah Division of Wildlife Resources, Vernal, Utah).

Including open discussion(s) on nonnative fish issues.

ABSTRACTS

Field assessment of mercury exposure to Colorado pikeminnow within designated critical habitat.

Barb Osmundson (U.S. Fish & Wildlife Service, Grand Junction, Colorado).

Fish sampling surveys in the last 20 years have demonstrated widespread mercury contamination in the freshwater systems of the northern hemisphere. Mercury occurs naturally in the environment and can be released from natural sources such as volcanic and geothermal activity, marine environments, and forest fires. Human activity, particularly coal-fired power plants and gold-mining, release large amounts of mercury into the atmosphere. Eventually, this atmospheric mercury enters waterways, and often ends up in lake bottoms and wetlands. Fish accumulate methyl mercury mostly from their diet, though some waterborne methyl mercury can be passed over the gills and accumulated directly. Most of the methyl mercury in fish accumulates in the muscle tissue. Fish eliminate mercury very slowly, with a half-life of about two years. Mercury concentrations in fish tissue generally increase with increasing age or body size, because of the slow rate of elimination relative to the rate of uptake. Mercury biomagnifies in aquatic food-chains; therefore, fish at higher trophic levels usually contain greater mercury concentrations than coexisting species at lower trophic levels.
Lab studies have shown that either inorganic or methyl mercury transferred from female fish to eggs during oogenesis can reducing hatching and adversely affect fish embryo development and survival. Because mercury is a neurotoxin, sublethal effects in fish may include altered behavior, such as reduced ability to avoid predators and reduced ability to secure food, resulting in emaciation and slow growth. Recent lab studies have demonstrated that mercury can also negatively affect the endocrine system of fish at environmentally relevant concentrations.

Of potential concern to endangered Colorado River fish is the proximity of 12 coal-fired power-plants adjacent to or upwind of critical habitat. Also contributing to mercury emissions upwind of critical habitat are Nevada ore-roasters. The objective of this study is to determine mercury concentrations in Colorado pikeminnow (CPM) collected from several different river reaches within critical habitat by using biopsied muscle plugs. Risk to Colorado pikeminnow from mercury exposure will be assessed, by comparing tissue residues to those linked with adverse effects, including endocrine disruption, by other researcher with other species. Preliminary data results are presented for samples collected from the Green, Yampa, and White rivers during 2008.

Survival rate estimation of hatchery-reared razorback suckers *Xyrauchen texanus* in the Upper Colorado River Basin, Utah and Colorado

Koreen A. Zelasko, Kevin R. Bestgen (Larval Fish Laboratory, Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, Colorado) and Gary C. White (Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, Colorado).

We used tag recapture data to estimate apparent survival, φ, and capture probability, *p*, for hatchery-reared, federally endangered razorback suckers *Xyrauchen texanus* stocked into Upper Colorado River Basin streams. Effects investigated included: river, river reach, year, season, fish total length (TL), 1st year in the river (ry1) versus subsequent years (post-ry1), and sampling effort. Recapture data were also used to describe post-stocking movement of razorback suckers. Total length at stocking had a positive effect on 1st-interval (ry1) survival rates. Averaging over stocking season, ry1 survival rates of razorback suckers stocked at <200 mm TL approached 0 but increased to ≥0.75 for the few fish >500 mm TL. Survival rate for razorback suckers stocked at the average length of 252.5 mm TL was low: 0.05 (95% confidence interval (CI): 0.042 – 0.071). Season of stocking also had a large effect on 1st-interval survival of razorback suckers: predicted survival for average length razorback suckers stocked in summer was <0.02 (95% CI: 0.012 – 0.022), but was 0.08 (0.057 – 0.100), 0.08 (0.057 – 0.118) and 0.07 (0.044 – 0.094) for fish stocked in autumn, winter, and spring, respectively. Overall survival rate for razorback suckers through any interval subsequent to their first interval in the river (post-ry1) was estimated at 0.75 (95% CI: 0.688 – 0.801), similar to the 0.70 rate assumed for adult fish in the integrated stocking plan. Capture probability estimates were relatively low, ranging from 0.002 – 0.128 for fish of average TL at stocking. Mean distance traveled, time elapsed, and rate of travel by razorback suckers on any leg of movement were 54.7 RK (range: 0 – 514.9), 254 days (range: 0 – 3,164), and 0.87 RK/d (range: 0 – 55.37), respectively, and highest for first legs (stocking to first capture) compared to subsequent legs. Nearly all (92.7%) movements were in a downstream direction. Movement out of stocking reaches was more frequent in the Colorado and Gunnison River subbasins (36.9%, range: 30.1 – 100%) than the Green River subbasin (7.7%, range: 2.9 – 10.3%). Our results will help guide production and stocking strategies for hatcheries and managers attempting to restore razorback sucker in the Colorado River Basin.

Successful spawning by stocked razorback suckers in the Gunnison and Colorado rivers, as evidenced by larval fish collections, 2002-2007.

Doug Osmundson (U.S. Fish and Wildlife Service, Grand Junction, Colorado) and Sean Seal (Larval Fish Laboratory, Department of Fish, Wildlife and Conservation Biology, Colorado State University, Fort Collins, Colorado).

Razorback sucker have been stocked annually into the Gunnsion River since 1994 and into the Colorado River since 1999. Through 2007, some 27,371 razorback sucker were

stocked into the Gunnison River, most near Delta, Colorado; some 78,743 razorback sucker have been stocked into the Colorado River, most near Grand Junction. Before effort was expended to manage off-channel areas for nursery habitat, Recovery Program members deemed it prudent to first verify whether the stocked razorback suckers were indeed spawning in the river. In 2002, crews began sampling shoreline habitats in the Gunnison River from Delta, Colorado to the Redlands Diversion Dam near Grand Junction. Sampling was conducted from early May to late June, following the suspected spawning season. The river was divided into 12 five-mile reaches and 1-6 sites within each reach were sampled for larvae on a weekly basis using 0.5-mm-mesh hand seines. Collected larvae from each site were preserved in ethanol and sent to the Larval Fish Laboratory to be measured, identified and preserved. Annual sampling continued through 2007. In 2004, similar sampling was begun in the Colorado River from Palisade, Colorado to Westwater, Utah. This sampling also continued through 2007.

Small numbers (1-8) of razorback sucker larvae were found in the Gunnison River each year except 2006. About half of these were positive identifications; others were tentatively identified as likely razorback sucker larvae. Catch rates appeared to decline during the study period: 0.055 fish per sample in 2002, 0.061 in 2003, 0.010 in 2004, 0.017 in 2005, 0.00 in 2006, and 0.005 in 2007. During the first year, seven larvae were found in a relatively localized area near the lower end of the river suggesting that spawning may have occurred nearby. Another individual larva was collected that year near Delta at the mouth of Roubideau Creek, perhaps representing another more upstream spawning site. In subsequent years, however, individual larvae were scattered throughout the study area.

In the Colorado River, small numbers (2-16) of razorback sucker larvae were captured in all four years of study. Catch rates appeared to increase over time: 0.012 fish per sample in 2004, 0.043 in 2005, 0.038 in 2006, and 0.071 in 2007. Distribution of razorback sucker larvae were not clumped, but rather scattered throughout the study area. A 5-pass mark-recapture effort of stocked razorback suckers conducted throughout occupied habitat of the upper Colorado River (Palisade to the Green River confluence) conducted in 2005, concurrent with Colorado pikeminnow monitoring, produced a population estimate of 2,135 individuals of all sizes (95% CI = 1,576-2,958) and an estimate of 1,066 adults (fish > 400 mm TL; 95% CI = 377-3,703). That year, 60% of the adult captures were from the upper reach; hence, we might suggest there were 600 or so adults in our Colorado River, larvae sampling area in the year in which we captured only four larvae. Higher catch rates of larvae in 2007 may indicate an increasing number of breeders present or perhaps better spawning and hatching conditions that year.

In 2007, a suspected razorback sucker spawning site was discovered in the Grand Valley between Fruita and Loma during routine electrofishing surveys. Thirteen fish in near-breeding condition were captured in a swift, shallow channel on May 24. On a return trip to the site the following week, another 17 fish were captured, only two of which were captured the week before. Based on observations of running ripe females captured at a variety of locations throughout the larger study area in recent years, spawning sites are probably scattered throughout the upper Colorado River.

Closed Population Estimates of Humpback Chub (*Gila cypha*) in the Little Colorado River, Grand Canyon, Arizona.

David R. Van Haverbeke (U.S. Fish & Wildlife Service, Flagstaff, Arizona).

Since 2000, a series of two-pass, closed mark-recapture efforts have been conducted during the spring and fall in the Little Colorado River (LCR) to track the abundance of humpback chub (HBC). Preliminary results indicate that during spring 2008, the estimated abundance of HBC ≥ 150 mm in the lower 13.57 km of the LCR was 5,850 (SE = 527). Of these fish, it was estimated that 4,831 (SE = 506) were ≥ 200 mm. These numbers appear to be indicating a relatively recent significant increase in the abundance of the spring LCR spawning population. During fall 2008, the estimated abundance of HBC ≥ 150 mm in the lower 13.57 km of the LCR was 4,750 (SE = 727). Of these fish, it was estimated that 1,936 (220) were ≥ 200 mm. These numbers also suggest an increasing trend in the LCR population of humpback chub.

Between 2003 and 2005, 1,150 HBC (50-100 mm TL) were translocated from the lower reaches of the LCR to above a travertine structure known as Chute Falls. Since 2006, mark-recapture efforts have been conducted in the reaches of the LCR above 13.57 km, largely in order to track the fate of the translocated HBC. During May and June 2008, it was estimated that there were 407 (SE = 28) HBC ≥ 200 mm residing above 13.57 km in the LCR. Study results suggest that most of the translocated fish are dispersing downriver in the LCR, but that limited natural spawning occurred above Chute Falls.

Yampa Canyon Humpback Chub Pilot Study.

Mike Montagne (Ouray National Fish Hatchery, Vernal, Utah).

The humpback chub (*Gila cypha)* is a native species of the Colorado River Basin listed as endangered by the U.S. Fish and Wildlife Service on March 4, 1967 (32 FR 4001). Recent humpback chub abundance and distribution studies of the Yampa Canyon population (see Karp and Tyus 1990, Haines and Modde 2002, and Finney 2006), have shown a dramatic decline in the population to the extent that the population appears near extirpation (Finney 2006). As a result of the recent decline in humpback chub capture rates, the U.S. Fish and Wildlife Service (USFWS) has recommended that some Yampa Canyon humpback chub be taken into captivity to preserve the genetics of this population.

Very little information is available about captive propagation of humpback chubs, so a study to determine what may be required to collect, transport, and sustain humpback chubs for an extended period was undertaken. Young humpback chub are difficult to distinguish from young roundtail chub (*Gila robusta*) until they grow sufficiently for their morphological differences become readily apparent, and they are often found in the same areas. For this reason it was decided to take 400 young of the year chubs, likely of both species, from the Yampa River, and translocate them to two different hatcheries

(200 apiece) to determine survival rates of wild *Gila* spp. taken into captivity and to research the best methods for captive rearing these species.

Habitat preferences and movement of three desert fishes in a highly altered stream: implications for maintaining viable populations

Jared Bottcher (Utah State University, Logan, Utah), Phaedra Budy (Utah State University, Utah Cooperative Fish and Wildlife Research Unit, U.S. Geological Survey, Logan, Utah), and Gary Thiede (Utah State University, Logan, Utah).

An organisms' ability to disperse to suitable habitats across multiple life-history stages, especially in modified and fragmented systems typical of desert streams, influences individual fitness and overall population viability. The bluehead sucker (*Catostomus discobolus*), flannelmouth sucker, (*Catostomus latipinnis*), and roundtail chub, (*Gila robusta*), are three species native to the upper Colorado River Basin that now occupy 50% of their historic range, likely as a result of widespread habitat degradation, interactions with non-native species, and a mismatch between past adaptations and the current environmental template. Despite these declines, populations of all three species are present in the San Rafael River, a highly-regulated tributary of the Green River, Utah, providing an area of high conservation priority and an opportunity for research. Our goal is to determine the extent, timing, and environmental cues associated with movement, habitat preferences for each species and life stage, and limiting factors, ultimately to guide effective management and recovery of these species. In 2007-2008, we sampled fish using a variety of methods from 25 systematically-selected, 300-m reaches in the lower 64 km of the San Rafael River, spaced to capture the range of species, life-stages, and habitat conditions present. We implanted all target species with a passive integrated transponder (PIT) tag, installed a passive PIT tag antennae, and measured key habitat parameters throughout each reach and at the site of native fish capture. Multiple age-classes of each species were collected in the San Rafael River, with the highest total densities occurring in complex habitats near the confluence with the Green River and in the most upstream reaches of our research area. Flannelmouth sucker were habitat generalists, whereas bluehead sucker and roundtail chub actively selected for riffles and pools, respectively. These discrete channel units, along with important rearing habitat (e.g. backwaters, eddies), are relatively rare in the lower San Rafael River, possibly limiting recruitment and overall population viability. Both local and long distance movement is pervasive for these three species, as all but one recaptured individual (passive and active) was captured at a location different from the initial tagging location. The abundance of age-0 and juvenile fish throughout the sampling period, along with a significant peak in adult downstream movement after the spawning period, suggests that the San Rafael River may provide important spawning and rearing habitat for several sensitive species. These results, along with Monte Carlo modeling aimed at capturing the effect of a stochastic environment on species vital rates, allow us to better understand the importance of tributaries and complex habitats for native fish persistence, and provide the first step towards developing interannual instream flow recommendations.

Development of an Autonomous Backwater Identification System to Predict the Effects of Flow on Physical Backwater Characteristics in the Middle Green River, Utah

Lee Walston, Kirk LaGory, Cory Weber, John Hayse, and Brian Cantwell (Environmental Science Division, Argonne National Laboratory, Argonne, Illinois).

To protect backwater habitats used by Colorado pikeminnow (*Ptychocheilus lucius*) juveniles, flow recommendations for the Green River call for limiting within-day stage changes to 0.1 m or less during the base flow period at the Jensen gage in Utah. We developed an autonomous backwater identification system (ABIS) to delineate backwater areas using topographic and flow data, and to evaluate the effects of stage changes on the physical characteristics of backwaters in the Ouray reach of the Green River. Detailed topographic information for 4 to 6 backwaters and the surrounding terrain was obtained annually during the baseflow period from 2003 to 2006 and in 2008. Using the topographic data, digital elevation grids (1m x 1m cells) were created for each backwater area. Elevation grids were then converted to grayscale images (8-bit) for input into ABIS. ABIS uses an image processing algorithm that analyzes the grayscale images to predict the area, volume, and depth for each backwater as a function of flow. ABIS was validated by comparing results to those obtained from manual GIS models, which showed a high degree of similarity. Compared to manual GIS models, ABIS allows for a more rapid and standardized approach to determine the effects of flow variability on physical backwater characteristics. (Work supported by the U.S. Department of Energy, Western Area Power Administration under contract DE-AC02-06CH11357.)

Status of Tamarisk Control & Riparian Restoration in the Upper Colorado River BasinStatus of Tamarisk Control & Riparian Restoration in the Upper Colorado River Basin.

Tim Carlson (Tamarisk Coalition, Grand Junction, Colorado).

In the Upper Colorado River Basin, the Tamarisk Coalition has been working with several other partners including FWS to better define the *tamarix* problem and to develop riparian restoration solutions. Activities include mapping/inventory, watershed planning, restoration design, bio-control and vegetative monitoring, and research conferences. As an outgrowth of this work several areas of research needs have been identified which are related to the aquatic habitat and potential impacts to the endangered fish species.

Basin-wide examination of trace element chemistry of nonnative fish otoliths

Brett Johnson, Brian Wolff (Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, Colorado), Pat Martinez (Colorado Division of Wildlife, Grand Junction, Colorado), and Dana Winkelman (Colorado Cooperative Fish and Wildlife Research Unit, Colorado State University, Fort Collins, Colorado).

Nonnative fishes can enter critical habitat in the Upper Colorado River Basin by a variety of paths, including natural reproduction, reservoir escapement and illicit introduction. Identifying the origins of these fishes by traditional methods has proven problematic. Trace elements and their isotopes in water impart a "chemical signature" to otoliths of fish inhabiting that water, and thereby provide information about the fish's movement history. We are examining chemical and isotopic signatures of otoliths of northern pike, walleye, smallmouth bass, largemouth bass, and black crappie (and some other species) collected from reservoirs and river reaches to determine how effective this technique may be for determining origins of these fishes. Preliminary results are promising, suggesting distinctive chemical signatures in fish from different reservoirs, and differences in river and reservoir signatures that may allow us to track origins of fish that have escaped from reservoirs into critical habitat.

Use of a floating weir for nonnative fish removal.

Leisa Monroe (Utah Division of Wildlife Resources, Vernal, Utah).

The use of a floating weir in the middle Green River for nonnative fish removal has the potential to increase exploitation, not only of smallmouth bass, but other nonnative fish species as well. The design and installation of the weir is relatively simple as well as the day to day operation. If successful, the cost will be minimal compared to multiple passes over many years of electrofishing.

Smallmouth bass otolith microstructure analyses and implications for Green River Basin fish and flow management.

Kevin R. Bestgen and Angela A. Hill (Larval Fish Laboratory, Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, Colorado).

Otolith microstructure analysis, particularly daily age estimation, has been a useful tool in fish ecology and management. Here we present preliminary results of otolith microstructure analyses and daily age estimation conducted on smallmouth bass *Micropterus dolomieu* collected in the Green and Yampa rivers, Colorado, from 2003-2007. Analyses showed that smallmouth bass spawning was usually initiated in June, but timing and peak spawning were strongly dependent on water temperature and streamflow, with bass spawning later in cooler and higher flows years such as 2005 and earlier in warmer and lower flow years such as 2007. In most years, smallmouth bass spawning typically spanned about a 4-week period. Small temperature differences substantially influenced the relatively fast growth rates of smallmouth bass. Simulations showed that relatively slow-growing native fish that hatched in early-July, were only 60% of the length of fast-growing smallmouth bass that hatched on the same day after just two weeks, and thus, were susceptible to predation for the duration of the growing season. Otolith analyses may also enhance our understanding of smallmouth bass

ecology in the Green River basin and guide efforts to disrupt spawning and reduce recruitment of this invasive predaceous species.

POSTER SESSION

A Family-level Computer-interactive Key to the Larvae of Freshwater Fishes in the United States and Canada

Darrel E. Snyder, Larval Fish Laboratory, Colorado State University, 1474 Campus Delivery, Fort Collins, CO, 80523-1474

Nearly 800 freshwater and anadromous fishes, representing about 40 families, are found in the United States and Canada. This key, an ongoing work-in-progress, currently covers 26 of those families and can be limited to any desired subset of those families, one of which has been predefined for the Upper Colorado River Basin. Summarizing mostly published descriptive information by family, I built a database in DELTA (DEscription Language for TAxonomy) format using DELTA Editor and created associated files for use by the host program, DELTA Intkey. The host program can be downloaded over the Internet without cost at website http://delta-intkey.com/ – select "Programs and Documentation", then "Intkey." The data and associated files for this key (including a "readme" instruction file) are available for download at http://welcome.warnercnr.colostate.edu/lfl-files-to-download.html – select "fam-na.zip." Computer-interactive keys are modern, flexible, and user friendly alternatives to dichotomous (and polychotomous) keys, but like dichotomous keys, they are tools to help facilitate identification and are not infallible. Among other limitations, errors in the data extracted from published descriptions may be perpetuated in this key, and it may suffer from inadequate or incomplete data for some taxa. Users are asked to notify me of any corrections or difficulties they may have, as well as forward suggestions for improvement.

Larvae and Early Juveniles of Three Small, Non-native Cyprinids Common to the Upper Colorado River System: *Cyprinella lutrensis, Notropis stramineus,* and *Pimephales promelas*

Darrel E. Snyder, C. Lynn Bjork, and Sean C. Seal, Larval Fish Laboratory, Colorado State University, 1474 Campus Delivery, Fort Collins, CO, 80523-1474

Red shiner *Cyprinella lutrensis*, sand shiner *Notropis stramineus*, and fathead *Pimephales promelas* are small-bodied, non-native cyprinids of common to the middle and lower reaches of Upper Colorado River Basin streams and rivers. To better facilitate visual identification of captured larvae and early juveniles, especially recently hatched protolarvae, prior descriptions and illustrations are being supplemented and assembled into more complete and comparable species accounts. This poster highlights some of the drawings and information being prepared and assembled for inclusion in a comprehensive guide to cyprinid larvae and early juveniles of the basin.