Aquatic Wildlife of the Merced River Canyon

By Rob Grasso
Merced Wild and Scenic Designation

- Headwaters of mainstem (YV) and south fork to Bagby
- Wild: 71.0 miles;
- Scenic: 16.0 miles;
- Recreational: 35.5 miles;
- Total: 122.5 miles.
Western Pearlshell mussel - *Margaritifera falcata*

- Not previously known in EP region
- Excellent indicator of water quality
- Declining across the Western U.S.
- Live >100 years
- Most have obligate trout host
- Glochidia for dispersal
Signal Crayfish – *Pacifastacus leniusculus*

- Native to Columbia River Basin (Klamath Signal Crayfish)
- Largely introduced as food and bait
- Yosemite Valley (1975)
- Easy to transport and keep alive
- Omnivorous and aggressive
- Abundance related to river flows
- Downstream reservoirs usually aide in recolonizing post-flow events
Native fishes of the Merced River
Sacramento sucker *Catostomus occidentalis*

- Common in Merced River
- Mostly algal grazer and detritus, but some invertebrates
- Grow to 0.5 m (20”)
- Tolerant of a wide range of habitat conditions
Hardhead Minnow - *Mylopharodon conocephalus*

- Large omnivorous minnow reaching 60 cm (~2 ft)
- Live about 10 years
- Prefer deep, clear slow-moving pools
- Migrate in rivers to spawn
Sacramento Pikeminnow - Ptychocheilus grandis

- Large predatory fish up to 1m (3 ft)
- Prefer clean rivers with deep, slow pools
- Do not usually do well with non-native fish
- Long-lived 16 years or more
Rainbow trout/Central Valley Steelhead - *Oncorhynchus mykiss*

- Rainbow trout
  - Commonly stocked hatchery fish (Merced River Hatchery)
- Central Valley Steelhead (non-hatchery origin)
  - A Distinct Population Segment (DPS)?
  - Genes responsible for timing of breeding
  - Could have reached Yosemite Valley and Wawona prior to dams
Chinook Salmon - *Oncorhynchus tshawytscha*

- Merced River – Fall Run (ESU)
- Evolutionary Significant Unit
  - Recent genetics work also suggest timing of breeding/run tied to specific genes
- Historic distribution in the Merced River system
  - “Mariposa Region” likely to El Portal but not Yosemite Valley or Wawona
  - Old reference: “red-headed eagle [vulture?] eating a salmon carcass near Wawona – Galen Clark era

CDFW
Smallmouth Bass – *Micropterus dolomieu*

- Stocked as a sport fish in reservoirs but adapt well to rivers
- Prefer crustaceans and inverts but opportunistic
- Common in Merced River
Sierran treefrog - *Hyliola [Pseudacris] sierra*

- Most common amphibian in the Merced River corridor
- Common throughout the west (Baja to Alaska)
- Distinct ‘ribbit-ribbit’ call aka Hollywood frog
Western toad – *Anaxyrus [Bufo] boreas*

- Most rapidly declining species in the West – Stebbins
- Uncommon along the Merced River
- At SF Merced known to delay breeding until post-peak flows
Foothill Yellow-legged frog – *Rana boylii*

- Only known to occur in Sherlock Creek drainage
- More common in Tuolumne River and tributaries – less bullfrogs
- State Listed – Threatened
- Considered for federal listing under ESA
California Red-legged frog – *Rana draytonii*

- Federally threatened
- Formerly in Piney Creek, Smith Creek and Jordan Creek
- Introduced into Yosemite Valley
- Possible in time it will find its way to tributaries outside of the park downstream
American bullfrog – *Lithobates catesbeiana*

- Not native west of the Rockies
- Invasive predator
- Successfully eradicated from Yosemite Valley
- Merced River strongholds include Briceburg to Railroad Flat and Hites Cove on SF Merced
- Tadpoles need permanent water for two years
Limestone Salamander – *Hydromantes brunus*

- Endemic to the Merced River Canyon (McClure Res. to SF Merced)
- Lungless salamander
- Very specific habitat requirements, wet
- Possibly indicative of a wetter past
- Evolved from Mt Lyell salamander
- Squared toes for climbing vertical wet walls and a strong muscular tail that aides in climbing
Sierra newt – *Taricha sierrae*

- Poisonous skin secretions – tetrodotoxin
- Evolutionary arms race – garter snakes
- Long-lived >20 years
- Bsal (*Batrachochytrium salamandrivorans*) – not in U.S. yet
Western Pond turtle – *Emys marmorata*

- Only native turtle to California
- Long-lived 50-60 years
- Low abundance in Merced River
- More common in NF and SF Merced
American beaver – *Castor canadensis*

- Unknown history in the Upper Merced River
- No historic species accounts in Yosemite Valley
- Common below McClure and McSain Reservoirs
- First observed in El Portal region in late 1970’s
- Migrate about 2-3 miles a year
- Seen in Yosemite Valley in 1990s
- Appear to be well-established in Merced River Canyon
North American River otter – *Lontra canadensis*

- Well established in San Joaquin River and lower Merced River
- 2014 (drought) first observation near Arch Rock Entrance Station
- Recent estimates 4-10 otters in Merced River
- Appear to be established in Upper Merced River System – Yosemite Valley and SF Merced to Wawona
- Possible association with beaver establishment and presence
The River Canyon as both a Migratory Corridor and Migration Barrier
Roads and Railroads
There's a long and dangerous road (literally) for newts to mate

It's newt migration season and the slow-moving amphibians are trying to make it to their breeding grounds. There is just one problem. A number of roads are in the way.

- Newts and roads
- Newts absent in Yosemite Valley (roads and bullfrogs?)
- Incline Road – El Portal
- Migration peak January – February
- Breeding March-April
Yosemite toad migration corridor
Highway 108 – Sonora Pass
Elevated Yosemite Toad Bridge over Forest Service Road – Sierra Nat’l Forest
Yosemite Toad Trail Re-routing
Considerations for high use areas and wildlife corridors
Identifying wildlife hotspots and migration corridors
Signage and Temporary Closure Considerations
Road brining

Figure 2. Highway Anti-Ice Treatment (Caltrans)

Figure 3. Brine Tanker Anti-Icing (Caltrans)

Brine Pre-Wet Treatment
New and Used Tire Leachates

- “Urban run-off mortality syndrome”
- 6PPD-quinone – ozone antioxidant
- Leaches from new and used tire wear
- Causes 40-90% mortality in juv Coho salmon
- Used tires proved more lethal to Rainbow trout