

NIMBUS AND AMERICAN RIVER FISH HATCHERIES

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Background

The American River flows out of the Sierras joining the Sacramento River on the western edge of Sacramento. Historically, it provided over 150 miles of spawning habitat for chinook (king) salmon and steelhead trout (a sea-run variety of rainbow trout). These fish migrated to the river from the ocean every year, to spawn and die by the hundreds of thousands. Modern humans, however, dammed the river for flood control, municipal water, power, irrigation, and recreation. With the construction of the Folsom and Nimbus dams in 1970, upstream spawning habitat was cut off or destroyed, leaving only the lower river for the fish and threatening the runs of salmon and steelhead with extinction. The lower American River is now an urban stream with regulated flows and intense recreational use. Yet large numbers of fall-run chinook salmon still manage to use the lower 28 miles of river, often providing a spectacle of spawning fish that is a reminder of the vast runs that once used all Central Valley rivers.

Because dams eliminate large amounts of salmon habitat, dam builders are usually required to provide *mitigation* for the lost fish, so commercial and sport fishers can continue to fish. When the dams were built on the American River, it was assumed that the lost wild salmon and steelhead could easily be replaced by fish raised in a fish factory. As a result, Nimbus Salmon and Steelhead Hatchery was constructed by the U.S. Bureau of Reclamation, the dam-building agency. It is operated by the California Department of Fish & Game with funding from USBR. The CFG website describes the hatchery well.

Both chinook salmon and steelhead trout are *anadromous* fish, meaning that they spawn in fresh water but spend most of their lives in the sea. Chinook salmon, as with all Pacific salmon, spawn once and then die. Today only fall-run chinook are left in the river, spawning from late October through December, with a peak in November. Steelhead can spawn several times and reach a peak of spawning activity in January, February, and March. As adult salmon and steelhead reach the area around Nimbus Dam, they are diverted by means of a small dam (a fish weir or rack) to a fish ladder, which leads into a holding pond. Because the salmon are going to die within a short time anyway, hatchery personnel kill the spawning fish before removing their eggs and sperm (milt). Removal of steelhead eggs is facilitated by injecting compressed air via a syringe; adult fish are then returned to the river.

American River Hatchery, located immediately west of Nimbus Hatchery, is run by the California Dept. of Fish & Game is used primarily to propagate trout for inland fisheries. It differs from Nimbus hatchery in that it is a rearing unit only, i.e. it does not raise trout from eggs. This hatchery (obviously somewhat of a misnomer) receives its fish, mostly rainbow trout, at fingerling (2-4 in) size from other state hatcheries and rears them until they are large enough to be planted in lakes and streams to support sport fisheries. The fish reared in this facility are domestic-strain trout, the result of decades of selective breeding for fish that thrive in cement troughs. They are every bit as domesticated as cows and chickens.

For more background on American River salmon, download the PDF file at

Best Time to Visit

The exact peak of activity at Nimbus hatchery varies from year to year but spawning salmon are generally most abundant from mid-October to late November. On weekends the hatchery can be quite crowded so, if possible, you may wish to consider a weekday trip. If you'd like to verify that you've chosen a good day to see the operations, you can call the hatchery at (916) 355-0666. Both hatcheries are open from 7 - 3 seven days a week.

Length of Trip

This field trip consists of a 29 mile drive and a self-guided tour of Nimbus Salmon and Steelhead Hatchery. After completing your tour of Nimbus operations you should walk to the west and observe the trout in the raceways of the American River Trout Hatchery. You should also walk along the trail provided below the hatchery and observe natural spawning habitat. If you are lucky, you may even observe spawning activity. As the season progresses, carcasses of spawned-out adult chinook are often seen in the river or on the banks. Turkey vultures (black) and gulls (white) can be observed feeding on the dead fish. Bring binoculars for close-up observations and a camera for scenic photos.

It is possible to complete the entire trip in about 3 hours, although spending more time at the hatcheries will certainly increase your understanding of this aspect of fish culture and conservation; the recommended trip duration is 4 to 5 hours.

TRIP GUIDE

Mileage

0.0 Mace Blvd. on-ramp to Interstate 80 East

Begin recording mileage where Mace Blvd. crosses Interstate 80, on the east edge of Davis; drive East on I-80.

3.2 Large sign on right, for Yolo Basin Wildlife Area

You are now crossing over the newest and closest (to Davis) wildlife area in California, home to thousands of migratory ducks and geese in winter and a wide variety of nesting birds in summer. The area is open to the public and has driving, biking and hiking trails. It may not look like much from the freeway, but it is really a great place to see wildlife. Even President Clinton had a tour when he was in office. A self guided tour is available on the same website as the present guide.

3.5 Yolo By-pass

The section of Highway 80 on which you are driving is known as the Yolo Causeway, because it is elevated to cross over a floodplain that was deliberately constructed by the Army Corps of Engineers to prevent Sacramento from flooding, as an alternative to building more dams upstream to control floods. It works remarkably well, as any one knows who has driven across it during a wet winter when the By-pass becomes a sprawling river. When dry, most of it is farmed with rice, corn, and other crops, although

large pieces are now used as wildlife areas as well. Even before portions officially became managed for wildlife, thousands of ducks and geese would overwinter in the By-pass. When flooded, the By-pass is an important rearing area for juvenile salmon and spawning area for splittail and other native fishes. Putah Creek flows through the By-pass and connects to the Toe Drain beneath the levee on the eastern side. This connection allows chinook salmon and steelhead to find their way into the creek to spawn.

6.2 End of causeway

The channel on the west side of the levee is the Toe Drain, which connects to the Sacramento River. Anglers on the bank are fishing for sturgeon, catfish, striped bass, and other fishes.

6.5 Follow Business 80/U.S. 50 East toward Lake Tahoe

10.0 Sacramento River

This stretch of the Sacramento River has suffered a near-complete loss of riparian vegetation, with concomitant effects on wildlife. Two bird species have suffered a near complete population collapse due to the loss of riparian vegetation: the yellow-billed cuckoo and the Bell's vireo. The last confirmed nesting of the cuckoo in the Sacramento area was in the late 1950s. Still, the river here is a major migration corridor for salmon, steelhead, sturgeon, and other fishes. When you get to the concrete spaghetti, keep heading due East on Highway 50 (Placerville).

10.5 Deciduous vegetation associated with Sacramento suburbs

From this point until you exit at Hazel Ave., you will see vegetation dominated by tall deciduous trees, mostly species native to the eastern U.S. and Asia, sustained here by summertime irrigation. What kinds of differences in wildlife species would you expect between this area and one further removed from human influence (For example, where are you most likely to see alien birds like pigeons, starlings, and house sparrows?)

28.0 Hazel Rd. exit; turn off freeway then left on Hazel Rd (heading north).

28.7 Nimbus Road; turn left at second light

As you approach the hatchery, notice the piles of stones along the road. These piles provide evidence of California's golden past: they are the spoils left over from the dredging for gold which took place in and along the American River. In fact, both the American River and Nimbus hatcheries are built on stone terraces left over from 19th century mining activity. The mining nearly destroyed the salmon and steelhead populations but they partially recovered once it ceased.

28.9 Hatchery entrance; turn right into parking lot

The first place you are likely to walk through is a large area of cement raceways that are filled with fish. At this time of year (October-November) the fish are juvenile steelhead (anadromous rainbow trout). Watch the steelhead in their tank and feed them trout chow from the dispenser. How much do you think their behavior resembles that of steelhead the same size in a stream? Note that the mesh that covers the raceway area protects the fish from predatory birds. Now wander around the hatchery, including the fish ladder coming into the hatchery, and visitor's center reading the signs and other informational material, as well trying some of the interactive displays in the visitor's center. Watch and listen to the reactions of kids and adults to the material presented. It is worth watching the video that shows hatchery operations. If docents are present while you tour the facility,

do not hesitate to ask them questions regarding hatchery operations and philosophy. What general messages do you think are being provided by the information available?

After you have finished touring the facility, take the short trail that is provided to walk along the river. You are walking on old piles of dredge spoils from gold mining days; dredging for gold literally turned the river bed upside down at this point, putting the biggest rocks on top. I recommend that you go beyond the end of the official trail and follow the paths along the river to get better looks at salmon and birds.

When salmon numbers are high, you will see fish crowded in the water along the bank, many trying to swim up into effluent from the hatchery that leaks out of the bank. See if you can observe the big red hook-nosed males, the more demure banded females, and the small (<16 inches) jacks, small males that come back to spawn after only a year at sea. You should also be impressed with the large number of fish-eating birds that come to enjoy the salmon, helping to recycle nutrients. One the wire across the river you will typically see large dark *double crested cormorants*, as well as white gulls. This is great place to learn how to identify gulls because as many as seven species can be seen here on one day, in adult and juvenile plumages. The commonest gulls are *herring gulls* (large), *ringbilled* and *California gulls* (medium) and *shortbilled (mew) gulls* (small, with short beaks). Other conspicuous birds include *crows*, *turkey vultures*, *great blue herons*, and *great egrets*, although many other birds are present as well.

Once you have finished the tour, find the American River Parkway and walk or bike down it a ways, admiring the river and riparian plants. Many salmon and steelhead spawn in the river still and the relative importance to fisheries of naturally spawned fish versus hatchery spawned fish is a hotly debated topic. You should be able to see salmon spawning or swimming in the river. You will also see carcasses of salmon that have spawned and died. Another good place to see salmon in the river is from the pedestrian bridge at Goethe Park downstream. The park exit is signed on Highway 50.