

**State of California  
California Department of Fish and Wildlife  
North Central Region**

**Mokelumne River, Amador and Calaveras Counties**

**2013 - 2015 Angler Survey Box Analysis**



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**Introduction**

The Mokelumne River (Mokelumne) is a highly regulated river managed by Pacific Gas and Electric (PG&E). The Mokelumne River is not only used for hydropower by PG&E but is managed by East Bay Municipal Utility District (EBMUD) for water usage for the eastern part of the San Francisco Bay. The Mokelumne and the watershed originates from snowmelt and rain collected on the western slope of the Sierra Nevada mountain range. The Mokelumne drains into Pardee Reservoir (Pardee), then Camanche Reservoir after which it flows into the Central Valley and into the Delta. The Mokelumne is open all year to the public with the standard regulation of five trout per day with 10 in possession from the Highway 49 bridge to Pardee Reservoir and open from the last Saturday in April through November 15 above the Highway 49 bridge.

California Department of Fish and Wildlife (CDFW) fish files indicate the Mokelumne was stocked between 1930 and 2008 by CDFW for recreational fishing but hasn't been stocked since 2008. Historically, the Mokelumne was planted with rainbow trout (*Oncorhynchus mykiss*, RT). Currently there is a wild population of rainbow trout, brown trout (*Salmo trutta*, BN), and kokanee salmon (*Oncorhynchus nerka*, KOK) in the section below the Electra Powerhouse and above Pardee.

In order to assess the fishery, CDFW installed four angler survey boxes (ASB) along the Mokelumne. One was installed just downstream of the 49 bridge at Big Bar while the remaining three were placed between the Electra Powerhouse and the 49 bridge (Figure 1). Anglers voluntarily fill out a survey sheet after they complete their fishing trip, and deposit it in the box. CDFW uses the data collected to assess angler satisfaction, species composition, and general angler statistics on the Mokelumne. This report covers the data collected from the Mokelumne's ASB from 2013-2015.

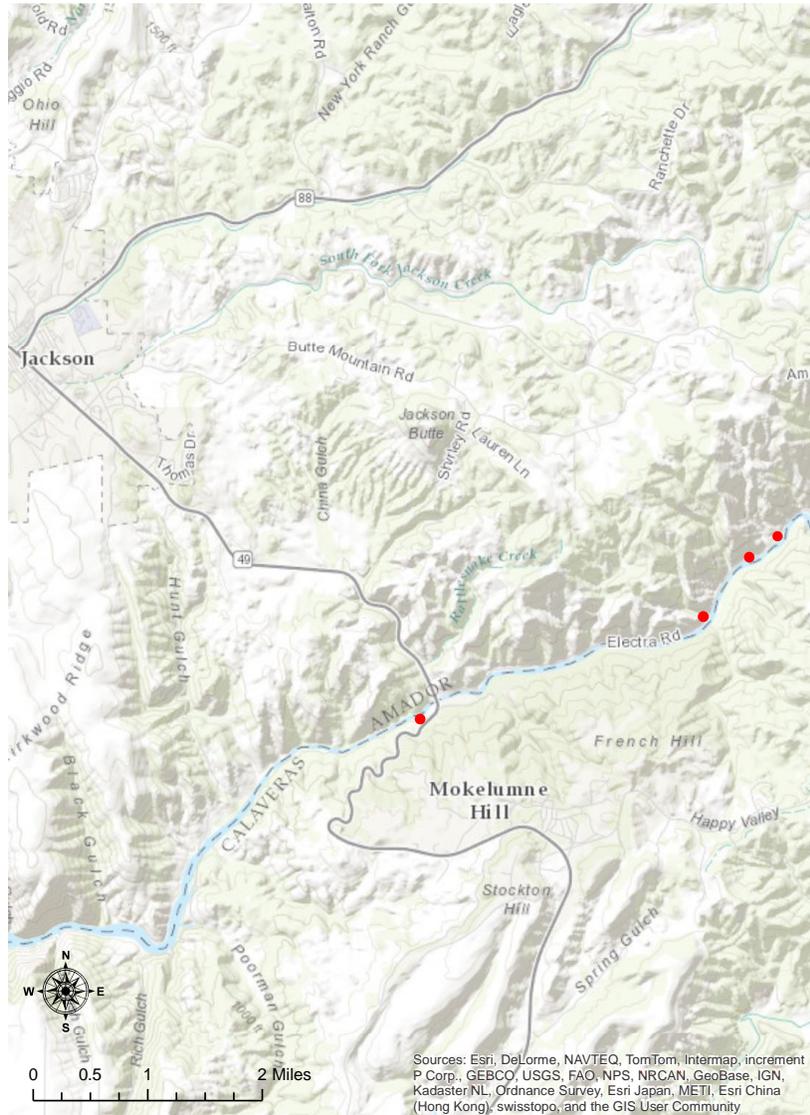


Figure 1. Mokelumne River ASB locationst (Amador and Calaveras Counties, CA)

## Methods

Anglers were asked to fill out a voluntary survey form about their fishing experience. The survey asks anglers for information regarding hours fished, type of gear and method used and the number of landed (kept and released) fish. They were also asked to record the size and species of the fish landed. Finally, anglers were asked three questions, and their answers were recorded on a scale of -2 to 2, with “2” representing most satisfied and “-2” representing least satisfied. The questions pertain to

satisfaction of overall angling experience, size, and number of fish. The back of the survey form is reserved for anglers who have any additional comments.

## Results

From 2013 – 2015 a total of 28 anglers responded to the survey. Cumulatively, these fishermen landed a total of 18 fish, while putting in 88.8 hours of fishing (0.20 fish/hour). The catch per angler was 0.64.

Anglers used bait, lures, and flies while fishing the Mokelumne (Table 1). Eleven anglers (~39%) used bait to catch fish, and had a catch rate 0.45 fish per angler. The least frequent known methods were lure fishing and multiple-methods, in which only 14% of the anglers reported using each, respectively. Anglers that didn't record their angling tackle method had the highest catch rate of 3.5 fish per angler.

Table 1. The frequency of anglers that used each angling method and their corresponding catch rates from 2013 - 2015.

Angling method	Number of anglers	Catch per angler
Bait	11	0.45
Lure	4	0.25
Fly	7	0.28
Multiple	4	0.75
Not recorded	2	3.50

For the entire period eight RT, five BN, and five KOK were reported to be caught (Figure 2). Kokanee only showed up in 2013 when anglers reported catching two KOK in the 8-9.9" and three in the 10-11.9" size classes.

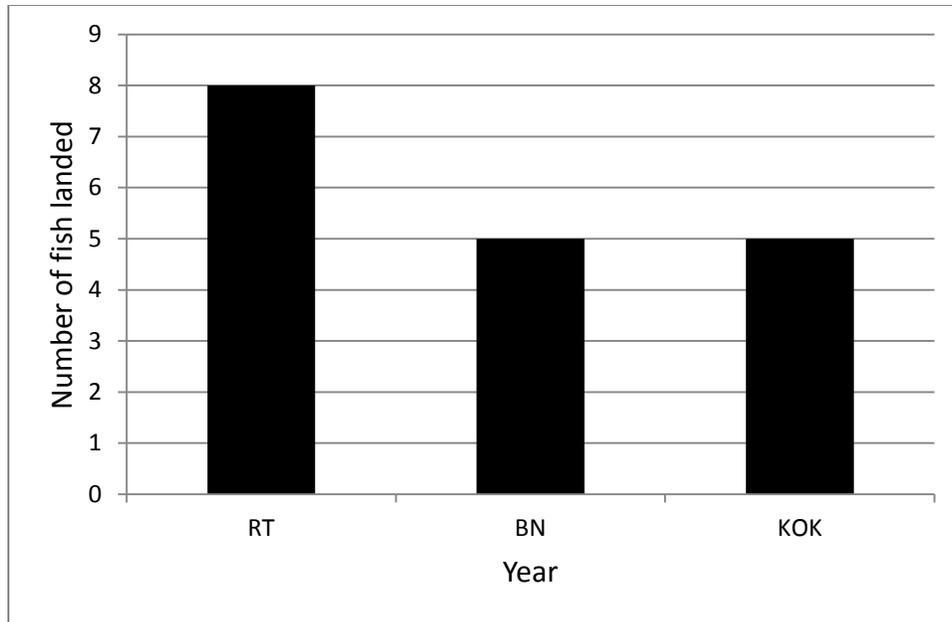


Figure 2. Number of each species of fish caught from 2013 through 2015 on the Mokelumne River.

ASB data showed that 56.5% (13 fish) of the landed trout measured less than 12 inches in total length (Figure 3). Sixty-one percent of landed fish that were recorded as kept or released were released.

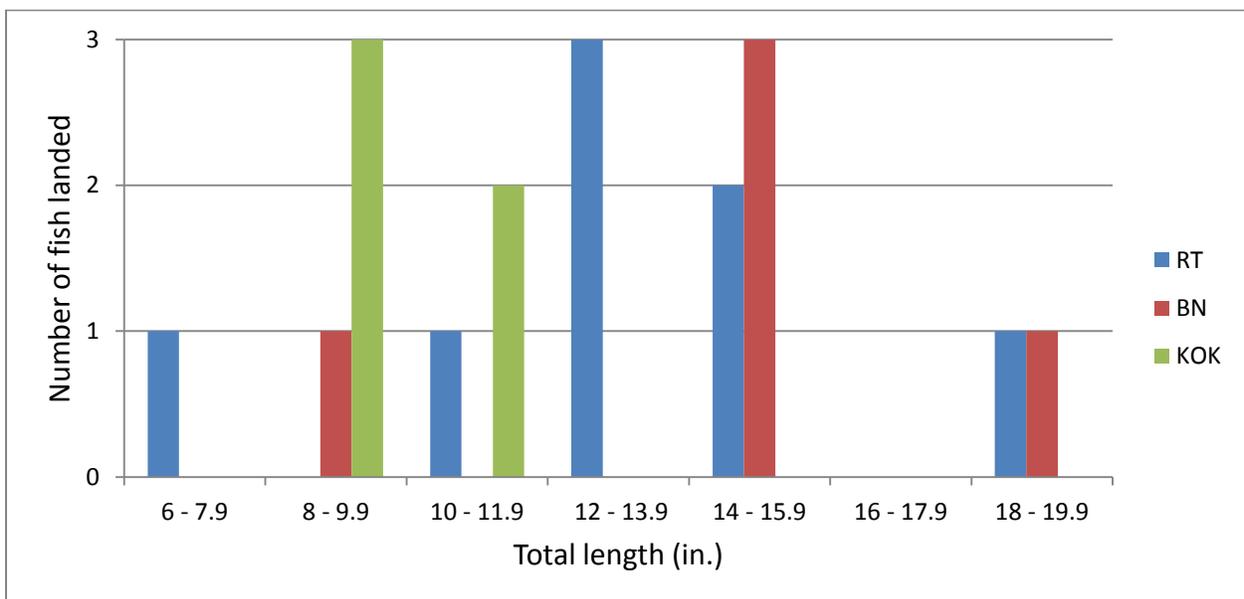


Figure 3. Frequency of trout in each size class that anglers reported landing on the Mokelumne River from 2013-2015.

Anglers reported being unsatisfied with their overall angling experience with a -0.54 value. When reporting their satisfaction with the number of fish caught, anglers had a positive experience with a 0.40 value. Anglers were also satisfied with the size of the trout caught with a 0.50 value reported.

## **Discussion**

The data gathered from the Mokelumne ASB has shown anglers to have caught at least 0.64 fish on average per angler. The number of respondents in the three year period was low, which did not provide a lot of data for CDFW to gather information from. With more respondents, CDFW could gather more precise information on whether the fishery is satisfactory or unsatisfactory for anglers. It is essential CDFW maintain the trend of increasing angler participation in the ASB survey, as it provides information on complete fishing trips. CDFW staff should continue to notify anglers of the ASB at the Mokelumne, and how helpful angler participation in the survey is.

Catch rates for anglers using multiple methods of tackle had the highest known method of catch per angler. There were only four anglers using multiple methods of tackle and there were 24 or more anglers using other types of tackle. These few multiple methods anglers could have been more skilled at fishing this river, resulting in a much higher average catch rate.

ASB surveys have shown more RT than BN captured by anglers. CDFW has not planted the Mokelumne since 2008 when 1,500 lbs. of RT were put in, but EBMUD continues to put a large allotment of one to three pound RT into Pardee. This might suggest why more RT are caught but data also indicates that the wild BN population in the Mokelumne is in good condition with a fair number of that species being caught.

Almost 57 percent of fish caught in the Mokelumne measured less than 12 inches in total length. This might suggest why the majority of fish reported landed were released. Anglers were satisfied with the size of fish they were catching even though the sizes caught were not very large. EBMUD has been planting one to three pound RT from private aquaculturists into Pardee in the recent past. However, anglers are not reporting catching many of these larger fish going up the Mokelumne, which is a tributary to Pardee. The RT could potentially be staying in the reservoir after they are planted, thus not giving anglers fishing the Mokelumne an opportunity to catch them. The section of the Mokelumne where the ASB's are located is a highly regulated stretch of water managed for hydropower by PG&E. The high flow variations that occur regularly throughout the year likely have a negative effect on the fishery.

Past CDFW snorkel surveys in 2006 showed large numbers of kokanee observed (Mehalik 2006), but only five have been reported being caught the last three years. A potential way to improve the fishery with greater numbers and sizes would be to decrease the number of ramp-up and ramp-down flows on the river. The four years of drought the state has endured might also be contributing to the low number of anglers seen since lower flows and increased water temperatures might be increasing the number of salmonids seeking shelter in the cooler temperatures of Pardee.

The overall fishing experience for anglers was negative on the Mokelumne. Although the overall angling experience was dissatisfactory, anglers were satisfied with the numbers and size of fish caught. The dissatisfactory overall angling experience might not then have anything to do with actual fishing but outside factors such as weather, manipulated flows, fishing access, crowds, setting, etc.

## **Recommendations**

- When available CDFW staff should encourage anglers to fill out the ASB forms in future trips. The ABS information should be used to estimate angler CPUE, while possible future roving-roving surveys should be used to estimate the total number of anglers fishing at the Mokelumne.
- When possible, PG&E should try to minimize pulse flows and/or have more gradual increase/decrease in ramping rates.

## **References:**

Mehalik, Stephanie. 2006. Wild Trout Snorkel Survey Observation Form. California Department of Fish and Wildlife. California Wild Trout Fish Files. Unpublished. 1701 Nimbus Road, Rancho Cordova, CA.

