



## Understanding the economic value of angling on Clear Lake –

A profile of a famous Lake.

Summer 2016

### ABSTRACT

Clear Lake is renowned for its fishing. Both local and non-resident anglers provide economic benefits to the local community. This report uses existing information to create a profile of the real and potential economic value of fishing on Clear Lake. Suggestions are provided to improve the information base to create a more accurate profile of the true economic value of fishing.

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# Understanding the economic value of angling on Clear Lake – A profile of a famous Lake.

## *Introduction*

For those who regularly fish Clear Lake it is generally accepted that the lake provides one of the best warm-water fisheries in the world. Bass, crappie, catfish and bluegill thrive in this highly productive waterbody. Its warm water, rich plant life and abundant food supply support an unusually robust number of fish. For years Clear Lake has attracted both recreational and tournament bass, carp and catfish anglers hoping to catch a “fish of a life time”. Crappie populations tend to be cyclic and can attract literally hundreds of anglers when population numbers are high. Catfish anglers tend to be traditionalist favoring a favorite fishing hole, either from shore or from a boat. Bluegill (*Lepomis macrochirus*) offer youngsters an opportunity to enjoy the thrill of catching a fish with minimal gear and experience. Carp (*Cyprinus carpi*) offer archery buffs a chance to compete and test their skills.

Recently, Bass Master Magazine, arguably the leading voice of bass fishing in America, rated Clear Lake third out of the top 100 bass fishing lakes in the country. In the same issue, Clear Lake was ranked first in the nine western states (July/August 2016) placing it ahead of the Sacramento/San Joaquin Delta, Shasta Lake and Lake Casitas in southern California. This type of notoriety tends to attract the attention of serious anglers who value a quality fishing experience and are willing to travel to a fishing destination.

Recreational anglers that fish Clear Lake may travel from the Sacramento, Chico, Ukiah or Santa Rosa for a day-trip while those who fish tournaments may travel from other states and begin fishing several days prior to the one, two or three day event spending as much as a week in the community.

## *Economics of Fishing in America*

According to the American Sportfishing Association’s (ASFA) last national assessment (2011), fishing in America is estimated to be enjoyed by more than 33 million people annually (<http://asafishing.org/facts-figures/angler-participation/>). This assessment includes both salt and freshwater angling. This equates to \$48 billion in expenditures creating more than 828,000 jobs. Expenditures used in the economic assessment included sales of food, fuel, lodging, tackle, bait and other items. The report estimates that people spend an average of \$1,441/year on fishing. Additionally, those companies who support angling and their employees contribute an additional \$115 billion to the American economy.

### *California's Contribution to Angling Economics*

The same ASFA report ranks California fifth in the nation based on the value of fishing economics. They estimate 1.6 million total anglers with nearly 1.3 million freshwater anglers generating 17 million days of fishing. The report goes on to estimate that freshwater fishing generates \$1.4 billion in direct sales with \$2.7 billion generated using multiplier effect. The California industry generates \$921 million in salaries and wages; 22,000 jobs; and provides \$213 million in Federal taxes and \$198 million in state and local taxes. Needless to say, Californians take freshwater fishing very seriously.

### *Regional Fishing License Sales*

Fishing licenses are sold by the California Dept. of Fish and Wildlife (CDFW) under various categories to address the needs of the state's citizenry. License categories include resident, non-resident, lifetime, disabled veteran, limited day(s), Native American, and more. License statistics are available on-line through the Department's web page:

<https://www.wildlife.ca.gov/Licensing/Statistics#SportFishingLicenses>).

Table 1 shows California fishing license sales revenues from 2010 – 2015 (CDFW).

Table 1. California fishing license revenues 2010 – 2015. (source: Cal Dept. of Fish and Wildlife)

2010	2011	2012	2013	2014	2015
\$55.1M	\$53.8M	\$56.9M	\$58.1	\$56.9M	\$57.2M

Table 2 shows license sales for Lake, Mendocino, Sonoma, Colusa, and Sacramento Counties for 2014 (the last year available). These counties were selected based on the proximity to Lake County and the number of anglers who could potentially consider a one-day trip to fish on Clear Lake over the course of a year.

Table 2. Total license sales (all categories) for Lake, Mendocino, Sonoma, Colusa and Sacramento Counties for 2014 (source: CDFW).

County	Lake	Mendocino	Sonoma	Colusa	Sacramento	Total
License sales	8,553	7, 583	23, 510	1,929	67,147	108,596

### *Assessing Angler Presence*

The challenge in assessing angler occurrence or days spent fishing Clear Lake lies in the ease and openness of accessing the lake. Clear Lake's public boat ramps do not require daily ramp fees (except Clear Lake State Park) therefore there is no accounting of the number of boats entering the lake on a daily basis. Recreational angling requires no local permit to fish (other than a state fishing license) and residents can

fish several days a week without an accounting of their activities. There currently is no regular monitoring of daily angling pressure on the lake.

Consequently, data sources to determine fishing pressure on Clear Lake is very scarce. Sources available to help develop a profile of fishing activity must rely on: the daily logs of fishing guides who only account for a small percentage of angling pressure; the sale of invasive mussel vessel inspection stickers which only require inspection of non-resident vessels on a monthly basis providing no accounting of trips between inspections; resident mussel stickers are good on an annual basis so provide no accounting of daily angling activity; CDFW logs of fishing tournaments and participants provide a basis of information; and casual observations by those who are interested in the fishing on Clear Lake.

#### *Case Study – Crappie fishing on Clear Lake 2016*

The arrival of the internet has changed how anglers share catch information and fishing tactics and the speed in which information can be shared. The first half of 2016 provided an example of the speed in which information can travel, and the challenge of accounting for the economic impacts from fishing on Clear Lake.

For the first time in several years crappie (*Pomoxis* spp.) populations irrupted throughout the lake. Fish numbers and size astounded many long-time fishing veterans who had difficulty recounting when such a population cycle had been so pronounced and extensive. It soon became obvious that anglers seeking their 25 fish limits were coming from outside the area. Informal surveys conducted by the local fishing community determined that anglers were traveling from Sacramento, Chico, S. F. Bay Area, Fresno, and Sonoma County (pers. comm.) to pursue their catch. It became obvious from talking with anglers that the internet was the source of their information. Those locations that provided easy access to the lake e.g. private resort docks, public boat docks, CL State Park, soon became overwhelmed with anglers pursuing crappie causing some resort owners to limit the number of anglers permitted on their docks to limit both liability and damage from the weight of people sinking docks. Locations like Lakeside County Park (Kelseyville) literally had anglers pursuing crappie from dawn to dusk for several months (March-June). By mid-summer crappie numbers remain high, but near shore vegetation has limited shore fishing access and the number of anglers has declined dramatically, though those docks with access to open water still attract crappie anglers.

Unfortunately there was no way to account for the length of stay or monies spent while crappie anglers visited Clear Lake. Obviously, those visiting from Fresno, or even the south portion of the Bay Area very well could have stayed for more than one day. To say that *thousands* of anglers visited Clear Lake to pursue crappie is not an over-statement. In one day, Terry Knight (*pers. comm.*) reported over 120 people fishing

from one bridge in CL State Park. That level of fishing pressure remained relatively constant for nearly three months.

*Bass – The king of warm water fish.*

Experienced anglers recognize the depth of interest in freshwater bass (*Micropterus* sp) fishing in this country. Several cable TV stations devote sizable amounts of air time to broadcast fishing shows focusing on bass fishing. Merchandizers spend tremendous energy in getting anglers interested in purchasing their products i.e. clothing, rods, reels, lures, boats, motors and other outdoor accessories; National organizations and businesses promote and sponsor major bass fishing events and tournaments i.e. ESPN, Wal-Mart, Shell Oil, and others. For Clear Lake to be recognized as one of the top bass fishing destinations in the country should not be considered a trivial matter.

Largemouth Bass  
(*Micropterus salmoides*)



*What we know about Clear Lake bass fishing demographics.*

Though scarce, available data can be used to develop a profile of bass angling on Clear Lake. One data source, tournament events, provides an accounting mechanism administered by the CDFW. The Department tracks the number of events registered for Clear Lake by: contest days, number of fish caught and weighed, total weight of the fish weighed, the number of competitors who registered for the events, and the number of hours it took to catch the reported fish. This is one of the few data sets available to analyze fishing success. Table 3 provides selected Clear Lake Largemouth Bass (*M. salmoides*) tournament data for 2015. (<https://www.wildlife.ca.gov/Fishing/Inland/Contests> ).

Table 3. Tournament data for Clear Lake - 2015 (source: CDFW).

Contest Days	Total Fish Weighed	Total Fish Weight	Number of Competitors	Total hours of effort
121	9695	33,744	2709	34,015

In many cases (weekends) several tournaments are occurring simultaneously with several locations on the lake serving as the starting and ending points for the event i.e. Konocti Vista Casino, Lakeside County Park, Redbud Park, and others.

Further examination of data provides an understanding of the temporal distribution of anglers competing on the lake. Figure 1 examines tournament data in the years 2010-2015 showing the distribution of tournaments and participation throughout the year. The months of April and May show more “contest-days” than the number of days in the month due to multiple contests being held simultaneously.

Fig. 1. Synthesized distribution of fishing tournament “contest-days” held on Clear Lake. 2010-2015 (source: CDFW).

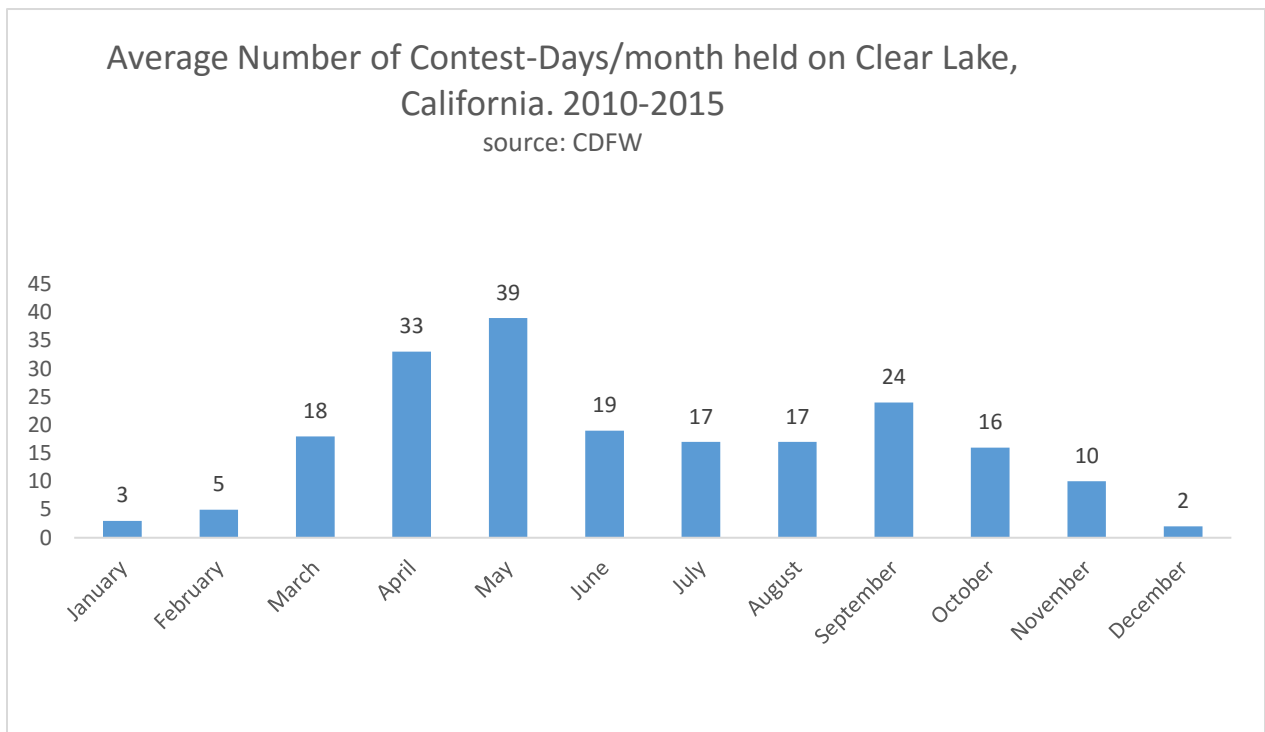
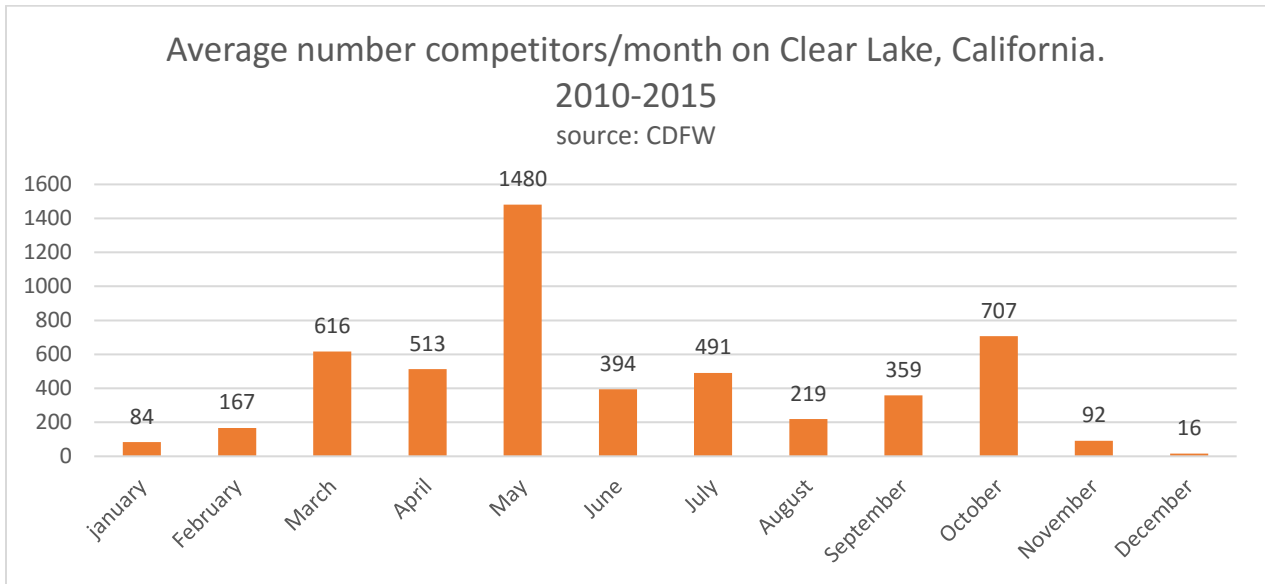


Figure 2, shows the distribution of tournament anglers by month. Though more events occur in the spring months, the data shows a relatively stronger participation by anglers in the second quarter of the year. The months March, April and May represent the “pre-spawn” and “spawning” time for largemouth bass, a preferred time by many to fish for the species.

Fig. 2. Distribution of tournament anglers on Clear Lake by month: 2010-2015. (source: CDFW).



The drop in tournament events and anglers during June, July and August is due to a number of factors. Starting in June, tournament durations drop from unlimited to six hours (to protect fish in warmer water); summer air temperatures can be extreme on anglers; non-angling boating pressure can affect fishing; and water quality conditions on Clear Lake can be challenging.

September and October experience an increase in tournament activities as summer temperatures begin to wain and tournament hours are once again extended beyond the 6 hour limit.

Competitive angler demographics are varied, some competitors more serious than others, few are full time competitive anglers. Most who compete do so as a complement to the annual income, and for the enjoyment of competing. As with any competitive sport, winning is not guaranteed and few competitors make their living from fishing tournaments.

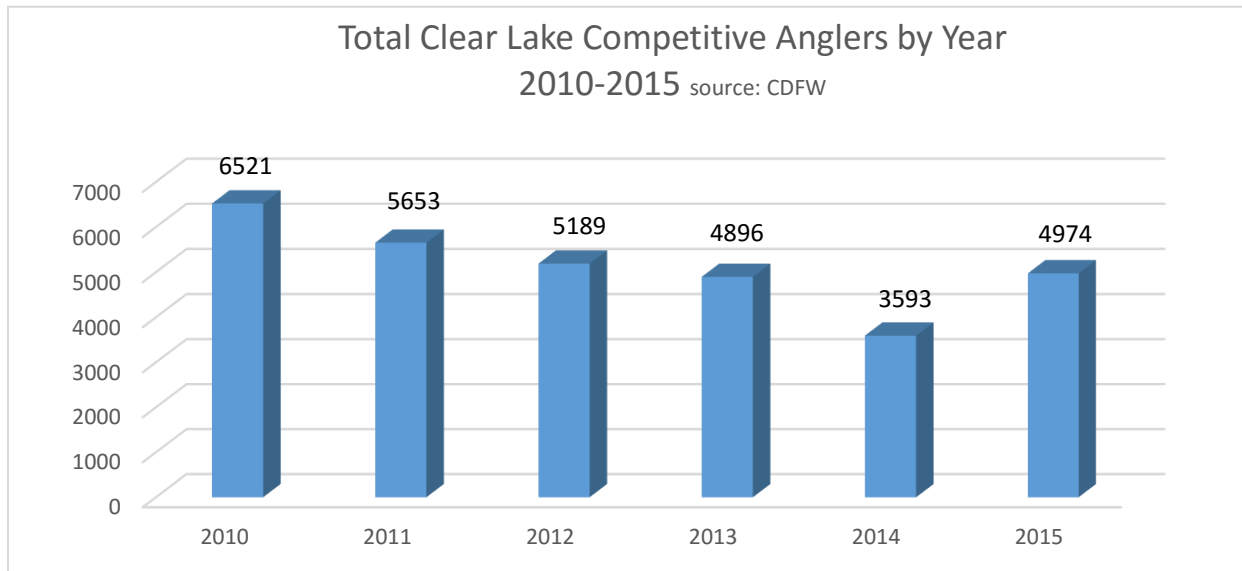


Channel catfish (*Ictalurus punctatus*). Photo by: Amber Manfree



Black Crappie (*Pomoxis nigromaculatus*). Photo by: Gary Riddle

Figure 3 provides a profile of the number of competitive anglers per year that come to fish Clear Lake.



*Non-tournament fishing demographics.*

Tournament anglers must register with the tournament Directors prior to fishing and the Directors must report their tournament participation to the CDFW. Hence, this system produces a fairly reliable source of information. The same cannot be said for non-tournament fishing activities as fishing on Clear Lake is not monitored.

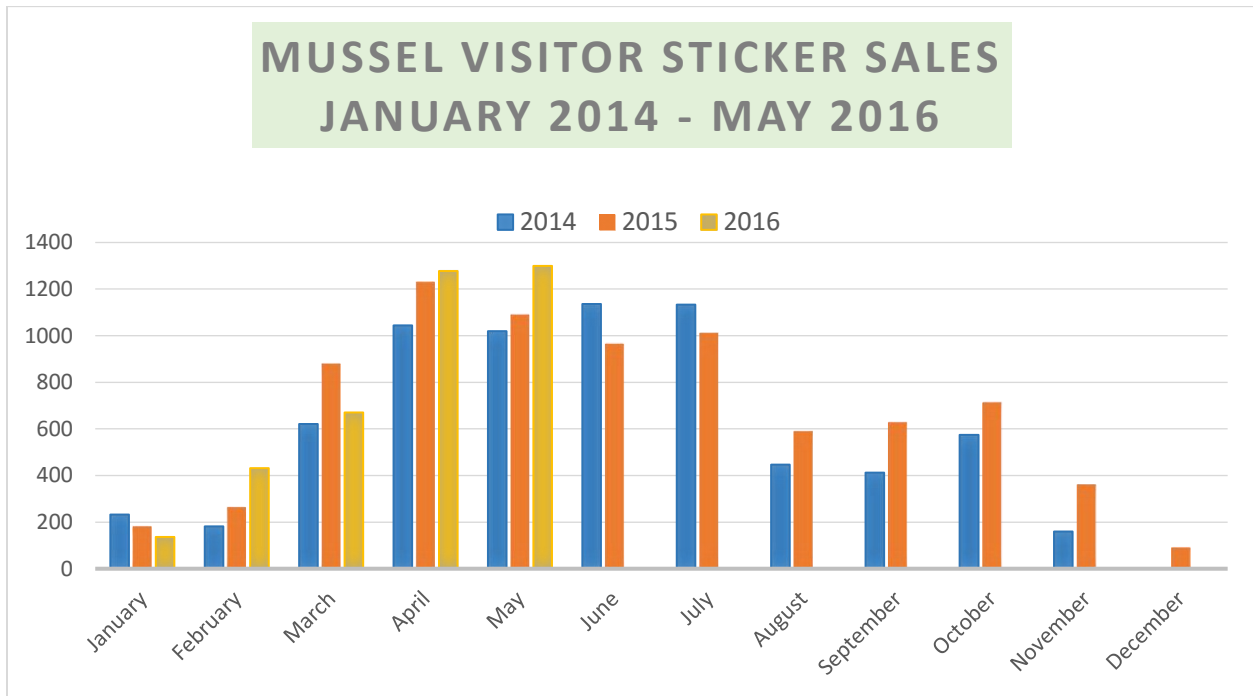
Using the sale of invasive mussel interception/inspection data can be used to extrapolate lake access information from those months not typically considered “boating” months (summer) (Fig. 4). This data includes any non-resident boat that must be inspected prior to launching on Clear Lake. Consequently, these numbers reflect both tournament and non-tournament boats.



View of Mt. Konocti a recognizable landmark on Clear Lake.



Fig. 4. Distribution of vessel interception/inspection sticker sales 2014-2016 (partial). (Source: County of Lake, Dept. of Water Resources).



This data demonstrates the months of March, April and May as being the most attractive months for non-resident boaters. It is a safe assumption that most of the non-resident boats coming to Clear Lake in these months are coming for the fishing. The difference between this data and the CDFW tournament angling data, is that these numbers reflect *boats* not *people*. In most cases, there are generally two anglers (maybe 3) per boat. Using a formula of two anglers per boat, the months of April and May could have as many as 2600 non-resident anglers/month on the lake. What is not determinable from this data is since non-resident boaters only need to have their boats inspected monthly, there is no way to extract how many consecutive days are spent fishing or staying in the community following the initial inspection, or if the boat returned later in the same month, and how many times they did so.

The months of September, October and November demonstrate a similar upward trend as the tournament contestant numbers. Late summer, early and mid-autumn months are again attractive to bass anglers as water and air temperatures begin to cool, lake water quality begins to improve, and non-angling boating pressure on the lake is diminishing.

December and January are historically quiet fishing months for Clear Lake as weather and water conditions are not often conducive to a pleasant fishing experience.

## *Lake County's Fishing "Industry"*

**Guide Services** – CDFW statistics for licensed fishing guides in Lake County identify 13 individuals who are currently licensed as fishing guides. As with any private business enterprise, some guides are more aggressive at marketing their business than others. Most offer four or six hour trips, taking two or three anglers/trip. Some charge \$50/angler/hour, while others have a flat fix rate for the number of anglers in the party e.g. \$260 for 2 anglers for 4 hours. In almost all cases, guide services are obtained by non-residents anglers. Guides provide the boat, fishing gear and fishing instruction.

**Retail Outlets** – There are currently four full-time tackle stores operating in Lake County: two in Lakeport, one in Clear Lake and one in Clear Lake Oaks. These shops provide full service retail services to their customers; are often involved in assisting in tournament events; and are helpful in providing instructions and tips to their customers.

It is not unusual to see most “mini-marts”, gas stations, convenience stores and other relatively small retail outlets offering some limited fishing tackle and/or bait to their customers. Three relatively large retail outlets exist in Lake County; K-Mart (Lakeport), Wal-Mart (Clear Lake), Kelseyville Lumber (Kelseyville) that offer fishing tackle for sale. Though each provides tackle for sale they offer little in the way of fishing instruction or guidance to their customers.

Collectively, these outlets represent several business that support fishing activities in Lake County. Though not a major component of their business plan, other than the tackle shops, fishing represents a portion of their sales, particularly those that sell soda, beer, food and fuel.

### *Estimating economic expenditures*

The USFWS 2011 report estimates that the average California angler's trip expenditure per day is approximately \$58.16. Using monthly non-resident vessel inspection permits, (limiting the number of anglers per boat to 2) with the daily fishing trip expenditure for one month as a multiplier, (April 2014, 2015 and 2016) results in an approximation of total daily angling expenditures for the month (Table 4).

Table 4. Estimated non-resident angler expenditures using a monthly average for April (2014, 2015, 2016) comparing vessel inspections and anglers/boat.

Year	2014	2015	Jan – June 2016	3 - year average of angler number	Estimated angling expenditures
Number of vessel inspection sticker sales	1044	1230	1278		
2 anglers/boat	2088	2460	2556	2368	
Expenditure X no. of anglers =	\$58.16 x 2368 =				\$137,722.88

Using the USFW report’s formula it is assumed that the three-year average (2014, 2015, half of 2016) resulted in approximately \$137,722.88 in angler related expenses for those fishing Clear Lake for one month. Using the same formulation Table 5 provides estimated expenditures for the other months considered most attractive to anglers.

Table 5. USFWS formula to estimate angler expenditures for Clear Lake. Here the average number of non-resident vessel inspection sticker sales (2014, 2015 and half of 2016) multiplied by the estimated number of anglers per boat (2).

Month	January	February	March	April	May	Sept	Oct	Nov	Dec
Monthly inspection average	183	292	723	1230	1136	520	643	260	91
Monthly angler average	366	584	1446	2460	2272	1040	1286	520	182
Estimated angler expenditures	\$21,286	\$33,965	\$84,099	\$137,722	\$132,139	\$60,486	\$74,793	\$30,243	\$10,585

Again, the source of these values are the monthly non-resident mussel inspection sticker sales and must be considered extremely conservative as they can only assume and account for one-day visits, once per month. With that said, non-resident angling is estimated to generate at a minimum \$585,318 annually.

The only source of local angler data is the number of fishing license sales. Obviously, this data does not provide an accurate profile of angling activity or even if license holders fish Clear Lake. However, for the

purposes of this report it is assumed that each Lake County resident who holds a fishing license will spent at least the estimated daily fishing-related expenditure value over the course of a year (\$58.16). Since 6,498 residents possess a fishing license it is estimated that their combined annual expenditures on fishing is at least \$377,923.68.

When taken together a *conservative* estimate of resident and non-resident fishing related expenditure values for fishing in Lake County is approximated at \$963,241.68 per year. It is probable that this estimate has under-valued the expenditures since the values are largely construed on the premise of one person, spending one day fishing. In the case of many tournament anglers this is often not the case as many will spend several days prior to the event to “pre-fish” as a means to improve their chances of finding fish while competing. Obviously, residents who fish Clear Lake most likely fish more than just one day/year. Finally, non-resident anglers are only monitored once a month when they have their boats inspected. Data for multi-day trips per month do not currently exist.

This report has taken a cautious and conservative approach to estimating the value of fishing to the local community. Regardless, of the final amount being expended, it is not an over-statement to suggest that fishing on Clear Lake is a “*million dollar industry*” and represents a vital component of the local economy. Given the conservative use of the available data, it is plausible that the true value of fishing on Clear Lake could substantially exceed the estimated values shown here. To fully appreciate the true value of fishing some measures should be consider for future development to expand the current knowledge base.

### **Summation**

- 1) Angler access information for Clear Lake is very limited and does not accurately reflect “time spent” on the water.
- 2) Mussel prevention inspection records suggest that (non-resident) anglers are the most common user-group on Clear Lake nine of the twelve months of the year.
- 3) Resident use of Clear Lake is not monitored and difficult to assess.
- 4) Existing surveys suggest that anglers generate significant financial resources (locally, regionally and nationally) to support fishing.
- 5) Though conservative, and most likely under-estimating its true value, data suggests that fishing on Clear Lake is *at least* a million-dollar-a-year activity.
- 6) A need exists to improve collection of angling and angler information to better address the needs of visiting anglers and to assist Lake County governments and the local business community to better incorporate anglers in their business and marketing plans.

### *Considerations to improve angling data, angler demographics and business opportunities*

- 1) Engage the “*fishing industry*” representatives to explore ways to increase awareness of the broader business community to recognize the value of fishing in Lake County and develop a strategic plan to acknowledge and recognize the value of anglers to develop a business, community-wide welcoming atmosphere;
- 2) Engage marketing expertise to explore co-mingling angling opportunities with other tourism based activities;
- 3) Free, voluntary angler surveys could be established at each of the major public launch ramps using “iron rangers” to collect angler information to better understand angler demographics.  
(Appendix 1);
- 4) Electronic traffic monitors at boat ramps would quantify ramp use, frequency, and assist in estimating maintenance costs;
- 5) Though less popular, boat ramp fees would provide an accurate accounting of launch activities and support maintenance costs.

### Citations and References

- 1) American Sportfishing Association’s (ASFA) Report (2011).
- 2) 2011 National Survey of Fishing, Hunting and Wildlife – Associated Recreation. U.S. Fish and Wildlife Service and U.S. Census Bureau
- 3) BassMaster Magazine July/August 2016
- 4) California Department of Fish and Wildlife – web based infomatics
- 5) Bassmaster.com best bass-lakes 2016

### Acknowledgements

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Appendix 1. Example of Angler Survey reporting forms to help assess angler activities and demographic. These could be distributed around the lake using “iron rangers” to disperse and collect data sheets.

Angler Survey

Please take a few seconds to help us better understand and manage the fish resources of Clear Lake.

Date: \_\_\_\_\_ Number of hours fished: \_\_\_\_\_

Hometown Zip Code: \_\_\_\_\_

Species	Caught	Released	Kept
Largemouth Bass	_____	_____	_____
Smallmouth Bass	_____	_____	_____
Crappie	_____	_____	_____
Bluegill	_____	_____	_____
Catfish	_____	_____	_____
Carp	_____	_____	_____

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