

2007-
2009

California Boater Survey

Executive Summary

A statewide examination of boating habits, environmental awareness and overall outreach and education program evaluation.



Presented by:
California Department of Boating and Waterways
California Coastal Commission
Santa Monica Bay Restoration Foundation
Keep the Delta Clean Program

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2007 – 2009 California Boater Survey Report

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Executive Summary

Background

This report presents findings of the boating education and outreach efforts conducted from 2007 to 2009 throughout California by the California Department of Boating and Waterways' (DBW) and California Coastal Commission's (CCC) Boating Clean and Green Program (BCGP), Santa Monica Bay Restoration Foundation (SMBRF), and Keep the Delta Clean Program (KDCP).

Purpose

Due to the shared technical and environmental goals encompassed within the BCGP, SMBRF and KDC; these project partners decided to conduct a statewide boater survey. The purpose of this survey was to collect information on boater practices that would be useful to the partners in their efforts to better orient education and outreach efforts, and to identify gaps in boaters' knowledge and the best ways to fill these gaps, without having to resort to speculation and assumptions.

By providing a snapshot of recreational boaters and boating behaviors in the State of California, the study's findings allow the project partners to develop more effective and accurate boater outreach and education.. The findings will also assist in developing new public education materials and targeting strategies to reduce potential sources of boat pollution. Lastly, this study will provide useful information for all boater education and boat-related pollution programs.

Primary Research Questions

The survey instruments used and the survey results presented in the following report evolved from a set of primary research questions developed by the project partners. These include:

1. What are the characteristics of California boaters?
2. How do boaters in California vary by region of residence?
3. How do boaters who are aware of and/or practice water pollution prevention measures differ from those who are unaware or do not practice such measures?
4. In what areas do boaters lack information/awareness of environmental laws and clean boating best practices?
5. Which boaters can water pollution prevention programs target in the future?
6. What types of educational outreach should such programs use?

Methodology

Between October 2007 and October 2009, project partners conducted a statewide survey of boaters about their attitudes, opinions and knowledge of various issues related to boating. A total of 5,735 surveys were administered.

For the analysis of the collected data, project partners divided the state into seven boating regions. Regions were based on DBW's *2001 Boating Facilities Needs Assessment Report*. The seven regions and the counties included in each region are listed in the following page.

California Region	Counties
San Francisco Bay Area	Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano
Central Valley	Amador, Calaveras, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Benito, San Joaquin, Stanislaus, Tulare, Tuolumne
Sacramento Basin	Butte, Colusa, El Dorado, Glenn, Lake, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Sutter, Tehama, Trinity, Yolo, Yuba
North Coast	Del Norte, Humboldt, Mendocino, Sonoma
Central Coast	Monterey, San Luis Obispo, Santa Cruz
South Coast	Los Angeles, Orange, Santa Barbara, Ventura, San Diego
Southern Interior	Imperial, Riverside, San Bernardino

Based on feedback received from survey respondents and through a re-evaluation of the original survey instrument, the survey was revised slightly in 2009 to reflect lessons learned from the 2007-2008 survey period (see Appendix A for the 2007 - 2008 and 2009 survey instruments).

The 2007-2008 and 2009 surveys were developed in conjunction with the Public Research Institute at San Francisco State University (PRI), KDC and the BCGP's Technical Advisory Committee, which is comprised of members in marine industry, boating associations (Recreational Boaters of California and Pacific Inter Yacht Club Association), and five KDC pilot marina harbormasters (Sugar Barge Marina, Discovery Bay Yacht Harbor, Lauritzen Yacht Harbor, Lazy M Marina and Bethel Harbor).

The surveys included questions about types of boats owned, boating activities (e.g. fishing, skiing, leisure cruising, etc.), frequency and location of boat use, sewage disposal habits, oil changing and disposal habits, boating experience, sources of clean boating information and a number of other topics.

During the 2008 and 2009 boating seasons (May through September), program staff attended boating events to distribute boater kits and administer surveys in person. Volunteer Dockwalkers¹ also played an integral role in distributing boater kits and collecting boater surveys. The goal was not only to survey boaters, but to educate them about clean boating and pollution prevention. Staff used these face-to-face opportunities to demonstrate the proper use of boater kit contents, as well as to answer any questions asked by boaters. This procedure ensured a high cooperation rate for the survey, because in order to receive a boater kit, boaters were first required to complete a survey. Due to the popularity of the boater kit, the vast majority of boaters recruited were happy to participate in the study, and most boaters were excited to learn more about safe and environmentally-friendly boating.

The information gathered from these surveys was entered and analyzed by an independent statistician and researchers with PRI at San Francisco State University. Most of the analysis presented in the following report relies on statistical tests, primarily the chi-square statistic, which measure whether apparent differences between sub-groups are large enough to consider them "statistically significant" rather than variations likely to occur naturally by chance. However, because these tests assume the presence of a random or probability sample, which was not used to collect the California Boater Survey

¹ Dockwalkers are volunteers who inspire and educate boaters and other recreators to be safe and environmentally sound while boating in California. They distribute boater kits with educational materials while visiting marinas, boat launch ramps, boat shows and events. The intercept survey method used provided a way to interact with boaters directly.

data, their use to evaluate sub-group differences here presents some challenges and should not be considered the only or final authority on whether variance signals meaningful difference. Likewise, the lack of evidence for sub-group differences in the analyses may be the result of non-probability sampling error. In general, when a non-probability sample method has been used, it is difficult to assess whether, or in what ways, those who participate in the study differ from those who do not. Thus, all findings are best viewed as particular to the given sample (i.e. boaters who participated) rather than representative of the entire population of interest (i.e. all California boaters). In consideration of these challenges, the following report focuses on large scale differences, avoids all analyses and interpretations based on fewer than 30 cases, and looks across sub-groups and sub-samples for consistent findings that may lend support to their validity.

The following summaries provide a descriptive snapshot of boaters surveyed and may not reflect the population of California boaters as a whole. Due to the purpose of this study and the sampling methodology used, the analysis to follow focuses primarily on motorized boaters.

Key Survey Findings

What Are the Characteristics of Surveyed Boaters and Boats on California Waters?

- **AGE AND EXPERIENCE:** About half (51 - 56 percent) of all boaters surveyed were age 50 or older and about three-quarters (73 - 77 percent) were age 42 or older. Only 3 - 5 percent of boaters were less than 26 years old. Over 80 percent had been boating at least 3 years and nearly three quarters (71 – 72 percent) had more than 5 years of experience. Less than 10 percent of those surveyed had less than a year of boating experience.
- **BOAT SIZE AND TYPE:** For those surveyed, ski boats and fishing boats were the most popular boats and together accounted for about half (51 – 54 percent) of the boats owned. About one-fifth (19 – 22 percent) were sailboats with auxiliary motors, and less than 15 percent were motor yachts. Although only a small number of the boaters own sailboats with auxiliary motors and motor yachts, they tended to use the boats the most. More than half (60 – 62 percent) of the boaters surveyed owned boats 20 – 39 feet long, 26 – 29 percent owned boats less than 20 feet long and a smaller percentage (11 – 12 percent) owned boats 40 feet or longer. Most of the trailerable boats (smaller than 26 feet long) were found in the Sacramento Basin or Central Valley, while more residents from the South Coast and the San Francisco Bay Area owned larger boats (greater than 40 feet long). Knowing that there are regional differences in the types of boats owned and considering the popularity of ski and fishing boats, a successful education and outreach strategy can focus on these differences. For example, Sacramento Basin or Central Valley educational messages can focus on environmental issues related to trailerable boats such as aquatic invasive species.
- **MARINE SANITATION DEVICES:** About 36 – 40 percent of boaters surveyed have installed toilets onboard, Type III was the most common marine sanitation devices (MSDs) (69 – 75 percent), while 18 – 22 percent had Type I. Those who boated on the San Francisco Bay or ocean at least once a year were most likely to have an installed toilet on their boats (54 - 59 percent), while those who used their boats on inland lakes were least likely (10 – 12 percent). This finding is consistent with the result reported that most trailerable boats are found in inland areas.

- **OIL CHANGE:** Almost half of boaters surveyed (40 – 47 percent) changed their own boat oil (i.e. Do-It Yourselfers, or DIYs), and about one half of those (53 percent) said they usually change it at home. Boaters age 50 and older and those with more than 5 years of boating experience tended to be among those most likely to change their own oil. Boaters who own sailboats with auxiliary motors or who use their boats to fish or camp are also more likely to change their own oil. Central Coast, Central Valley and San Francisco Bay Area region residents are among those most likely to change their own oil. Considering these results, program partners should continue providing educational messages to DIYs on proper oil change techniques and disposal options.
- **OIL DISPOSAL:** Between 43 and 46 percent of the boaters surveyed travel less than a mile to dispose of their used oil where they change it. About one quarter (24 – 29 percent) traveled more than 3 miles to dispose of used oil. Distance traveled varied by region as higher proportions of Central Coast residents in both survey years (63 – 67 percent) reported they travel less than 1 mile to dispose of their used oil. The provision of conveniently located certified used oil recycling centers, not only at marinas, could increase the proper disposal and recycling of used oil by the boating community.
- **OIL LEAKS:** Across all boaters surveyed, 96 - 97 percent said oil leaks into the bottom of their bilge or engine compartment most of the time or every time they use their boat, while only 2 percent said it rarely or never leaks oil. These findings support the continued need and demonstrate the importance of educational programs to target use of preventative engine maintenance and pollution prevention tools such as oil absorbents to reduce oil pollution.

What Are Surveyed Boaters Doing on California Waters?

- **BOAT USAGE:** About half of all respondents (43 – 50 percent) boated at least once a year on the ocean, 41 – 45 percent boated at least once a year on inland lakes, 18 – 27 percent boated on the Sacramento-San Joaquin Delta, and 14 – 17 percent boated on San Francisco Bay. Of the boaters who boated on the ocean, the average time spent per year is almost 50 days. Of the boaters who boated on San Francisco Bay, inland lakes and the Sacramento-San Joaquin Delta, the average time spent per year was about 1 month.
- **FUEL CONSUMPTION:** The highest proportion of the boaters surveyed consumed less than 12 gallons of fuel in a typical day on the water (45 – 48 percent). Overall, the state’s highest fuel consumers appeared to be South Coast and Southern Interior residents. 32 – 34 percent of these boaters reported using 21 or more gallons per day. Across all boaters, those who owned offshore racers tended to be among the highest fueling consumers, while those who owned sailboats with auxiliary engines tended to be among the lowest consumers.
- **HOURS ON THE WATER:** Almost half (49 percent) of all boaters surveyed logged 50 or fewer engine hours annually, while about 10 - 11 percent logged more than 150 engine hours annually. Boaters who used marina dry storage or who owned motor yachts, houseboats, or fishing boats were among those most likely to put more than 150 hours on their engine per year while owners of sailboats with auxiliary motors were those most likely to log 25 hours or less per year. Boaters who used their boats to fish were among those most likely to put more than 150 hours on their engines.
- **SEWAGE PUMPOUTS AND OBSTACLES:** Across all boaters surveyed with onboard toilets, a little over one-third (38 – 39 percent) used sewage pumpouts more than 10 times a year or every time they go out and a little less than a third (30 – 32 percent) used them 1 – 5 times annually. The most common obstacle to pumpout usage encountered by all boaters was waiting in line more than 10 minutes, followed closely by broken pumpouts. Most of the boaters who used pumpouts

where they launch (60 percent) had difficulty finding a pumpout while boating elsewhere. The majority of the respondents reported “never” having a problem (56 – 59 percent) finding a pumpout. Conversely, 40 percent of boaters still have difficulties finding a pumpout. Among those who boated on the Sacramento-San Joaquin Delta, Sacramento Basin residents said they encountered broken or closed pumpouts, had to wait more than 10 minutes, or couldn’t find a pumpout more often than San Francisco Bay residents.

These results suggest that there is still a gap in knowledge of sewage pumpout locations. Maps, signage and other educational resources continue to be useful tools to address this gap. Waiting in line and encountering broken pumpouts are still common obstacles for boaters. Proper maintenance of existing facilities and installation of additional pumpouts should remain a priority.

- **WATER ACTIVITIES:** Overall, surveyed boaters most often used their boats to leisure cruise, fish, swim or ski. In particular, boaters from the Sacramento Basin and Central Valley regions were more inclined to use their boats to fish while San Francisco Bay Area, South Coast and Southern Interior residents prefer leisure cruising.

How Aware of Water Pollution Prevention Are Surveyed Boaters?

- **BOATER KITS:** Overall, the 8 – 13 percent of boaters who received boater kits in the past tended to be much more likely to use oil absorbents to clean leaked oil and somewhat more likely to correctly identify environmental service logos. This trend supports continued educational efforts, such as boater kit distribution and face-to-face outreach. Study results also suggest that there are subsets of the boating community that could benefit from additional educational efforts, such as younger and less experienced boaters, as well as those who launch at public launch ramps and fuel their boats at gas stations.
- **COMMON CONCERNS:** Concerns common to most of the boaters surveyed, particularly older boaters, included intoxicated boaters, inexperienced boaters, trash and debris and drinking water quality. Boaters expressed the least concern about speeding boats, abandoned vessels and bigger boats. Intermingling messages that are of most concern to boaters with messages that focus on less popular topics could be a successful strategy to expose boaters to other important environmental issues. For example, abandoned boats may not be a common concern to boaters, but is a topic of serious concern in terms of environmental impact and the cost of clean up. These gaps in knowledge suggest there are additional opportunities to show boaters new ideas and pollution prevention methods.
- **CALIFORNIA DRINKING WATER:** To more closely examine the boaters’ understanding of the link between water consumption and resource protection, program partners asked boaters to identify the primary source of drinking water in California. Across all years, only about 15 – 19 percent of boaters overall were aware that 51 – 75 percent of California residents receive drinking water from the Sacramento-San Joaquin Delta, and 40 – 48 percent did not know the percentage of households served.
- **LOGO RECOGNITION:** From 2007 to 2009, boaters who could correctly identify the oil recycling service logo and the sewage pumpout service logo has increased (6 percent and 4 percent, respectively). Encouragingly, across most regions, boaters who change their own oil demonstrated higher recognition of the oil logo and those with installed toilets demonstrated higher recognition of the sewage logo. Perhaps not surprisingly, boaters with less than 6 months of boating experience had the most difficulty identifying the environmental service logos; however, in 2009, boaters with between 6 months and 2 years of boating experience correctly identified both logos more readily

than boaters of all other experience levels. Overall correct identification of both logos was generally highest among boaters from coastal regions and lowest among those from inland regions. Future educational efforts should continue to emphasize recognition of these logos to help the boating community locate pollution prevention services throughout the state for sewage and used oil disposal.

- **OIL CHANGE:** While almost half of the boaters surveyed (40 – 47 percent) who changed their own boat oil (DIYs) tended to be among those most likely to clean any oil that has leaked into the bilge and more likely to use oil absorbents, they also tend to use rags or paper towels and soaps or detergents more often, a finding that suggests both a critical educational gap and opportunity to provide information on proper pollution prevention tools and disposal options. .
- **USED OIL DISPOSAL:** About half (47 percent) of all boaters surveyed who change their own oil, especially those who store their boats at home on trailers, dropped their used oil off at certified oil recycling centers such as auto shop or gas stations. Nearly another third (30 – 32 percent) dropped their used oil at marinas. Still, 5 – 9 percent of boaters overall disposed of used oil improperly, and in 2007 – 2008, up to 23 percent of boaters age 16 – 25 said they tossed their used oil in the trash, stored it at home, or took it to the dump. Among those surveyed, Central Valley (17 percent), Southern Interior (12 percent) and Sacramento Basin residents (11 percent) were among those most likely to use improper used oil disposal methods. Overall, younger boaters were more inclined to use certified oil recycling centers than older boaters, while older boaters used marinas in greater proportions. Considering these results and the fact that used oil is a hazardous waste and it is illegal to dispose of it in the trash or store it improperly, more education on used oil impacts, disposal options and regulations is needed. Developing educational materials for marinas and certified used oil collection centers coupled with trash can signs could be the the most appropriate plan to increase proper used oil disposal.
- **CLEANING UP OIL LEAKS:** About 98 percent of surveyed boaters who reported oil leaks said they cleaned the oil, and of those who reported how they clean leaked oil, about half (50 – 51 percent) used oil absorbents, while 10 – 12 percent used soap or detergent. In 2007 – 2008, Sacramento Basin residents were among those least likely to use oil absorbents and most likely to use rags or paper towels to clean leaked oil. In 2009, boaters from the Central Coast or Central Valley were among those most likely to use oil absorbents. Overall, boaters who use their boats to ski or wakeboard are generally less likely to use bilge cleaning products, less likely to use oil absorbents, and more likely to use improper methods and materials, such as rags, paper towels, soaps and detergents. Those who leisure cruise were also among those most likely to use oil absorbents. Boaters overall who use oil absorbents tend to take their used ones to oil waste receptacles at marinas more than using other disposal options, especially those surveyed in 2009. However, about 29 percent of those who use oil absorbents tossed them in the trash. Increased use of oil absorbents over the survey period suggests that the proper use of pollution prevention tools may be becoming a more common practice. However, educational efforts should continue to educate the boating community on proper preventive engine maintenance practices, the use and disposal of pollution prevention tools (i. e. oil absorbents) and state and federal regulations.
- **ILLEGAL SEWAGE DISCHARGE:** About 70 percent of surveyed boaters do not know the penalty in California for illegally discharging untreated sewage is a \$2,200 fine. In 2008, boaters age 26 – 33 and over 65 tended to be the least informed about fines and penalties while in 2009, boaters age 16 – 25 tended to be least informed. Boaters from the North and South Coasts tended to be the most informed. Among all groups, but especially among boaters surveyed in 2009, those who could

identify the environmental service logos demonstrated more knowledge of the fines than those unfamiliar with the logos. Future education and outreach efforts should continue to focus on the environmental impact of improper sewage disposal, fines and regulations and make a particular effort to target age groups that tend to be the least informed about illegal discharges.

How Can Surveyed Boaters Be Reached?

- **BOAT STORAGE:** While the largest majority of surveyed boaters overall (47 – 48 percent) opted to store their boats at home on a trailer, a little over one-third (34 – 39 percent) stored their boats at a marina in-water berth. These findings suggest that future education and outreach efforts should target boat launch ramps and marinas.
- **BOAT LAUNCHING:** Most boaters surveyed who launched their boats used public launch ramps. Residents from the Sacramento Basin and Central Valley were among those most likely to use public launch facilities, and their choice of facility was much more likely to be a marina. All boaters agreed that the top reasons for their choice of usual launch location were 1) good access, 2) close proximity to boat storage location, 3) convenient trailer parking, 4) fuel docks and 5) restrooms.
- **SEWAGE PUMPOUT USE:** Overall, between 51 and 80 percent of boaters used pumpouts where they store or berth. Those who fueled at marina fuel docks or bring their own gas cans tended to use pumpouts at marinas most often while those who use gas stations tend to use pumpouts where they launch. About one-quarter (22 - 25 percent) of those who brought their own gas cans used pumpouts somewhere other than where they store or launch.
- **FUELING:** The most common fueling location frequented by all boaters was gas stations, with about half of boaters (50 percent) stopping at gas stations prior to launch. However, over one-third (37 – 38 percent) used marina fuel docks and another 12 – 13 percent brought their own cans. Use of gas stations was particularly high among those who trailered their boats at home. Tendency to use marina fuel docks generally increases with age, while tendency to use gas stations generally decreases. Efforts to increase awareness on environmentally sound boating practices may be most useful by targeting both gas stations and marina fuel docks.
- **OIL CHANGE:** The majority (53 percent) of boaters surveyed changed their own boat oil at home and 40 - 41 percent changed it at a marina. Motor yacht owners were among those most likely to change their oil at marinas, while ski or fishing boat owners were most likely to change their oil at home.
- **INFORMATION SOURCES:** Boaters tend to rely on boat shows, marinas, marina supply stores, and word-of-mouth for their boating information more than other sources, and a significant proportion (16 – 24 percent) use Boat US Magazine, safety classes, boating associations or Latitude 38. Patterns of information seeking and resources accessed depend on boater age, boating experience, and region of residence, with use of most resources generally increasing with age and/or experience until age 65. The youngest (16 – 25 years old) and oldest boaters (over 65 years old) also tend to access safety classes in greater numbers. Among regional differences in information sources used, boaters from coastal regions from San Francisco Bay and south rely on marinas more often than boaters from the North Coast or inland regions, while Central and South Coast residents tend to use marine supply stores more than boaters from other areas. San Francisco Bay and Central Coast residents read the Bay and Delta Yachtsman and Latitude 38 more often than others, and San Francisco Bay, Central Coast, South Coast, and Southern Interior residents read Boat U.S. Magazine more than others.

One of the main goals of the program partners is to promote environmentally sound boating practices throughout the state. The results from this survey report suggest that there is a need to continue current educational programs and to develop new strategies, in order to increase and improve clean boating practices in California.

As study results suggest, there are segments of the boating community that are less aware of water pollution prevention measures or least likely to practice environmentally sound behaviors while boating. Attempts to reach these boaters must take into consideration where they store, launch, fuel and use their boats, as well as where they obtain boating information. Program partners should continue to develop more refined and multi-faceted outreach strategies, as well as more partnerships with marinas and boating facilities to make information dispersal even more effective. In addition, it may be important to craft messages and campaigns that personally resonate with particular boaters by addressing their specific needs, especially those who have demonstrated resistance to environmentally conscience messages and behavioral change.

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