



Non-Motorized Boating in California

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Executive Summary

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The California Department of Boating and Waterways (DBW) commissioned this research study of non-motorized boating in California to (1) understand how many, and what types, of non-motorized boats there are in California; (2) understand how economically important non-motorized boating is to California; and (3) potentially plan future facilities to meet the needs of California's non-motorized boaters. This research study of non-motorized boating in California affords a better understanding of who participates in non-motorized boating; the types of boats they use; where and why they boat; and the facilities they need. The information in this report may help DBW, waterway managers throughout the State, and non-motorized boating service providers, to further support and promote non-motorized boating in California.

Non-motorized boating is a growing, dynamic, and diverse element of outdoor recreation in California, which is home to approximately 1.7 million non-motorized boats (2006) – almost twice as many boats as the 963,758 registered (primarily motorized) boats in the State (as of December 31, 2005). Most non-motorized boats are owned by California households, although there are a number of non-motorized boats in commercial and institutional fleets, as well as owned by clubs.

Table ES.1, on the next page, provides the estimated number of non-motorized boats in California. There are an estimated 969,707 households in California that own non-motorized boats. Many households own more than one boat, with the average number of non-motorized boats per household estimated at 1.75.

Table ES.2, following Table ES.1, provides the estimated total number of non-motorized boats in California, by boat type. Prior to starting this study, it was important to carefully define what was, and what was not, included within the definition of non-motorized boats in California:

For purposes of this study, "non-motorized boat" means any boat not currently registered with a vessel registration (CF) number from the California Department of Motor Vehicles. This non-motorized boat definition includes: (1) boats propelled by paddles or oars (and usually without a motor), such as canoes, kayaks, inflatable boats and rafts, rowing boats including row boats, shells, sculls, dories, and driftboats), and other types of manually propelled boats; (2) small sailboats, 8 feet in length or shorter (and usually without a motor); and (3) sailboards and kiteboards. Non-motorized boats do not include "toy like" blow-up rafts and other non-durable water toys, nor do non-motorized boats include inner tubes or fisherman float tubes (without oars). Finally, non-motorized boats do not include normal surfboards, beach boogie boards, or riverboards.

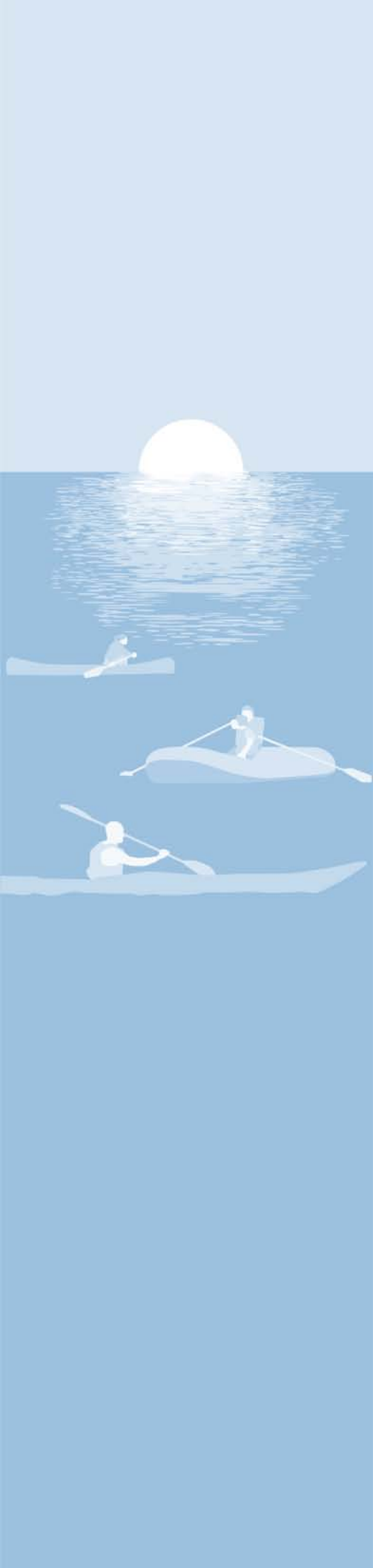


Table ES.1
Estimated Number of Non-Motorized Boats in California by Category (2006)

Category	Number of Boats by Category	Percent of Total
1. Privately Owned	1,696,987	99.0%
2. Commercial and Institutional Owned	15,062	0.9%
3. Club Owned	2,700	0.1%
Total	1,714,749	100.0%

Table ES.2
Estimated Number of Non-Motorized Boats by Boat Type in California (2006)

Boat Type	Number of Boats by Boat Type	Percent of Total
1. Inflatable*	711,509	41.5%
2. Kayak	543,251	31.7%
3. Canoe	191,505	11.2%
4. Rowing Boat	160,735	9.4%
5. Sailboard/Kiteboard	55,969	3.2%
6. Small Sailboat**	42,770	2.5%
7. Other	9,010	0.5%
Total	1,714,749	100.0%

* For purposes of this study, the "inflatable" category includes inflatable rafts, catarafts, and transoms. Inflatable kayaks are included in the "kayak" category.

** Many boaters consider any sailboat that they store at home, and load on their car, as a "small sailboat", even if the sailboat is longer than 8 feet in length. This estimate of small sailboats includes a significant number of these longer small sailboats.

There are significant ambiguities in the precise definition of non-motorized boats. Carefully defining non-motorized boats served to reduce these ambiguities. However, without legal clarification at the federal and/or state levels, the definition of non-motorized boats will continue to remain ambiguous. Because precisely defining non-motorized boats is so challenging, there likely is (1) some counting of vessels in this study that were not within our definition of non-motorized boats, as well as (2) some undercounting of vessels that should have been within the study definition. Therefore, study counting errors likely could be both positive and negative.

To provide a clearer definition of non-motorized boats in the future, it might be necessary to list specific types, and perhaps even brands, of vessels, particularly in the most ambiguous categories, such as inflatable boats. This would obviously need to be a dynamic list, as manufacturers are continuously entering and exiting the marketplace. For purposes of this study, we accepted that there was considerable ambiguity in the definition of non-motorized boats, and thus some uncertainty in the precise number of non-motorized boats, particularly by boat type. However, this acceptance did not preclude provision of best estimates for the number of non-motorized boats in California, at the level provided in this report.

Table ES.2 illustrates that inflatable rafts and boats were the most common type of non-motorized boat in California, followed by kayaks. There were significantly more inflatable boats and kayaks than the other types of non-motorized boats included in this report: canoes, rowing boats, small sailboats, sailboards (windsurfers), kiteboards, and other non-motorized boats such as paddleboats and dragon boats.

Table ES.3, on the next page, provides the estimated total number of kayaks, by five types. There are many types of kayaks, and the relatively new recreational, or sit-on-top kayaks, have recently become very popular, particularly among new boaters. Sea kayaks, whitewater kayaks, inflatable kayaks, and any number of specialty kayaks (fishing, racing, surf, scuba, etc.) made up about one-half of the total number of regularly used kayaks.

Table ES.3
Estimated Number of Kayaks by
Kayak Type in California (2006)

Kayak Type	Number of Kayaks by Kayak Type	Percent of Total
1. Recreational Kayak	241,993	44.6%
2. Sea/Touring Kayak	134,070	24.7%
3. Inflatable Kayak*	75,561	13.9%
4. Whitewater Kayak	55,545	10.2%
5. Other Kayak	36,082	6.6%
Total	543,251	100.0%

* There is some ambiguity within kayak definitions, as inflatable kayaks may be used for recreational paddling, touring, and whitewater paddling.

Table ES.2 and Table ES.3 provide estimates for the total number of non-motorized boats in California, by boat type. However, almost one-third of non-motorized boats in the State were not used regularly. In order to focus on non-motorized boats that Californian’s utilized most frequently on State waterways, **Table ES.4**, below, provides estimates of non-motorized boats, by boat type, for only those boats that were regularly used by California boat owners, or were in commercial, institutional, or club fleets.

Regular non-motorized boat use for boat owners was defined, for purposes of this study, as boats owned by boat owners that utilized their non-motorized boat(s) five (5) or more days per year. The study defined two additional categories of non-motorized boat owners, “infrequent” boaters, defined as non-motorized boat owners that utilized their non-motorized boats between one and four days per year, and “inactive” non-motorized boat owners, defined as non-motorized boat owners that did not utilize their boat(s) in the last five years. For the latter two boat use categories, Table ES.4 provides only the total number of non-motorized boats.

Because they are based on a smaller number of survey responses, the boat utilization estimates provided in Table ES.4 are less statistically accurate than the overall boat type estimates provided in Table ES.2. However, these estimates of regularly used non-motorized boats provide reasonable measures of the relative number of regularly used boats, by boat type, particularly for kayaks and inflatable boats.

Table ES.4
Estimated Number of Non-Motorized Boats by Boat Type and Utilization Level in California (2006)

Boat Type	Number of Boats by Boat Type	Percent of Total
a. Boats Utilized 5 Days, or More, per Year	1,194,113	69.6%
1. Kayak	479,954	28.0%
2. Inflatable*	419,457	24.5%
3. Canoe	125,322	7.3%
4. Rowing Boat	94,553	5.5%
5. Sailboard/Kiteboard	44,939	2.6%
6. Small Sailboat**	20,878	1.2%
7. Other	9,010	0.5%
b. Boats Utilized 1 to 4 Days per Year	300,197	17.5%
c. Boats Not Utilized Within Last 5 Years	220,439	12.9%
Total	1,714,749	100.0%

* For purposes of this study, the “inflatable” category includes inflatable rafts, catarafts, and transoms. Inflatable kayaks are included in the “kayak” category.

** Many boaters consider any sailboat that they store at home, and load on their car, as a “small sailboat”, even if the sailboat is longer than 8 feet in length. This estimate of small sailboats includes a significant number of these longer small sailboats.

Table ES.5
Estimated Number of Regularly Used Kayaks
by Kayak Type, Kayaks Utilized 5 Days or More
per Year in California (2006)

Category of Kayaks	Total Kayaks by Kayak Type	Percent of Total
1. Recreational Kayak	208,940	43.5%
2. Sea/Touring Kayak	123,074	25.7%
3. Inflatable Kayak*	70,047	14.6%
4. Whitewater Kayak	50,055	10.4%
5. Other Kayaks	27,838	5.8%
Total	479,954	100.0%

* There is some ambiguity within kayak definitions, as inflatable kayaks may be used for recreational paddling, touring, and whitewater paddling.

Among regularly used non-motorized boats, kayaks were the most common type of non-motorized boat in California, followed by inflatable boats. In comparing Table ES.2 and Table ES.4, one can see that 292,052 inflatable boats (711,509 minus 419,457) were not regularly used. By comparison, “only” 63,297 kayaks (543,251 minus 479,954) were not regularly used. These “not regularly used” boats fell within either the “Boats Utilized 1 to 4 Days per Year” or “Boats Not Utilized Within Last 5 Years” categories in Table ES.4.

Table ES.5, above, provides the estimated number of kayaks, by five types, for regularly used kayaks. The proportion of kayaks, by type, that were regularly used is very similar to the proportion of kayaks, by type, overall.

This study of non-motorized boating in California focused on boat ownership, congruent with previous DBW studies of motorized boats. However, as the study progressed, it became apparent that for non-motorized boating, participation was another key metric that needed to be assessed. Thus, while the study results primarily focus on non-motorized boat ownership, the study also evaluated the number of participants, and number of days of participation. The participant,

and participation day, results for non-motorized boat owners are less statistically reliable than the statewide number of owned non-motorized boat estimates, but they do provide reasonable estimates at the statewide level, and representative relative allocations between boat types and regions.

An estimated 2.5 million Californians participated in non-motorized boating in 2006, accounting for 8.2 percent of the State’s population, age 12 and over. The vast majority of these participants were from non-motorized boat-owning households, although commercial/institutional and club participants were also significant components of non-motorized boating participation. **Table ES.6**, on the next page, provides the estimated number of non-motorized boating participants by type.

Table ES.7, following Table ES.6, provides estimates of total non-motorized boating participation by boat type (for regularly used boats). Total participants for kayaks and inflatable rafts were very close, with each at just over 30 percent of total participants. The participant data by boat type is conservative because it does not take into account that many non-motorized boaters participated with more than one boat type. In Table ES.7, each of the 1.9 million non-motorized boat owning participants was counted only once, and assigned to only one boat type based on the proportion of utilized boats, by type. Thus, the actual number of 2006 boat owning participants for any particular boat type was likely higher than these estimates.

Non-motorized boaters encompass a wide range of participants: (1) those that participate in non-motorized boating through rentals, classes, guided trips, or clubs; (2) those that own, but rarely use, their non-motorized boats; (3) those that participate in non-motorized boating several times a year as a family recreational activity; (4) those for whom non-motorized boating is a regular weekend and vacation avocation; and (5) those that participate in non-motorized boating almost daily as a form of exercise.

Table ES.6
Estimated Number of Non-Motorized Boating Participants by Participant Type in California (2006)

Participant Type	Number of Participants by Participant Type	Percent of Total
1. Boat-Owning Participant	1,917,503	77.0%
2. Guided Trip Participant	243,827	9.8%
3. Rental Participant	208,902	8.4%
4. Instruction Participant	87,093	3.5%
5. Club Participant	33,000	1.3%
Total	2,490,325	100.0%

Table ES.7
Estimated Number of Non-Motorized Boating Participants by Boat Type in California (2006)

Boat Type	Total Participants*	Percent of Total
a. Boats Utilized 5 Days or More per Year	2,101,072	84.4%
1. Kayak	776,208	31.2%
2. Inflatable	813,501	32.7%
3. Canoe	224,155	9.0%
4. Rowing Boat	131,967	5.3%
5. Sailboard/Kiteboard	71,881	2.9%
6. Small Sailboat	55,137	2.2%
7. Other	28,223	1.1%
b. Boats Utilized 1 to 4 Days per Year	389,253	15.6%
Total	2,490,325	100.0%

* Total participants by boat type were adjusted to match the total number of participants overall. As a result, these estimates assume that each participant utilized only one boat type. Because some participants used multiple boat types, these are conservative estimates of boat type participation.

For Californians that own a non-motorized boat, the average number of participation days per year was 24. The majority of those that do participate in non-motorized boating expect to either keep participating at the same levels, or increase participation, over the next five years.

The total estimated non-motorized boating participation days in 2006 is provided in **Table ES.8**, on the next page. **Table ES.9**, following Table ES.8, provides estimates for the total number of participation days by boat type (for regularly used boats). For boat owners, these estimates are based on average annual

participation days by most-used boat type, and are representative of the relative split of user days by boat type for regularly used boats. Kayaks represented almost one-half of total non-motorized boating participation days in 2006, followed by inflatable boats.

Non-motorized boaters use many different types of waterways, ranging from the Pacific Ocean to small local ponds. California has numerous harbors, lakes, reservoirs, and rivers that are appropriate for all types of non-motorized boating activities. The top five reasons why non-motorized boaters choose to boat at a particular waterway are: (1) because it

Table ES.8
Estimated Number of Non-Motorized Boating Participation Days by Participant Type in California (2006)

Participant Type	Number of Days by Participant Type	Percent of Total
1. Boat-Owning Participant	45,905,022	94.6%
2. Club Participant	1,870,000	3.9%
3. Guided Trip, Rental, and Instruction Participant	726,472	1.5%
Total	48,501,494	100.0%

Table ES.9
Estimated Number of Non-Motorized Boating Participation Days by Boat Type in California (2006)

Boat Type	Total Participation Days	Percent of Total
a. Boats Utilized 5 Days or More per Year	47,619,582	98.2%
1. Kayak	21,516,355	44.4%
2. Inflatable	13,757,628	28.3%
3. Canoe	5,093,451	10.5%
4. Rowing Boat	3,873,109	8.0%
5. Sailboard/Kiteboard	586,338	1.2%
6. Small Sailboat	1,975,017	4.1%
7. Other	817,684	1.7%
b. Boats Utilized 1 to 4 Days per Year	881,912	1.8%
Total	48,501,494	100.0%

was close to home or convenient; (2) to gain access to another activity such as fishing; (3) because it was not crowded; (4) because of the facilities at the waterway (parking, restrooms, etc.); and (5) for particular features or destinations at the waterway such as beaches and shoreline.

Non-motorized boaters in California are from all regions of the State, and they participate in many types of boating activities. In general, there are relatively more non-motorized boating participants in rural regions than in urban regions. Certain types of non-motorized boating activities are more predominant in some regions than others, as non-motorized boating is typically limited by waterways.

Whitewater kayaking and rafting, both among boat owners and through guided trips, are popular

on rivers in the Central Valley, Sacramento Basin, and Northern Interior regions. Non-motorized boaters use their inflatable boats, canoes, and recreational kayaks on sheltered harbors, lakes, and calm rivers within all of the State's regions. Canoe rentals are popular in the North Coast region, while a large number of boaters in the Sacramento Basin and Central Valley regions use kayaks and inflatable boats on the region's many lakes. Most sea kayaking, sailing, sailboarding, and kiteboarding takes place in the San Francisco Bay Area, South Coast, and San Diego regions on ocean harbors and bays.

One of the attractions of non-motorized boating is that it does not necessarily require a significant investment in order to participate. Non-motorized boating contributed \$1.7 billion to the California economy in 2006. This contribution came from four

major categories: (1) non-motorized boat owner annual expenditures on items such as boats, supplies, and apparel; (2) non-motorized boat owner trip expenditures on items such as fuel (to drive to the boating location), food, entrance fees, and lodging; (3) consumer expenditures on non-motorized boat rentals, instruction, and guided trips; and (4) the sales output from non-motorized boat manufacturers located in California. The \$1.7 billion reflected an economic contribution of approximately \$1,000 per non-motorized boat in 2006.

The economic contribution of non-motorized boating does not represent the full value, or benefit, of non-motorized boating to Californians. Participants in non-motorized boating gain significant intrinsic value from the activity.

The time and travel costs that consumers incur to enjoy a recreational outing can be used as a proxy to estimate the “price” or intrinsic value of recreation. Based on a travel cost methodology, the mid-range calculated recreational user value of non-motorized boating in California was \$36.09 per person, per day in 2006.

The \$36.09 per person, per day, recreational user value, applied to the total number of participation days for California non-motorized boating in 2006, results in a statewide recreational user value for non-motorized boating of \$1.75 billion. This \$1.75 billion user value is slightly higher than the economic contribution of non-motorized boating of \$1.7 billion.

The non-motorized boating per person, per day, recreational user value of \$36.09 is larger than the equivalent value for motorized boating at \$17.89 in 2000.^a Thus, while non-motorized boaters may have less economic impact than motorized boaters, they place a higher intrinsic value on their activity.

^a From Volume V of the *California Boating Facilities Needs Assessment (BNA), Boating Economic Assessment and Demand Projections*.

A growing number of Californians recognize the recreational value of non-motorized boating. Over the last four years, an estimated 135,759 California households joined the ranks of non-motorized boating participants. This estimate reflects an average annual compound rate of growth of 3.84 percent for non-motorized boating participation over the last four years (2002 to 2006). Inflatable boats or rafts, and plastic recreational kayaks, are the most common boat types for new participants. Most new non-motorized boating participants take up this activity either as young adults, or in their 40s and 50s.

The number of new non-motorized boaters in California is expected to continue to increase over the next several years. Projecting forward, the number of non-motorized boat-owning households is expected to increase to between 1.044 million to 1.151 million, by 2010. The number of non-motorized boating participants in those households is projected to range from 2.064 million to 2.274 million, by 2010.

This increase in non-motorized boaters will be due, in part, to the continued new participation among Baby Boomers as they near, and enter, retirement. In addition, many individuals in another large age group cohort, children of Baby Boomers, also are starting to participate in non-motorized boating as young adults.

As non-motorized boating continues to grow in popularity, pressure on California’s waterways and facilities also will continue. This demand for non-motorized boating facilities parallels a similar pressure on all of California’s park and recreation facilities.

Facility needs for non-motorized boating are significantly less than for motorized boating. The top five facility needs requested by non-motorized boaters were: (1) improved access to the water; (2) restrooms; (3) parking; (4) maintained water levels or releases; and (5) floats or launch ramps.

Non-motorized boaters generally prefer “low-impact” facilities. Typically, non-motorized boating

participants bring their boats to the water on top of, or in, their automobiles. The most important non-motorized boating requirement is access points to the water. For any given access point, the key facility needs for non-motorized boating include: (1) a place to unload vessels fairly close to the water; (2) a safe place to park; (3) restrooms; (4) a trail or access to the water; and (5) a beach, grassy area, or dock close to the water level from which to launch. **Table ES.10**, on the next page, summarizes the general facility needs and issues for eleven types of non-motorized boats.

As the population of non-motorized boaters has increased, so has the potential for conflicts between various user groups, including non-motorized boaters, motorized boaters, anglers, landowners, and other recreationists. Waterway management for non-motorized boating is often inconsistent, and has not always kept pace with the growth in new non-motorized boating activities.

The growth in popularity of non-motorized boating has highlighted the high degree of ambiguity and confusion in regards to laws and regulations applicable to non-motorized boaters. The recent growth in the non-motorized boating activity has made the need for law and regulation consistency and clarification more prominent. For example, it is difficult to define exactly what is a non-motorized boat, and then even more difficult to determine what boating safety laws

and regulations (for example, life jacket requirements) apply.

There will be growing pressure on California's waterway managers, and DBW, to focus on the diverse needs and issues related to non-motorized boating. This may not be a simple task.

Diversity is the common thread among all aspects of non-motorized boating. There is no universal type of boat, boater, location, or waterway that characterizes non-motorized boating. Furthermore, California's waterways are managed by many different Federal, State, county, and city agencies, as well as water and irrigation districts. Many waterways are managed by more than one government entity, and often land along a waterway is privately owned. Developing a consistent approach to non-motorized boating in California will require a high degree of collaboration among the various government entities; boating organizations; non-motorized boating commercial and institutional entities; and non-motorized boaters.

Improving opportunities for non-motorized boating participation in California is a challenge worth undertaking. With approximately 2.5 million total California participants (includes boat-owning, guided trip, rental, instruction, and club participants), non-motorized boating makes up an important aspect of California's recreation framework and active outdoor lifestyle.

We would like to thank the many individuals and organizations that provided input to this report. This report would not have been possible without contributions from the literally thousands of individuals and organizations involved in non-motorized boating that completed surveys, provided telephone interviews, and participated in the special interest group meetings. We would also like to thank Quantum Market Research, of Oakland, California, for undertaking the challenging task of the statewide and regional random telephone surveys.

Table ES.10
Overview of Key Facility Needs by Non-Motorized Boat Types in California (2006)

Boat Type	General Facility Needs and Issues
1. Canoes	<ul style="list-style-type: none"> ■ Gradual slope or long steps to the water (i.e. not steep) ■ Flat place to launch from, close to water level (such as low freeboard dock) ■ Parking and restrooms
2. Outrigger canoes	<ul style="list-style-type: none"> ■ Storage for boats near water ■ Access for getting on and off a beach ■ Communication between boats and shore for emergencies
3. Sea kayaks	<ul style="list-style-type: none"> ■ Gradual slope or long steps to the water (i.e. not steep) ■ Flat place to launch from, close to water level (such as low freeboard dock) ■ Parking and restrooms ■ Security at parking areas ■ Overnight parking for longer trips
4. Whitewater kayaks and rafts	<ul style="list-style-type: none"> ■ Adequate water releases and flows ■ Security at parking areas ■ Access to water ■ Parking and restrooms
5. Recreational kayaks	<ul style="list-style-type: none"> ■ Gradual slope or long steps to the water (i.e. not steep) ■ Flat place to launch from, close to water level (such as low freeboard dock) ■ Parking and restrooms
6. Inflatable boats (non-whitewater)	<ul style="list-style-type: none"> ■ Gradual slope or long steps to the water (i.e. not steep) ■ Flat place to launch from, close to water level (such as low freeboard dock) ■ Parking and restrooms
7. Small sailboats	<ul style="list-style-type: none"> ■ No significant needs, as many small sailboats use yacht clubs to launch from ■ Key need is a place to launch where they can carry, or wheel, boat on a dolly down to the water
8. Rowing shells or sculls	<ul style="list-style-type: none"> ■ Storage for boats near water ■ Lighted buoys for early morning rowing ■ Shower facilities ■ Parking and restrooms
9. Sailboards	<ul style="list-style-type: none"> ■ Grassy or paved area for rigging ■ Safe access to water in areas with adequate wind ■ Parking and restrooms
10. Kiteboards	<ul style="list-style-type: none"> ■ Adequate space for launching ■ Areas with safe beach access ■ Signage for kiteboarders and those on-shore regarding safety ■ Parking and restrooms
11. Dragon boats	<ul style="list-style-type: none"> ■ Storage for boats near water ■ Lighted buoys for early morning rowing ■ Shower facilities ■ Parking and restrooms