

Content

Chapter # Water-dependent Recreation.....	1
Water-dependent Recreation in California	1
Potential Benefits of Water-dependent Recreation.....	2
Potential Costs of Water-dependent Recreation	3
Major Issues Facing Water-dependent Recreation	3
Access.....	3
Climate Change	4
Coordination	4
Flood Management.....	4
Funding.....	5
Impacts to Cultural Resources	5
Impacts to Natural Resources	6
Invasive Species	6
Water Quality	7
Recommendations to Facilitate Water-dependent Recreation	7
Selected References.....	8

Figures

PLACEHOLDER: Figure #-1 Percentage of Californians participating in water-dependent activities	1
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Subgroup: Practice Resource Management

Chapter # Water-dependent Recreation

Water-dependent recreation includes a wide variety of outdoor activities that can be divided into two categories. The first category includes activities that are dependent on water such as fishing, boating, canoeing, kayaking, swimming and rafting. The second category includes recreation that is enhanced by water features but does not require actual use of the water, such as wildlife viewing, picnicking, camping and trail use.

Water-dependent recreation is included among the water management strategies because recreation is an important consideration for water managers. Water management and water infrastructure can have significant effects on recreation. By considering recreation during the planning process, water managers can take advantage of opportunities to enhance recreation and guard against actions that would limit recreation.

The Davis-Dolwig Act was passed by the California Legislature in 1961. This act established State policy regarding recreation and fish and wildlife enhancement at State-built water facilities and specified the responsibilities of State agencies under the act. Compliance with the provisions of this act is an important consideration for State water managers when new facilities are built.

The management of lands and water resources by the State, including those associated with State water projects, invokes an implied principle of trust responsibility. State agencies managing lands and water resources are required to uphold public trust in the planning, management, use, and protection of resource values. As trustee to public resources, the State must consider the benefit and use of land and water resources for recreational opportunities. As discussed in **Chapter ? of Volume 1, the Public Trust Doctrine** recognizes recreation as one of the public trust uses that State agencies must take into account when managing tidelands and navigable waters and their tributaries.

Water-dependent Recreation in California

Each year millions of people visit California's waterways seeking an enjoyable recreation experience (**Figure #-1 Percentage of Californians participating in water-dependent activities**). With its temperate climate and over 1.3 million acres of water surface, 2,600 miles of waterways and 3,427 miles of coastline, California is able to offer a variety of recreation opportunities during any season. In 2007, adults spent about **150 million** days enjoying recreation activities directly dependent on water. Many more days were spent in nature-based activities such as wildlife viewing (**55 million** adult participation-days), and hiking (**36 million** adult participation-days) [**update with data from 2007 PO&A Survey**]. In 2006, being one of the most popular pursuits among California travelers, beach and waterfront activities helped draw 366 million domestic and non-domestic travelers making California the most visited state in the country.

PLACEHOLDER: Figure #-1 Percentage of Californians participating in water-dependent activities

With over 38 million residents, California's recreation resources are already in high demand, especially those accessible to water. Currently, the State's infrastructure is inadequate in meeting

the public's recreation demands. The lack of available recreation resources result in "over loved" facilities, jeopardizing the natural resource and degrading the recreational experience. With the population estimated to hit 40 million by 2012, over 50 million by 2032, and nearly 60 million by 2050, it is essential to develop recreation facilities to accommodate the increased demand. In order to be equipped for the population boom, planning for new facilities should begin now. Planning and development efforts take many years to complete; beginning the process sooner will ensure our preparedness for the increase in demand as well as protect our current facilities and resources from being over run.

The 2007 Public Opinion and Attitudes on Outdoor Recreation in California, a study conducted every 5 years to better understand Resident's recreation habits, shows strong support for water-related activities. Nearly 79 percent of the respondents indicated that the availability of lakes, reservoirs, rivers, and wetlands was an important factor in their overall enjoyment of their favorite recreation activity. Slightly more than 80 percent of the respondents indicated that more outdoor recreation areas, such as picnic and camping sites, are needed at lakes and reservoirs [update with data from 2007 PO&A Survey].

Potential Benefits of Water-dependent Recreation

Water-dependent recreation provides a wide range of health, social and economic benefits to California residents and visitors. It encourages physical activity, such as swimming and paddling, as well as walking and bicycling along attractive waterside trails. By promoting physical activity, it helps to address some of the major physical and mental health issues prevalent throughout the state, such as the obesity, depression and stress. Many of the benefits derived through recreating cannot be given a monetary value, such as strengthening individuals, families and communities. In general, Water-dependent recreation enhances the quality of our lives and if done respectfully, our environment.

Water-dependent recreation provides a platform for environmental education, promoting stewardship, and motivating public participation in resource protection efforts. Educating youth, on the importance of watersheds and water-related environments, at an early age is important to establishing healthy life-long environmental habits. With the majority of California's residents living within highly urbanized areas, natural environments are more difficult than ever to access. This, along with technological advances, result in children spending more time inside then out enjoying nature. This is causing both physical and mental health issues to rise among California's youth. There are efforts to reconnect youth with nature and get them back outdoors to recreate. Water related activities are an excellent tool for enticing children into the outdoors. Reconnecting youth with the natural world, through fun and refreshing recreational experiences, will secure the protection and preservation of California's natural resources by fostering future environmental advocates.

Water-dependent recreation has a major influence on California's economy - influencing tourism, business and residential choices and land value. As one of the most popular expenditure based activities, water-dependent recreation contributed to attracting 67 million out-of-state and international visitors to California in 2006. In 2007, it contributed to the \$96 billion spent directly on travel which created the greatest number of jobs in the accommodations and food service field (534,000) and the arts, entertainment and recreation field (226,500). In 2008, the estimated direct and indirect benefit of recreational boating is \$19.4 billion.

Water-dependent recreation generates revenue for the State through fees, permits and licenses. In 2007, 964,881 boats were registered in California resulting in nearly \$2 billion in State and local

taxes. More than 284,000 jobs in California were directly related to boating in 2002. Sales of sportfishing and water fowl hunting licenses and stamps generated more than \$63 million in annual revenue for the Department of Fish and Game in 2007.

Commercial business offering recreation equipment and services boost local economies and create jobs. Benefits are not always associated with use. Water-dependent recreation facilities preserve open spaces and viewsheds - prompting long-term investments, increasing land and property value, and becoming a deciding factor in business and residential decisions. By marketing the recreation component and its potential benefits, agencies can gain public support for their water facility or plan. The benefits derived through Water-dependent recreation are endless and are invaluable to the quality of our communities and lives.

[Explore beneficial effects on Climate Change and Flood Management. Create water transfer and storage facilities that are closer to a natural ecological system. Research the Reno Walk - 'whitewater park' downtown on the Truckee and Wingfield Park and the San Antonio River Walk]

Potential Costs of Water-dependent Recreation

Initial development costs of recreation facilities can vary with the size of the project. Generally, a percentage of the total project costs are allocated for development of permanent recreation facilities. For example, the capital cost of recreation sites on a State Water Project is a percentage of all capital expenditures for the SWP. [expand with some examples of development costs].

[Explore cost estimates for Operation & Maintenance – vary with each facility and its individual characteristics. This includes not only the maintenance a recreation facility and its services but also the infrastructure necessary to reach that facility like roads and trails. Use some examples]

[Research an example of the cost to convert a concrete channel to a natural setting]

[In order to preserve our natural resources and avoid overuse and misuse, recreation facilities and services should increase relative to the population growth. If the population is estimated to nearly double, how does that equate into recreation costs? Population growth is not the only concern. As California's climate continues to change, and get hotter for longer, the public's demand for water resources will increase. Development of costly facilities will be necessary to meet that demand.]

[discuss costs associated with research]

Revenue generated by recreation facilities and programs could be used towards the water facilities fiscal sustainability. Concession agreements to operate recreation facilities can provide additional income while cutting back on the operation responsibilities. [Explore more options for working towards sustainability?]

Major Issues Facing Water-dependent Recreation

Access

As fees are increased, low income communities are excluded from public spaces. Extra steps need to be taken to reach underserved communities including consultation with tribes. With the changes in demographics, population, and types of use there will be capacity issues. There needs to be coordination between recreation and water management professionals with urban land-use management strategies to ensure the availability of water-dependent recreation resources in highly populated areas. Due to the limited availability of water-dependent recreation opportunities, an emphasis should be placed on urban water facilities.

Access to a water facility is not always the problem, sometimes it is lack of water. Varying water levels impact the availability of different recreation opportunities. Water levels are so low that boat ramps and launches don't reach the water. Folsom Lake State Recreation Area is another example of how water levels are affecting recreation opportunities. In the summer of 2008, the water level was so low at Folsom Lake, a 5 mile an hour cap had to be placed on all water vessels. Coordinate with water transfer management to assure adequate water supply is available. This coordination could also help address issues with recreation affecting water quality and natural resources.

[explore public safety and boater safety – especially for minority and low income communities.]

Climate Change

As our climate changes, so does the management of and demand on our resources. Temperatures fluctuate creating the increased risk of catastrophic wildfire and the potential loss of natural resources such as ecosystems, species, habitats and communities. Temperature, rainfall and water-level changes will impact visitor use and their demands. As the coastal areas are submerged in the increasing sea levels, recreationists will be forced inland causing even more strain on those water facilities. As recreation demand grows, more strain will also be put on the other management strategies such as ecosystem restoration and water treatment. All of this equates into higher maintenance, restoration and development costs and will impact the quality of the recreation experience. Ideas need to be explored to help recreation providing agencies adapt to the demands of the changing climate.

[Are there stringent smog guidelines for boats? With nearly one million registered boats in California, this will contribute to the climate change issues]

Coordination

Funding and impacts to natural resources are exacerbated by the lack of coordination between those who manage water resources and those who provide recreational services. All too often, agencies are limited in scope and effectiveness in recognizing and mitigating trends affecting resource conditions, particularly outside their immediate jurisdiction. While partnerships and cooperation between agencies, organizations and individuals have grown, efforts at the watershed or landscape level are often fragmented, and opportunities are missed to achieve broader goals, placing both resources and the public at risk.

[Coordination with integrated regional water management will help increase and disperse recreation demand.]

[Need to express the value of water-dependent recreation to both the public and water managers through research, partnerships, and consistency between state plans.]

Flood Management

Linking recreation facilities to integrated flood and regional water management has also been explored. Because of the way they are built and managed, there are opportunities for creating levees with trail and water trail systems. Other ideas include establishing green environments, like trails and parkways, and restoring greenways instead of concrete channels as part of flood control facilities. Creating facilities that are closer to a natural ecological system can provide both recreation opportunities and water and natural resource sustainability. Some good examples are the Napa River and Guadalupe River flood management projects which have taken water systems and integrated a user friendly environment that included greenways, walking paths, trails and

open space. Lake Elizabeth in Fremont is a critical element to flood management and is an urban designed environment with many recreation attributes. Sepulveda Flood control Basin in Los Angeles is another good example. Funding can be acquired through the partnering flood management projects and recreation development. The Temecula flood easement was funded because it will be parkland with trails. Developing an urban designed environment with recreational component and flood management component is a common development mitigation strategy.

[LA river project – restoration partner with flood side]

Funding

Funding concerns usually transcend all other issues affecting outdoor recreation, including water-dependent recreation. These funding issues fall into two categories: (1) planning and development of new recreational sites associated with water projects, and (2) operation and maintenance of recreation sites once they are in place. When new dams, reservoirs or canals are being built, there may not be enough money to fully incorporate recreation. One reason for this is that the beneficiaries of recreation may be different from the other beneficiaries of the water project, requiring complex funding mechanisms to fully support recreation planning. This is a significant issue in State Water Project planning: The Davis-Dolwig Act specifies that water users shall not be charged for the cost of recreation facilities, but other funding mechanisms have not always been made available. Maintenance of recreation facilities may be more susceptible to funding cuts during poor economic conditions than for other resources thought to be more essential. Without reliable funding, it is difficult for recreation providers to deliver quality, consistent and relevant facilities and services to meet growing demand. Many park and recreation providers have taken steps to reduce programs and operating costs to become more efficient on leaner budgets by raising fees and charges, reducing or eliminating services, delaying equipment purchases, and deferring land acquisition, facility developments, rehabilitation and renovation of aging infrastructure. Inconsistent funding also makes it difficult to plan for services and reduces the willingness of many service providers to offer new programs or to take risks.

[What funding impacts will we face as the population grows and more facilities are required?]

[With the spread of invasive species, such as the quagga mussel, costs to maintain facilities and natural resources will sky-rocket]

Impacts to Cultural Resources

Due to low water levels and stream flows, Native Americans are unable to participate in cultural activities such as clam gathering and spear fishing. There are many cultural activities, such as ceremonial dancing, that are dependent on the water flows of specific rivers and streams. It is important to ensure that cultural groups have access to the resources necessary to celebrate their heritage.

Reduced water levels are also resulting in archaeological and cultural resources being discovered/exposed thereby reducing the public's ability to recreate. In order to protect the cultural resource, the public isn't allowed to launch boats, hike, etc. Essentially the reduced water level exposes artifacts resulting in the public being denied access.

[Location of facilities, especially in relation to cultural sites]

[expand this section]

Impacts to Natural Resources

Natural resource values often define the character and aesthetic appeal of a water-dependent recreation, making it desirable and interesting to visitors. Overuse, misuse, and poorly planned uses of any recreation resource can degrade natural resource values and recreational experiences. Exceeding the use limits of what a natural environment can handle results in closures and the public being denied access. Creating water transfer and storage facilities that are closer to natural ecological systems could help mitigate some of the impacts of public-use. By building programs with natural processes and recreating water recreation facilities closer to a natural system the ecosystem will be able to recover faster from the impacts of over-use.

Water levels and stream flow also contribute to the impacts on the natural resources and the recreation experience. The amount or timing of streamflow is regulated through water transfer schedules. This may have a good or bad effect on recreation. Water managers should consider the effects of their actions on all resource values, including recreation as well as ecosystem health. Coordination with water transfer managers would help improve water quality, the recreation experience and protect the natural resource.

Increasing numbers of visitors pursuing outdoor recreation threatens the proper functioning of ecosystems, disrupts and displaces wildlife, and degrades the natural, environmental, and aesthetic quality of an area and ultimately the very recreational experience being sought. To help users better understand and accept why they are unable to access recreation resources, they need to be educated in environmental processes, preservation and restoration efforts. This could be done using interpretive centers associated with water facilities. Visitors unfamiliar with ecological processes or environmental ethics are often unaware of the consequences of their actions.

Invasive Species

The issues of invasive species to any waters of the state are of particular concern. Future invasive species in the Sacramento/San Joaquin Delta could be an environmental disaster that could have far reaching effects on the ability of California to provide water to its constituents, whatever the use. Recreational uses of waterways, as well as the state water project, have already been negatively affected in the Delta region by invasive plant species. Invasive aquatic plants limit recreational boater and commercial vessel navigation and passage, cause negative effects on the health and safety of California citizens, restrict water flows, clog water intakes, and entrap sediments. These non-native plants potentially decrease Delta fisheries productivity by hindering and impeding anadromous and pelagic fish migration, compete with native vegetation, causing anoxic (low oxygen) conditions and threatening water quality. These invasive plants also increase agricultural pumping maintenance requirements and other associated costs. The expansion rate of these invasive species, in the Delta, is approximately 10 percent per year.

The Quagga Mussel is a close relative of the Zebra Mussel and both have similar environmental and economic impacts. Quagga mussels were first found in the Colorado River system in January 2007 and later were found in San Diego and Riverside counties. Zebra mussels were found in a San Benito County reservoir in January 2008. Recreation users can inadvertently spread these invasive species between water facilities, adversely affecting the natural resource, native species, and maintenance costs. They can be easily transported by the boat or its trailer. Boat engines and other parts of the craft also can carry mussel larvae - called veligers - which can spread into waterways and lakes. The spread of the mussels threatens water delivery systems, hydroelectric

facilities, agriculture, recreational boating and facilities, and the environment in general. The negative impact of recreational boating because of the Quagga mussels are:

- Reduce fish population
- Closure of recreational opportunities to boaters
- Ruin the boat engine by blocking the cooling system
- Jam boat steering equipment
- Increased drag at the bottom of the boat wasting fuel and reducing speed
- Require scraping and repainting of boat bottoms
- Colonize boat ramp and boat docks

Water Quality

Water quality can affect and be affected by water-dependent recreation. Poor water quality can have a negative impact on water-dependent recreation. A source of contamination is untreated sewage escaping from treatment facilities or broken sewer lines that have led to the highly publicized closure of public beaches. Another source is fertilizers and chemicals from agricultural runoff that also contribute to the problem. Contaminated lakes, rivers, and streams not only present health risks to those participating in water-contact recreation, but they can significantly diminish the recreation experience. Low water levels and over-use will significantly impact the water quality. In reverse, the negative effects water-dependent recreation can have on water quality are also of concern. Human-source contamination, such as body contact, untreated sewage, and petroleum products discharged from houseboats and other pleasure craft can be a significant problem to water meant for drinking.

Recommendations to Facilitate Water-dependent Recreation

1. In developing water-dependent recreation opportunities, jurisdictions should consider public needs as identified in the California Outdoor Recreation Plan.
2. Use existing data and new surveys to determine recreational needs that might be met by incorporating recreation more fully into new state and regional water project planning.
3. Develop closer working relationships among water managing and advocacy entities such as DWR, DFG, Cal-Boating, CSP, State Lands Commissions and Ocean Protection Council so that recreation planning is incorporated appropriately into the Delta Vision program planning.
4. Conduct, and periodically re-examine, scientifically valid studies of the carrying capacity of proposed and existing sites for water-dependent recreation to help prevent degradation of water quality and wildlife habitat. Use data collected by other agencies, such as the U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, and the Federal Energy Regulatory Commission, such as the results of FERC Relicensing studies.
5. Collect data on visitation rates vs. reservoir water levels and downstream flow rates, and use this data to help optimize the timing of water that is released or held for recreation.
6. Develop partnerships with universities to coordinate the monitoring of public recreation use, equipment and emerging outdoor and water-dependent recreation trends.

7. Create partnerships with education providers to educate youth about preserving and protecting natural resources. **[include outreach – Biodiversity Council, Stewardship Council]**
8. Promote and establish effective partnerships between federal agencies, state and local governments, California Tribes, and the private sector for operation, maintenance and law enforcement of water recreation sites.
9. Coordinate with the Department of Fish and Game in exploring the use of funding from the Bay-Delta Sport Fishing Enhancement Stamp to integrate new and improved public angling opportunities.
10. Development of new floodways, levees or other water facilities must consider built-in recreation opportunities in the planning design.

[Identify some indicators, metrics & performance measures to evaluate the recommendations]

[Work to maintain consistency between the Water Plan and other Agency reports such as the California Outdoor Recreation Plan and the Central Valley River Study.]

[Central Valley Vision – Includes efforts to improve water quality, increase access and develop additional facilities. The Central Valley River Study explores the recreation resources and conducts a gap analysis along various valley rivers.]

[Proposes to study water recreation impacts on local economies, such as the effects of lake levels and peak visitation levels on the economy.]

Selected References

California Department of Parks and Recreation, “Public Opinions and Attitudes on Outdoor Recreation in California 2007,” **currently being updated**

California Department of Parks and Recreation, “California Outdoor Recreation Plan 2007,” **currently being updated**

Public Research Institute, “Survey of Boat Owners in California”

California State Board of Forestry and Fire Protection, California Department of Forestry and Fire Protection, “The California Fire Plan,” www.fire.ca.gov

Online Sources of Information

Department of Fish and Game, www.dfg.ca.gov

American Sportfishing Association, www.asafishing.org

California Department of Tourism, www.gocalif.ca.gov

California Department of Finance, www.dof.ca.gov/Research/Research.php