

Chapter 4: Park Use and Issues

This chapter lists and briefly describes uses and issues raised during the planning process that affect park management. Management policies and recommendations in Chapters 5 & 6 address many of these uses and issues.

Overview of Park Use

Recreation within the units on the north side of the bay is currently limited by the relatively small number of developed facilities. Developed recreation opportunities are provided at two of the units and include mountain bike and beach access trails within the Diamond Creek unit; and skiing and hiking trails within the Eveline unit. The Overlook Park unit and the Cottonwood Eastland unit have minimal development – recreational use in these units primarily occurs on user defined or social trails.

Most visitors to the park units on the south side of the bay arrive by water taxi or personal boats and most visit during summer – in 2017, over 80% of users visited this area in June, July, or August. Use in this area mostly occurs on the saltwater and beaches and the developed trail systems on the Grewingk Glacier forelands and the area around Halibut Cove and Halibut Cove Lagoon and China Poot Bay. Commercial water taxis deliver visitors to trailheads and beaches; recreational boating related activities include fishing, wildlife viewing, and access to hiking, hunting, and other activities. With the recent addition of the Kachemak Bay Water Trail, the marine tidelands are receiving increased use by kayakers and others. Since China Poot Lake has a barrier falls at the outlet, the area offered an opportunity to establish a personal use fishery, in place since 1980, that has become very popular. Birding is also a very popular activity throughout the parks, especially during the annual Kachemak Bay Shorebird Festival, usually held in the early part of May.

Aircraft are also a common means of access, landing on saltwater, gravel bars, and at several freshwater lakes. Most of these landings are made by commercial flight operators. Flightseeing and air taxi services offer an important recreation service and access to distant portions of the park.

Public use cabins are very popular in summer. Winter use is low and primarily consists of backcountry skiing, although some hiking, mountaineering, and kayaking also occur. Winter users near the year-round communities of Halibut Cove, Seldovia Village, and Seldovia typically access ski terrain adjacent to their residences by hiking up with skins on their skis.

While exact numbers are not known, use of the lands and waters within KBSWP are significantly lower than the use occurring in the KBSP. The cost of crossing the bay from

Homer is prohibitive for many potential park visitors, and ideal beach landing sites with ready access to the interior of the park are limited. This is especially true on the Gulf of Alaska side of the park, where cost of transport is even higher (usually from Seward or Homer by boat or aircraft). KBSWP can also be accessed via an arduous trek over the southern spine of the Kenai Mountains (most commonly by trekking the Tutka Alpine Traverse (AKA Tutka Backdoor Trail)); via Rocky River Road; or by boat or plane. For those that do make the trip, a truly remote experience is the reward.

Other current uses of the park, at least some of which are likely to increase in popularity, include: surfing, rock climbing, sailing, photography, diving, ice skating on Grewingk Lake, snowshoeing, horseback riding, dog walking, wildflower viewing, paddle boarding, flightseeing, Nordic skiing, mountaineering, and skijoring.

In January of 2014, ADNR received 122 responses to a questionnaire on recreational park use. 117 of the questionnaire respondents had visited KBSP, while 100 had visited KBSWP. Based on responses to the questionnaire, the most common recreational use of the park units is for general recreation, which includes hiking and boating. (See Figure 1: Park Visitor Activities.) Users that responded to the questionnaire visited the units on the south side of Kachemak Bay more than the northside units, with fewer visitors to areas along the Gulf of Alaska, and the fewest to locations along the spine of the Kenai Mountains (see Figure 2: Park Use Areas).

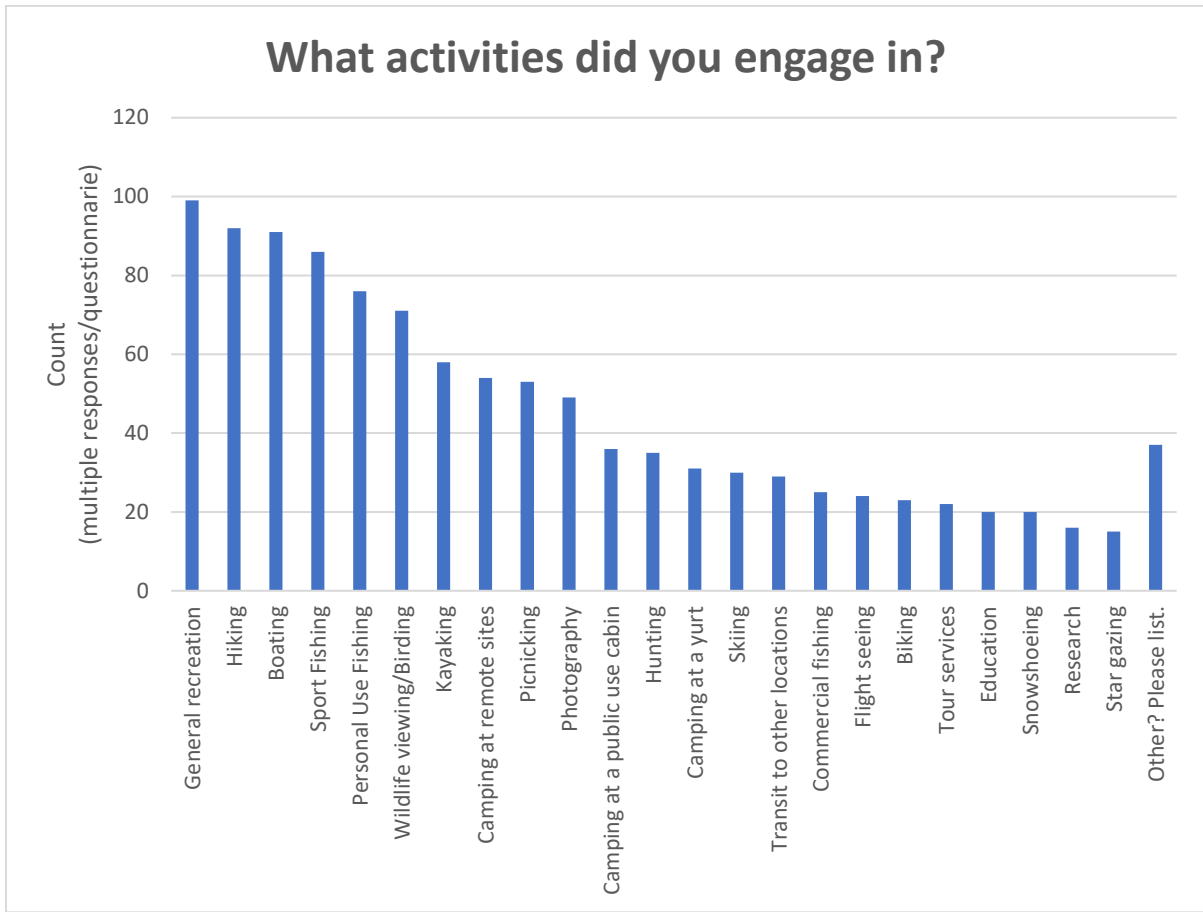


Figure 1: Park Visitor Activities

Park activities mentioned by respondents to the 2013-14 questionnaire (122 respondents).

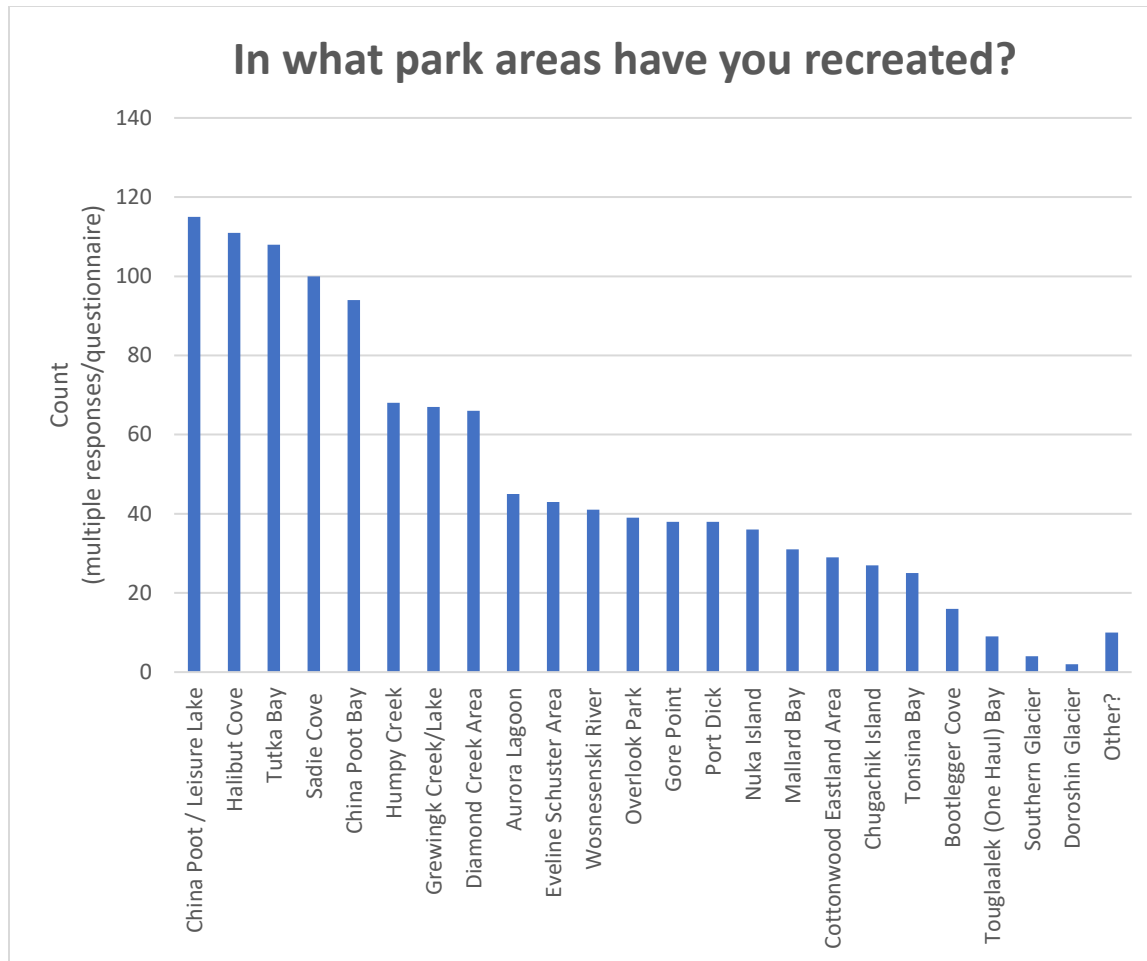


Figure 2: Park Use Areas

Geographic areas where respondents reported recreation activities, based on 2013-14 questionnaire results. Respondents could select multiple areas of use (122 respondents).

Changing Use and Recreational User Conflicts

Since the last plan was completed for the park units, changes in technology and recreational use patterns have necessitated a review of current and emerging recreational activities. Park users are creative people, looking to push the limits of themselves, technology, and sport. In some cases, DPOR may offer expanded recreational opportunities; in other cases, some uses may be limited to protect resources.

Bicycling

Off-road cycling has significantly increased in popularity since the last plan was completed. The recent development of fat-tire bikes (tire widths of 3.7 inches or greater) enables cyclists to travel on a wider range of ground surfaces with the potential for less surface damage. Park

users would like to be able to ride mountain bikes on designated trails within KBSP and fat-tire bikes on the beaches of Kachemak Bay and the Gulf of Alaska.

Personal Watercraft (PWC)

Personal watercraft ownership is increasing and now represents a large segment of overall boat sales in the United States. In 2001, regulations were promulgated prohibiting PWC use within KBSP, KBSWP, and the Kachemak Bay Critical Habitat Area (KBCHA), which overlaps KBSP and is managed by ADF&G.¹ Interest in allowing this activity to occur within Kachemak Bay was expressed during the planning process as was support for retaining the current prohibition on their use. Some feel that allowing PWC use is an equal-access issue, would provide business opportunities, and that recent advances in technology and design have largely addressed previous concerns related to fuel, exhaust emissions, and noise. Others think that PWC use will degrade the park experience for other park users, disturb wildlife, erode the shoreline, and pollute the bay.

In January of 2021, ADF&G repealed the regulation prohibiting PWC use in the KBCHA. As of June 2022, a court case challenging this repeal remains unresolved. State park regulations still prohibit PWC use in Kachemak Bay State Park waters that overlap the KBCHA.

Rotary-winged aircraft (Recreational and Commercial)

Helicopters are used to access parks areas, mostly commercially. There has been increased interest in expanding landing areas for summer operations; but since 1989 DPOR has only authorized helicopter landings on Grewingk Glacier as part of commercial flightseeing tours. People have raised concerns regarding helicopter use including: potential expansion of the use; and disturbance to wildlife, sensitive areas, and the park's quietude. Additionally, concerns were raised about compatibility with park purposes.

Recently, commercial operators have applied for helicopter landings in support of heli-skiing operations. Typically, this type of use includes multiple flights to ferry skiers to the top of the run from the base. Other potential helicopter uses might include heli-hiking (transport from an access point to an elevated drop-off point in the summer, without ferry flights) or heli-backcountry-skiing (transport from an access point to an elevated drop-off point in the winter, without ferry flights).

Fixed-wing aircraft (Recreational and Commercial)

Current regulations allow aircraft landings on saltwater, gravel bars (KBSP only), saltwater beaches (KBSWP only), Emerald Lake, China Poot Lake, Hazelle Lake and Petrof Lake. Requests to allow float plane use on Upper Hazelle Lake, Wosnesenski Lake, Gore Point Lake, and Port Dick Lake were received. Conflicts can arise between those seeking a quiet and remote backcountry experience and those reaching the park by air. Aircraft can easily reach remote areas in the park, whereas other backcountry users may have undergone considerable effort just to get away from exactly this kind of motorized activity.

¹ 11 AAC 20.115, 11 AAC 20.215, and 5 AAC 95.310, respectively.

Unmanned Aerial Vehicles (UAVs)

The commercial and recreational use of Unmanned Aerial Vehicles, commonly referred to as drones, is increasing. Government agencies are also using drones to gather aerial data in a cost-effective manner.

Some appreciate that drones offer amazing landscape views with low impact and would draw users to the park. There are concerns that DPOR doesn't have enough staff to monitor drone use; that many drone users will lack the expertise needed to determine how far they are from wildlife or people; and that drone use will invade the privacy of park users. Others believe that due to vegetation and topography, an operator may not know the drone is disturbing someone nearby; that at 400 feet, a drone would impact a large area; that allowing recreational drone use conflicts with the definition of a scenic park (AS 41.21.990) because drones introduce an "artificial feature," albeit temporarily; and that fines for misuse of drones should be instituted.

Unmanned Underwater Vehicles (UUVs)

Unmanned underwater vehicles operate underwater and can be either remotely operated by a human or be autonomous. UUVs are used for oceanic research, seafloor mapping, and the installation, maintenance and inspection of submerged pipelines and fiberoptic cables. UUVs can record conditions and terrain below sea ice when this activity is too risky for a manned vessel.

Commercial Activities

Commercial Activities Facilitating Recreation

DPOR generally encourages commercial activities that provide or enhance recreation services in state parks. Commercial activities should be consistent with the purpose of the park and the appropriate level of commercial development must be determined. Commercial uses of park lands and waters (except for some fishing uses) are managed by DPOR through a fee-based commercial use permit system. Commercial operators include such visitor services as water and air taxis, fishing charters, guided hiking and hunting, and wildlife tours. Producing films, publications, video guides, and commercials are also considered commercial activities.

Commercial tours facilitate sea-kayaking and other human-powered boating, offer instruction of various types, equipment, and half-day to multi-day guided trips. One of the operators is a general guide service, willing to help individuals recreate via multi-sport trips in KBSP. Two of the operators are resort lodges, with fixed assets on the south side of the bay, but whose customers use the park units for hiking, bird-watching, and fishing, among other activities.

Water taxi services range from simple trips across the bay to cargo delivery and research support using larger and more capable vessels. Many of the water taxi permittees offer service to docks at Halibut Cove, Seldovia, public use cabins, and private lodges, as well as

beach landings at Glacier Spit, China Poot, Saddle Trail, and elsewhere for hikers looking to explore the park.

Fishing charters use portions of the bay for salmon and halibut fishing. In addition, guided fishing excursions are available to the many streams that flow through the park, offering fishing for salmon, trout, and Dolly Varden.

Commercial Fishing

The Kachemak Bay area is divided into nine commercial fishing subdistricts and includes Port Graham to the south. There are only five beach areas along the southern shore of Kachemak Bay where set gillnets are allowed.

Pacific cod, Pacific halibut, walleye pollock, sablefish, lingcod, salmon, and many species of rockfish, skates, and flatfish are commercially important species that occur within the marine waters of the Parks. The Pacific cod fishery is the largest commercial groundfish fishery in the Cook Inlet Area with about half of the total harvest occurring in the Cook Inlet District, which includes Kachemak Bay.

In Kachemak Bay and the waters of the Outer Coast unit, there have been commercially important pot fisheries for Tanner, Dungeness, and king crab, and spot shrimp; and a trawl fishery for northern and sidestriped shrimp. The commercial herring fishery has been closed since 1990 due to low abundance. Fisheries have been closed since 1995 for Tanner crab, 1997 for Dungeness crab and shrimp, and 1984 for king crab, due to low abundance of these species. Tanner crab continues to be harvested but only through sport and subsistence fisheries and some years even these have been closed or limited. Hardshell clams were once abundant in Kachemak Bay but commercial fisheries were closed by regulation in 2007. There was a short-lived commercial fishery for blue mussels, but it has been closed since 1998. Red sea cucumber and green sea urchin populations in Kachemak Bay once supported commercial dive fisheries, but these were closed in 1997 due to low stock abundance. Weathervane scallops also occur in Kachemak Bay and the outer coast; however, abundance is low, historical harvests minimal, and no recent permits have been issued.

Disposals

When the Alaska Legislature created KBSP and KBSWP, these lands were withdrawn from the public domain and designated as special purpose sites under Article VIII, section 7 of the Alaska Constitution. As legislatively designated lands, the executive branch is prohibited from disposing of any real property interests in these lands. Therefore, the Division of Parks and Outdoor Recreation (DPOR), tasked with managing these parks, must avoid issuing permits or entering any agreements that constitute impermissible disposals of state park lands.

In 2000, the Alaska Supreme Court in *Northern Alaska Environmental Center v. State, Dep't of Natural Resources*², adopted the functionally irrevocable test to determine if a permit or agreement constitutes a disposal of an interest. The test does not focus on the wording of the permit or agreement, but instead considers “the likelihood of revocation” and “the long-term and harmful character of the environmental impact.” A significant investment in a project and the need for it to continue to generate revenue pursuant to that investment means there is a low “likelihood of revocation” of any agreement related to that project.³ In 2013, the Alaska Supreme court in *SOP, Inc. v. Alaska*⁴ held that a “non-revocable ATV permit” created an easement and thus constituted an unconstitutional disposal of legislatively designated lands. In the 2015 case *Nunamta Aulukestai v. State, Dept. of Natural Resources*⁵, the Alaska Supreme Court determined that even boreholes represented a “long-term and harmful” impact to state lands under the functionally irrevocable test.

Applying the functionally irrevocable test to activities within the parks, the Tutka Bay Lagoon Hatchery (TBLH) operated by the Cook Inlet Aquaculture Association (CIAA) under an agreement with ADF&G appears to constitute an impermissible disposal of state park lands for the following reasons:

- The plain language of ADF&G’s 2014 agreement with CIAA allows CIAA to operate the TBLH for twenty years and states that the parties would work towards transferring the TBLH facilities and buildings to CIAA.
- The hatchery has extensive infrastructure and its operational expenses are funded through cost recovery.
- There is a \$16.1 million investment in the TBLH by the Department of Commerce, Community and Economic Development (DCCED); wherein continued operation of the TBLH is needed to ensure that return.
- The TBLH buildings and the operations within the lagoon have a long-term effect and environmental impact on state park lands and waters.

Private property rights and utility easements that pre-date the park’s creation on land lying within the statutorily-described boundaries of the parks do not constitute a disposal of park lands. Park management decisions should respect these valid entries while implementing statutory and regulatory park management mandates and protecting park resources.

Tutka Bay Lagoon Hatchery

After the creation of KBSP as a scenic park in 1970, the legislature in 1974 authorized private, non-profit corporations to operate salmon hatcheries. The Tutka Bay Lagoon

² *Northern Alaska Environmental Center v. State, Dep't of Natural Resources*, 2 P.3d 629 (Alaska 2000).

³ *Nunamta Aulukestai v. State, Dept. of Natural Resources*, 351 P.3d 1041 (Alaska 2015); *NAEC*, 2 P.3d 629.

⁴ *SOP, Inc. v. Alaska*, 310 P.3d 962 (Alaska 2013).

⁵ *Nunamta*, 351 P.3d 1041.

Hatchery (TBLH) – located within KBSP – was constructed by ADF&G in 1976. ADF&G’s Fisheries Rehabilitation, Enhancement, and Development (FRED) Division, using general funds, operated the TBLH hatchery for 16 years as a state managed hatchery. In 1991, ADF&G contracted with Cook Inlet Aquaculture Association (CIAA) to operate the hatchery, activating cost recovery to fund operations; and in 1994 CIAA took over operations while the state retained ownership of the facility. The current services agreement for CIAA to operate the TBLH expires in 2031.

The hatchery cultivated sockeye salmon from 1976-1978 as well as in 1990, 1996, 1997, and 1999, and chum salmon from 1978-1990. Pink salmon have been cultivated since 1976 with no releases occurring from 2005-2011. In addition to being released in Tutka Bay Lagoon, pink salmon produced at this facility have been remote released at three locations in Kachemak Bay: Halibut Cove (1986-1992), the Nick Dudiak Fishing Lagoon (1987-1992), and Halibut Cove bight (2012). Remote releases of hatchery-produced sockeye salmon from the Trail Lakes Hatchery have occurred within KBSP in China Poot Lake, Hazelle Lake, and Tutka Bay Lagoon for decades. These releases support both commercial and sport fisheries, as well as the Kachemak Bay Personal Use Dipnet Fishery (5 AAC 77.545) that occurs in China Poot Bay.

In 2013, CIAA applied for a DPOR permit to imprint pink salmon in net pens at the head of Tutka Bay at a site approved by ADF&G. Over the course of several years and several commissioners, various appeal decisions were issued about locating net pens in Tutka Bay. These decisions provided different, and thus inconsistent, guidance about the appropriateness of net pens in Tutka Bay. In 2019, CIAA submitted two permit applications. The first was again seeking approval to place net pens in Tutka Bay. The second was to dispose of brood stock carcasses (hatchery waste) in Tutka Bay. These applications were subsequently denied by the DPOR Director. CIAA appealed both decisions to the Commissioner and in 2020 the Commissioner denied both appeals. Because KBSP is a scenic park, the Commissioner determined placing net pens in the open waters of Tutka Bay would be inconsistent with the legislature’s reasons for setting aside the lands to create KBSP. The Commissioner also determined 11 AAC 12.050 specifically prevents the disposal of waste in a state park, and that there was no valid reason to allow CIAA to deposit such waste in KBSP. As of late fall, 2020, both of these decisions are being litigated in state court.

During the planning process, the public offered many comments on the hatchery and its operations. Many suggested that the common property fishery arising from hatchery fish was so minimal that the hatchery should be reclassified as a commercial operation, rather than a state management operation designed to enhance fisheries. Concerns were raised that moving the net pens outside Tutka Bay Lagoon degrades the scenic beauty of the park and the quality of recreational opportunities and that the pens’ associated discharges harm the environment. Other concerns expressed included that the large number of pink salmon produced at the hatchery clogs personal set nets; leads to straying far outside Tutka Bay; impacts the food web, thereby depleting many marine species (including king and Tanner crab, halibut, shrimp, herring, Pacific cod, clams, and mussels); and supplants wild salmon genomes. Other

commenters lauded the hatchery's cost recovery as good for commercial fisherman and thought the hatchery complements the natural scenery.

Homer Electric Association

The HEA distribution line easements predate the park's formation; therefore, the easement interest in the land is not part of the park. HEA utilizes helicopters for powerline maintenance with landing sites located at intervals adjacent to distribution lines. DPOR authorizes these temporary landing sites and support activities through special use permits. In maintaining their lines, HEA faces environmental challenges including flooding and the increased incidence of treefall due to spruce bark beetle infestations. HEA does not have authorization to reroute or install new lines outside of their current easements.

In 2015-16, the Wosnesenski River spilled into Stonehocker Creek, which then began flooding a section of the powerline easement in KBSP near China Poot Bay. This compromised the powerline which serves Peterson Bay and Halibut Cove. In early 2019 DPOR permitted HEA to install a sheet pile dam to divert Stonehocker Creek away from the easement. This temporarily dewatered the powerline corridor until Stonehocker Creek breached the dam in July 2019 and water again flowed down the easement.

A review of available aerial imagery and on-the-ground reconnaissance reveals that electrical lines have been constructed within KBSP. While Homer Electric Association's distribution lines (and possibly others) predate the park, in some cases, lines appear to have been constructed outside of existing easements, on park land.

Division of Parks & Outdoor Recreation Facilities and Trails

Park facilities include structures such as cabins, ranger stations, campgrounds, and marine docks to name a few. Often associated with these facilities are trail systems – terra, snow, and water – that further facilitate public use in park units. A primary purpose of a plan is to recommend facility and trail development to not only meet the current recreational needs of the public, but also meet the expected potential recreational needs for the 20-year period of the plan. Costs associated with construction, operation, and maintenance were considered as a factor in recommending facilities and trails as were current and desired recreational use patterns. This plan recommends those facilities and trails that are consistent with the long-term vision for these units. In some instances, existing public facilities are inadequate to accommodate even current use levels (which can lead to degradation of park resources) or are situated in an area that no longer receives high levels of agency or public use (e.g. Halibut Cove Lagoon Ranger Station). Facilities developed by DPOR (when properly sited, designed, and developed) can accommodate use while at the same time minimizing impacts to the surrounding environment or neighboring private property.

Trails provide access for the public to enjoy scenic views, the wilderness quality, and other resources and recreation opportunities within the park units. When viewed as a system in concert with facilities, trails can greatly influence how and where the public chooses to recreate. Currently, most public use of trails occurs at Grewingk Glacier and in the vicinity of Halibut Cove and China Poot Lake. Much of the park units' interior or southern coast is unreachable by trail, and is visited only by those willing to bushwhack or fly in. The existing trails in certain areas are becoming more popular, and many could be upgraded to accommodate increased use and different use types. Although higher class trails (e.g. Class 4 or 5 ADA-accessible terra trails) are suitable in some areas of the park units, they are not appropriate in all areas. There is a desire from users for multi-use trails, paths that can support "hut to hut" hiking between public use cabins, and trail networks that can accommodate 2-3 day long backpacking trips. Many of the trails on published maps were constructed long ago and have since fallen into disuse due to lack of maintenance. Multiple users have discovered trails marked on published maps are impassable due to downed trees and/or overgrown vegetation. Maintenance of existing trails is as important as construction of new trails – otherwise the investment in the new trail is lost. In addition, maps of the park units need to be updated to include changes to the trail system. For more on trails, see Appendix E: Trail Plan.

Effects of Human Use on the Environment

Humans influence the marine, freshwater, and terrestrial environments through recreational and commercial use. Use of boats and other vessels as a means of recreation and transportation to other recreation opportunities is extensive – this use includes the potential for releases of fuels and lubricants directly into marine and freshwater environments. Additional human impacts include the old Sadie Cove quarry site; alteration of the natural habitat to facilitate human uses (such as trails, docks, PUCs, yurts, etc); commercial activity within the parks (fishing, guiding, water taxis, hatchery operations, etc.); and numerous potential trespass structures (waterlines, powerlines, etc.) adjacent to private properties.

Exxon Valdez Oil Spill

The 1989 Exxon Valdez Oil Spill (EVOS) directly impacted natural resources and the subsistence, private, and commercial interests that depend on those resources. The EVOS Trustee Council was formed to oversee ecosystem restoration through the use of a \$900 million civil settlement. The Council consists of three state and three federal trustees (or their designees); and is advised by members of the public and the scientific community. When EVOS funding has been used to acquire lands for habitat protection, conservation easements that restrict land use are routinely included. In 1993, the state acquired 23,701 acres of private inholdings within KBSP that included prime habitat. The purchase was funded with \$14.5 million from the state and \$7.5 from the EVOS Trustee Council. Other parcels that were purchased through EVOS funding and are being managed as part of the state park

system include Overlook Park and Diamond Creek State Recreation Sites. Management of these lands must be consistent with conservation easements associated with the land.

Fees, Park Pass, and Visitor Use Management

User fees (commercial and visitor) play an important role in funding continued development and maintenance of state park facilities. In the face of fiscal budget concerns, there have been suggestions for the park to become more self-sufficient through adjustment and expansion of DPOR's fee collection system. Per AS 41.21.026, DPOR may not collect a fee for ordinary use of a park unit or a restroom within a park unit. DPOR may charge fees for parking (if restrooms are also available), camping, boat launching, admission to visitor centers and historic sites, sale of certain merchandise, and overnight lodging rentals such as public use cabins. DPOR may also charge for commercial use permits and special park use permits.

Spruce Bark Beetle Infestations

During the 1980s and 1990s, the spruce forests of Kachemak Bay's watershed experienced a large spruce bark beetle outbreak – part of an infestation that resulted in the death of over 2.3 million acres of spruce on the Kenai Peninsula. These vast acres of dead trees changed the uplands habitat, the hydrology of rivers and streams, and affected the diversity and distribution of wildlife inhabiting the parks. The large number of standing and fallen dead trees throughout the park post-outbreak presented a significant maintenance, public safety, and fire hazard mitigation challenge. Despite a major, ongoing outbreak in other areas of Southcentral Alaska that began around 2016, recent survey data suggests that spruce beetle populations are at endemic levels on the southern Kenai Peninsula.

Invasive Species

Presidential Executive Order 13112 defines an “invasive species” as a non-native species that causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can change ecosystems by altering habitat composition, increasing wildfire risk, competing with native species for food and territory, changing existing predator/prey relationships, reducing productivity, or otherwise disrupting natural habitat functions.

Management

ADF&G is responsible for management of fisheries, wildlife, and habitats – the agency strives to protect native fish and wildlife and their habitats from the impacts of invasive species. ADNDR has management responsibility for terrestrial and freshwater plants. As appropriate, the two agencies collaborate to safeguard Alaska ecosystems from aquatic

invasive species. Management of specific invasive species occurs based on decisions of priority and available resources. There are many non-native species present in Alaska. ADF&G and ADNR will prioritize management of an invasive species when it is proven to cause significant negative impacts on native species or habitats, and management is determined to be feasible.

The Kenai Peninsula Cooperative Weed Management Area (KP-CWMA) is a partnership dedicated to preventing the introduction and managing the spread of non-native, invasive plants across the peninsula. Through a signed cooperative agreement, relevant and interested agencies, organizations, tribal landowners, and other groups work together to develop management objectives, set realistic priorities, and facilitate effective treatment. The KP-CWMA strategic plan outlines the strategic, landscape approach to invasive species with an emphasis on early detection and rapid response to specific invasive plant species.

Spruce Aphid Invasion

In 2015, the spruce aphid, a non-native insect originally from Europe, was documented to have caused extensive Sitka spruce defoliation in Halibut Cove and to a lesser extent in Homer. The outbreak extended completely around Kachemak Bay by 2016 and had subsided by 2017. Spruce aphid outbreaks commonly occur following mild, relatively warm winters and can quickly crash if winter temperatures are cold enough. The aphids begin actively feeding and reproducing in early spring. Individual needles initially show yellow mottled blotches where aphids are feeding and eventually turn reddish-brown and drop, leaving infested parts of the tree without foliage. In Alaska, spruce aphids occur only in forests adjacent to the coast and have thus far only been found within the range of Sitka spruce in the state. Infested trees can often recover from spruce aphid-caused defoliation.

Invasive Terrestrial Plants

While not all are confirmed to exist in the parks, these are the ten most harmful species of invasive plants that are within, or currently threaten, the parks. They all would damage native habitat and are listed from most harmful to less harmful:

- Japanese Knotweed (*Fallopia japonica*)
One infestation in Seldovia is currently being contained – no other known infestations in Kachemak Bay
- Reed Canary Grass (*Phalaris arundinacea*)
Abundant near Homer; present in Seldovia and at Bradley Lake; and possibly exists in park areas across the bay
- White Sweet Clover (*Melilotus alba*)
Only known infestation is at Bradley Lake Hydroelectric Site

- Orange Hawkweed (*Hieracium aurantiacum*)
Common in Homer and Seldovia; reported in Cottonwood Eastland, Diamond Creek, Bradley Lake, and at Tutka Bay near the hatchery (where CIAA is treating it)
- Canada Thistle (*Cirsium arvense*)
Only two known populations are along East End Road
- Bull Thistle (*Cirsium vulgare*)
Seldovia only
- European Bird Cherry (*Prunus padus*)
- Chokecherry (*Prunus virginiana*)
- Bird Vetch (*Vicia cracca*)
May have been eradicated near Homer
- Common Tansy (*Tanacetum vulgare*)
A few infestations in Homer & Seldovia

Many more harmful and aggressive invasive plants may be introduced into the parks in the future but have not yet arrived. There are also many less-damaging invasive plant species threatening or existent within the parks. Dandelions are present in all park units near Homer and in the Upper Hazelle Lake area (and likely other areas); plantain and buttercup have been recorded in park areas across the bay; and several species of yellow hawkweed have been reported in Homer, Seldovia, or Bradley Lake.

Managing vectors by cleaning boots, gear, equipment, and vehicles is critical in preventing the introduction and spread of invasive plants. After prevention activities, early detection and rapid response is considered the next highest priority to mitigate the introduction and spread of invasive weeds. This approach, as defined by the National Invasive Species Council, is the most effective means for eradicating invasive species and is intended to be the keystone of invasive plant management within the parks.

Aquatic Invasives

In 2002, ADF&G prepared the Alaska Aquatic Nuisance Species Management Plan to address the threat invasive species pose to the aquatic ecosystems of the state.

Japanese skeleton shrimp (*Caprella mutica*) is the only verified record of an invasive aquatic species in Kachemak Bay or other park areas. Although elodea and northern pike are present in the waters of Kenai National Wildlife Refuge (KNWR), they are not known to occur in the parks. Float planes landing in remote lakes can be a vector for spreading elodea. European green crab are not yet known to occur in Alaska. They are of concern because invasive populations in the Pacific Northwest, as far north as British Columbia, are expected to expand their range into Alaska waters where they could have detrimental impacts on native crabs and their habitat. Eelgrass beds, which European green crab populations decimate, are

important in the nearshore ecosystem as they provide shelter and foraging habitat for salmonids, and spawning surfaces for Pacific herring.

Other Non-native Species

Rock doves, starlings, and house sparrows are invading the parks (and other areas of Alaska) and may be endangering native bird species. The following feral, non-native game birds have been detected within or near KBSP: bobwhite quail (*Colinus virginianus*), chukar partridge (*Alectoris chukar*), Hungarian partridge (*Perdix perdix*), ring-necked pheasant (*Phasianus colchicus*), and wild turkey (*Meleagris gallopavo*). Coyotes are also present in park areas. ADF&G knows of no assessment demonstrating that these species cause negative environmental, economic, or human health impacts in Alaska. Thus, while these species are non-indigenous, at this time they do not fit the definition of “invasive species” as previously described.

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) is a federal grant program that is administered by the National Park Service (NPS). LWCF provides matching funding to state and local governments to acquire, develop, and plan for public outdoor recreation areas. In Alaska, DPOR is the government agency that disperses federal grant dollars under this program. LWCF provisions require the agency receiving the grant dollars to maintain the funded project for public use and must identify and reserve enough area around the project to ensure continued public use. The boundary for the reserved lands is included on a map that is mutually agreed to by the State and the NPS. Any property where LWCF funds have been expended may not be wholly or partly converted to anything other than public outdoor recreation uses without the prior approval of the Secretary of the U.S. Department of the Interior. If for some reason the recreational nature of the property is lost, it represents a conversion of use requiring mitigation in the form of acquisition of other recreational properties or outdoor recreational enhancement as approved by the National Park Service. The process to convert LWCF-protected lands can be lengthy and costly for the agency requesting the conversion.

The entirety of both KBSP and KBSWP are subject to LWCF program provisions. Actions that may represent a conversion of use include installing above-ground utilities; development of roads with a non-recreational primary purpose; development for private purposes; or encroachments such as driveways.

Park User Trespass

Trespass onto private lands can create conflict between park users and landowners. Whether unintentional, or with knowledge of the recreationist, use of private property by visitors to the park units has occurred, but this type of use should be curtailed.

Private Structures and Uses

There are nearly 150 private parcels adjacent to the park units and over 200 private parcels bounded within the park units. (This includes the state and wilderness parks and the park units on the north side of Kachemak Bay.) Private parcels are generally five acres or less in size and many are located along prime areas of the coast. Most of these parcels predate the establishment of the park and were obtained through state and federal land disposal programs. Private inholdings present potential areas of conflict between park users, park management, and private landowners regarding management practices, policies, and the development of park facilities. The largest communities are Halibut Cove and subdivisions in Peterson Bay, Petrof View, and Bear Cove. There are also some private inholdings on the coast of Tutka Bay and Sadie Cove.

DPOR has identified many unauthorized structures that may have been placed, constructed, or maintained in a park unit without a special park use permit issued under 11 AAC 18.010. A more detailed review of many of these structures in relation to property boundaries is warranted prior to contacting the upland owner to determine a corrective action. Other structures, such as docks or water collection and storage structures, that are clearly within a park unit will not need to undergo further review before a corrective action is determined. Similarly, some uses are occurring within park units that are prohibited or need to be authorized before they are conducted. These include gathering firewood for use at adjacent private property, riding a bicycle off a road or parking area, or using hand tools to clear trails, to name a few. In some instances, DPOR may not be able to authorize structures or other permanent modifications to park resources. In these instances, DPOR will notify the owner of record of the prohibited structure and work with the owner to rectify the issue.

Based on a 2004 survey by ADF&G, over 1000 docks, buoys, piers, walkways, and other types of mooring and access structures have been constructed, placed, or maintained on tide and submerged lands below mean-high-waterline within the Kachemak Bay Critical Habitat Area (KBCHA); some of these structures were also located within KBSP. Many of these structures required authorization by both DPOR and ADF&G prior to their construction or placement, but in many cases, this has not been completed. Without a permit, these constitute an unauthorized encroachment upon park waters and can be a safety issue. In 2015, ADF&G conducted an outreach effort, which resulted in permit renewals for a number of docks throughout the KBCHA.

Many private parcels have unplanned and informal social trail networks connecting private land to the park. While relatively minimal in nature, many of these trails extend onto DPOR managed lands and connect to existing hiking trails. These trails invite use by the public – most have not been developed to sustainable trail standards and may be contributing to degradation of park resources.

Visitor Safety

Recreating anywhere in Alaska’s frontcountry and backcountry comes with inherent risks. Weather, terrain, wildlife, earthquakes, tsunamis, availability of communications, trail conditions, and travel logistics are just a few of the possible variables that visitors to KBSP and KBSWP should prepare for. People are encouraged to research the conditions they are likely to encounter in the area where they are planning to recreate. Visitor safety is important to DPOR and up-to-date information is usually provided through websites, social media, or email.

International Dark Sky Park Designation

The dark-sky movement works toward a reduction in light pollution. Reduced light pollution saves energy and reduces negative impacts on nocturnal animals and on human circadian rhythms. Light pollution can be greatly reduced through usage of light fixtures that cast less light upward. In order to better promote dark skies, DPOR staff should pursue an International Dark Sky Park designation from the International Dark-Sky Association. This organization assists in light pollution reduction and has recognized parks around the globe as International Dark Sky Parks.

Quiet Park Nomination

Quiet Parks International is a non-profit dedicated to preserving quiet spaces for the benefit of all life. DPOR will consider working toward nominating the parks for an award from Quiet Parks International or other organization that celebrates quiet parks.

Western Hemisphere Shorebird Reserve Network

In 1995, 7260 acres that included Fox River Flats Critical Habitat Area, parcels near the Homer Spit, and other areas in Kachemak Bay were designated part of the Western Hemisphere Shorebird Reserve Network (WHSRN). In 2016 the rest of the Kachemak Bay Critical Habitat Area (as well as Beluga Slough and Sixty-Foot Rock) were added to the network for a total of 232,462 acres. Kachemak Bay’s 320 miles of shoreline attract many

species of shorebirds. The Network's goal is to protect shorebirds and their habitats throughout the Americas.

Climate Change

Kachemak Bay water temperatures have been warmer than the long-term average since early 2014. Oceanographic surveys documented significant warming of the entire water column of the bay during the 2014-2016 Pacific marine heat wave and again in 2019.

While rising sea levels are a global concern, Kachemak Bay is somewhat protected from sea level rise for the foreseeable future. This is due to land levels around Kachemak Bay rising more quickly than sea level. This land-level rise is caused both by isostatic processes (loss of ice in glaciers and icefields) and tectonic processes (the tectonic plate the area sits on is rising as plates collide). The land-level uplift around Kachemak Bay is currently around 8.6 mm per year, while global sea-level rise is around 3.2 mm per year.

Glaciers feeding into Kachemak Bay are rapidly retreating. Grewingk Glacier, for instance, has retreated nearly 2 miles since the early 1950s. This ice melt during the summer produces a strong fresh-water signal in the surface waters of Kachemak Bay, even during periods of little to no rain. The surface waters of Bear Cove and off the end of the Homer Spit remained relatively fresh in August of 2019, even though there was almost no rain during that time period. Research underway in 2019 will help assess the contribution of fresh water and nutrients entering the bay from melting glaciers.

Coastal erosion is an ongoing concern in the Kachemak Bay area, although it is more significant on the north side of the bay, which consists of softer sedimentary rock than the south side. Increasing frequency and magnitude of storms associated with climate change may increase erosion problems on the north side.

Ocean acidification is a concern for Kachemak Bay marine resources. Data from the Kachemak Bay National Estuarine Research Reserve's System Wide Monitoring Program shows a potential trend of decreasing pH at all four long-term water quality monitoring sensors.