
Dude Creek Critical Habitat Area Management Plan

by

Division of Habitat

and

Division of Wildlife Conservation



Photo credit: Jim Dau

April 2017

Alaska Department of Fish and Game

Divisions of Habitat and Wildlife Conservation



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative		fork length	FL
deciliter	dL	Code	AAC	mid-eye-to-fork	MEF
gram	g	all commonly accepted		mid-eye-to-tail-fork	METF
hectare	ha	abbreviations	e.g., Mr., Mrs., AM, PM, etc.	standard length	SL
kilogram	kg			total length	TL
kilometer	km	all commonly accepted			
liter	L	professional titles	e.g., Dr., Ph.D., R.N., etc.	Mathematics, statistics <i>all standard mathematical signs, symbols and abbreviations</i>	
meter	m	at	@	alternate hypothesis	H _A
milliliter	mL	compass directions:		base of natural logarithm	e
millimeter	mm	east	E	catch per unit effort	CPUE
		north	N	coefficient of variation	CV
		south	S	common test statistics	(F, t, χ^2 , etc.)
		west	W	confidence interval	CI
		copyright	©	correlation coefficient	
		corporate suffixes:		(multiple)	R
		Company	Co.	correlation coefficient	
		Corporation	Corp.	(simple)	r
		Incorporated	Inc.	covariance	cov
		Limited	Ltd.	degree (angular)	°
		District of Columbia	D.C.	degrees of freedom	df
		et alii (and others)	et al.	expected value	E
		et cetera (and so forth)	etc.	greater than	>
		exempli gratia		greater than or equal to	≥
		(for example)	e.g.	harvest per unit effort	HPUE
		Federal Information		less than	<
		Code	FIC	less than or equal to	≤
		id est (that is)	i.e.	logarithm (natural)	ln
		latitude or longitude	lat. or long.	logarithm (base 10)	log
		monetary symbols		logarithm (specify base)	log ₂ , etc.
		(U.S.)	\$, ¢	minute (angular)	'
		months (tables and		not significant	NS
		figures): first three	Jan., ..., Dec	null hypothesis	H ₀
		letters		percent	%
		registered trademark	®	probability	P
		trademark	™	probability of a type I error	
		United States		(rejection of the null	
		(adjective)	U.S.	hypothesis when true)	α
		United States of		probability of a type II error	
		America (noun)	USA	(acceptance of the null	
		U.S.C.	United States	hypothesis when false)	β
			Code	second (angular)	"
		U.S. state	use two-letter	standard deviation	SD
			abbreviations	standard error	SE
			(e.g., AK, WA)	variance	
				population	Var
				sample	var
Weights and measures (English)					
cubic feet per second	ft ³ /s				
foot	ft				
gallon	gal				
inch	in				
mile	mi				
nautical mile	nmi				
ounce	oz				
pound	lb				
quart	qt				
yard	yd				
Time and temperature					
day	d				
degrees Celsius	°C				
degrees Fahrenheit	°F				
degrees Kelvin	K				
hour	h				
minute	min				
second	s				
Physics and chemistry					
all atomic symbols					
alternating current	AC				
ampere	A				
calorie	cal				
direct current	DC				
hertz	Hz				
horsepower	hp				
hydrogen ion activity	pH				
(negative log of)					
parts per million	ppm				
parts per thousand	ppt,				
	‰				
volts	V				
watts	W				

DUDE CREEK CRITICAL HABITAT AREA MANAGEMENT PLAN

Alaska Department of Fish and Game
333 Raspberry Road, Anchorage, Alaska 99518-1599

April 2017

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Alaska Department of Fish and Game
Anchorage, Alaska

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The *Dude Creek Critical Habitat Areas Management Plan* has been prepared by Alaska Department of Fish and Game biologists. This plan was developed with the aid of an interagency planning team composed of representatives from state, federal, and local agencies with jurisdiction over the critical habitat area and critical habitat area resources:

Charles Pinckney, Alaska Department of Natural Resources

Morgan Deboer, Paul Berry, and Mike Taylor, City of Gustavus

Hank Lentfer, The Nature Conservancy

Ben Grussendorf, Alaska Board of Game (Soon after the release of the first public review draft plan, we learned of Ben's death on June 1, 2011. Ben served as the Board of Game liaison on the planning team, and his input into this plan was invaluable. We are grateful to Ben for his assistance on this plan, and for the many years he spent on the Board of Game working to provide hunting opportunities for the public while conserving Alaska's wildlife populations.)

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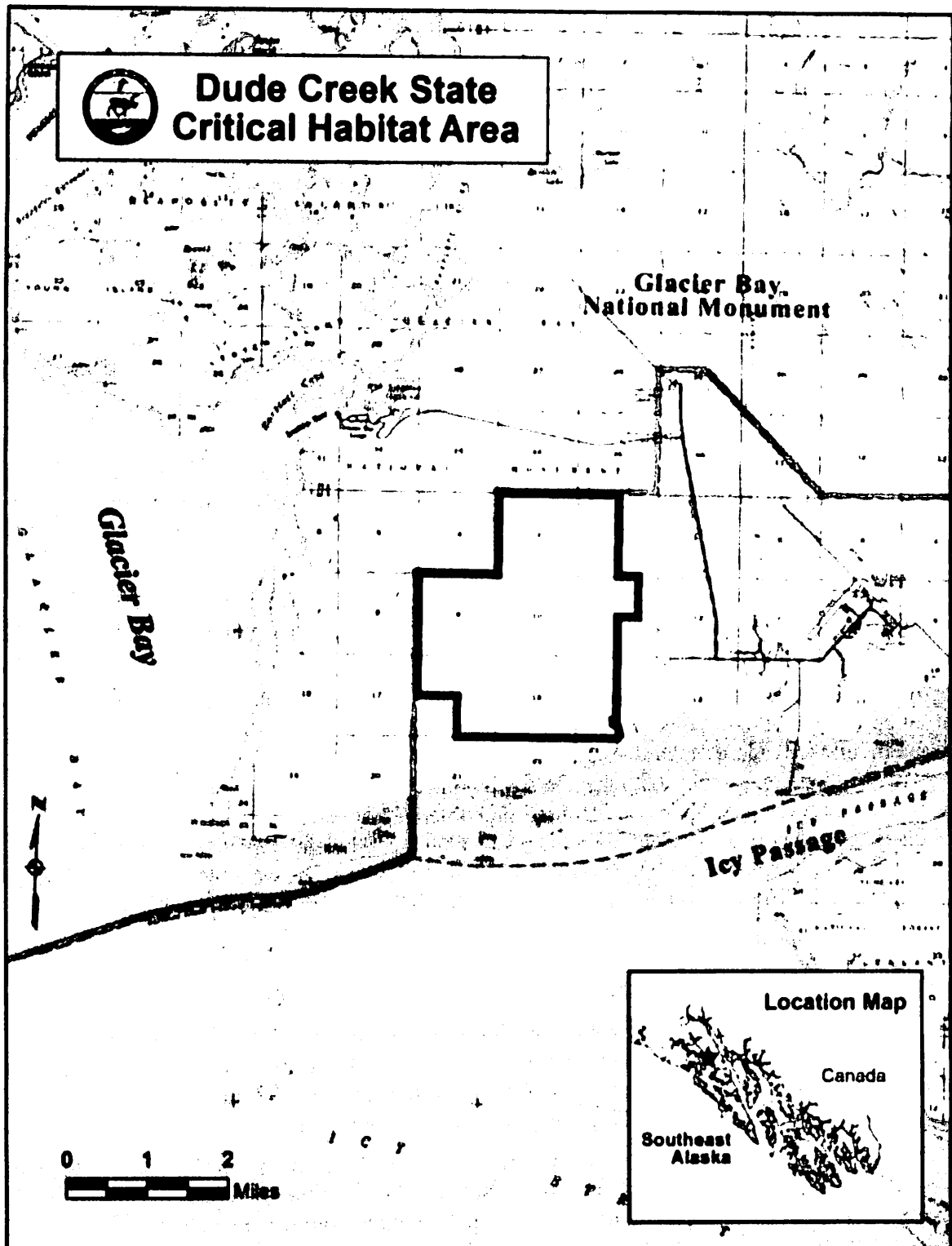


Figure 1.—Map of Dude Creek Critical Habitat Area

INTRODUCTION

In 1988 (§ 1 ch 31 SLA 1988) the Alaska Legislature established the Dude Creek Critical Habitat Area (CHA) to protect and enhance wet meadow habitats for lesser sandhill cranes (*Grus canadensis*) and for the continued public use and enjoyment of the area. The CHA is located on the Gustavus Forelands in Southeast Alaska, west of the community of Gustavus, and abuts the Glacier Bay National Park. Dude Creek CHA encompasses approximately 4,082 acres of open wetlands graduating to scrub pine and spruce forests.

Dude Creek CHA is co-managed by the Alaska Department of Fish and Game (ADF&G) in accordance with Alaska Statute 16.20.500-530, and the Alaska Department of Natural Resources (DNR) per AS 38.05. The purpose of the *Dude Creek Critical Habitat Area Management Plan* is to provide consistent, long-range guidance to ADF&G in managing the CHA. ADF&G has undertaken this comprehensive planning process in order to establish guidelines, policies, and regulations for management of fish and wildlife, habitat, and current and future activities that affect them in the CHA.

This plan presents management goals for the CHA and its resources, and identifies policies to be used in determining whether proposed activities are compatible with the protection of fish and wildlife, their habitats, and public use of the CHAs. The goals and policies of this plan are adopted as regulation.

This plan affects state lands and waters. There are no private or federal lands within the boundary of the CHA. Furthermore, the plan does not address hunting or fishing regulations, which are the authority of the Alaska Boards of Fisheries and Game.

ADF&G will use this plan in several ways; through the Special Area permitting process, land use activities within the Critical Habitat Area, including those proposed by private individuals, companies, or federal, local or state agencies, will be approved, conditioned, or denied on the basis of their consistency with the goals and policies provided in this management plan.

Research programs, public use facilities, and other department projects will be consistent with the goals and policies presented in this plan. Other state, federal, and local agencies have management responsibilities that affect the Dude Creek CHA as well. Many uses, including lease or disposal of resources on state land in the CHA, require DNR authorization.

THE PLANNING PROCESS

This plan is the result of a public planning process led by ADF&G. It was developed by a collaborative planning team representing state, federal, and local entities; a) the State of Alaska Departments of Fish and Game and Natural Resources; b) the National Park Service; c) the community and City of Gustavus; and d) The Nature Conservancy.

ADF&G initiated the effort by holding public scoping meetings in Gustavus, Hoonah, and Juneau to explain the planning process and solicit citizens' issues, interests, and concerns for the Dude Creek CHA. The planning team used public input from these meetings to formulate a list of issues to be addressed in the plan. Concurrently, we began collecting and synthesizing information on fish and wildlife populations and their habitats, other natural resources, land ownership, and existing land uses in the vicinity of the Dude Creek CHA. This information,

presented in both map and narrative form, comprises the plan's Resource Inventory (Appendices A and E).

Management goals and policies for the Dude Creek CHA were developed by the planning team to address the identified issues. All policies were developed with consideration for their ability to meet the formulated management goals. In addition, other applicable laws and the Public Trust Doctrine were considered.

The public review draft dated May 6, 2011 was distributed to solicit comments and suggestions to strengthen the plan and make it useful to the department and the public. A second public review period was conducted in October 2015. The second public review draft, with minor edits to incorporate public comments, will become the final plan. The Commissioner of the Alaska Department of Fish and Game will adopt the final plan and corresponding regulations for use by the department in managing the CHA. At this point, the plan can be implemented by ADF&G.

Consultation with the Board of Game (Board) and the City of Gustavus (City) during planning efforts is required by AS 16.20.6110(c). This requirement was fulfilled by having representatives from the Board and the City on the planning team who participated in developing and reviewing the plan's policies and goals. Information about the planning process was made available to the Board at meetings held November 2010, November 2011. The final draft of the goals and policies, as well as a summary of the planning process was presented at a Board of Game work session in March 2016. The City of Gustavus was very involved during the second public review and the City Council passed Resolution CY15-33 in December 2015 supporting adoption of the draft plan into state regulation.

This plan will be reviewed and updated, as appropriate and necessary. Public participation will be solicited during the update process.

STATUTES

Alaska statutes that specifically pertain to the establishment and management of the Dude Creek Critical Habitat Area are codified in AS 16.20. The management direction for all state critical habitats, AS 16.20.500, became law in 1972 (§ 2 ch 140 SLA 1972). The enabling legislation for the Dude Creek Critical Habitat Area became law in 1988 (§ 1 ch 31 SLA 1988).

Sec. 16.20.500. Purpose. The purpose of AS 16.20.500 – 16.20.690 is to protect and preserve habitat areas especially crucial to the perpetuation of fish and wildlife, and to restrict all other uses not compatible with that primary purpose.

Sec. 16.20.510. Regulations. The Board of Fisheries and the Board of Game, where appropriate, shall adopt regulations they consider advisable for conservation and protection purposes governing the taking of fish and game in state fish and game critical habitat areas.

Sec. 16.20.520. Multiple land use. Before the use, lease, or other disposal of land under private ownership or state jurisdiction and control, within state fish and game critical habitat areas created under AS 16.20.500 – 16.20.690, the person or responsible state department or agency shall notify the commissioner of fish and game. The commissioner shall acknowledge receipt of notice by return mail.

Sec. 16.20.530. Submission of plans and specifications. (a) When a board determines that the following information is required, it shall instruct the commissioner, in the letter of acknowledgment required under AS 16.20.520, to require the person or governmental agency to submit:

- (1) full plans for the anticipated use;
 - (2) full plans and specifications of proposed construction work;
 - (3) complete plans and specifications for the proper protection of fish and game; and
 - (4) the approximate date when the construction or work is to commence.
- (b) The board shall require the person or governmental agency to obtain the written approval of the commissioner as to the sufficiency of the plans or specifications before construction is commenced.

Sec. 16.20.610. Dude Creek Critical Habitat Area. (a) The purpose of the Dude Creek Critical Habitat Area is the protection and enhancement of the wet meadow habitat that is the key roosting area for migrating lesser sandhill cranes, for the protection of lesser sandhill cranes, and for the continued public use and enjoyment of the area.

(b) The following described area is established as the Dude Creek Critical Habitat Area:
Township 40 South, Range 58 East, Copper River Meridian

Section 2: W1/2

Section 3

Sections 9 - 10

Section 11: W1/2NE1/4, W1/2

Section 14: Lot 3, NW1/4, N1/2SW1/4, SW1/4SW1/4

Section 15

Section 16: N1/2, SE1/4.

- (c) The Dude Creek Critical Habitat Area described in (b) of this section shall be managed under a management plan prepared and implemented by the department in consultation with the community of Gustavus and the Board of Game.
- (d) The department shall allow public uses, including fishing, hunting, trapping, mechanized and nonmechanized public access, grazing, firewood harvesting, wildlife viewing, hiking, and berry picking under the management plan adopted under (c) of this section to the extent that the activities are compatible with (a) of this section.
- (e) The legislature understands that a portion of the state land described in (b) of this section is mental health trust land of the state and the legislature intends that the land retain its status as mental health trust land, notwithstanding its inclusion in the Dude Creek Critical Habitat Area.

GOALS

Activities occurring within the Dude Creek Critical Habitat Area will be consistent with the following goals in accordance with the purpose for which the areas were established (AS 16.20.500). All department management decisions in the Dude Creek CHA, whether affecting activities undertaken by the department, other agencies, or the public, will be in accordance with these goals.

Goal I. Fish and Wildlife Populations and Their Habitats

- A. Manage the Dude Creek Critical Habitat Area to protect or enhance habitat for migrating sandhill cranes, especially wet meadow feeding and roosting habitat, and to protect or enhance habitat for other naturally occurring resident and migrant fish and wildlife populations.
- B. Minimize harmful disturbance to fish and wildlife, with special attention to sandhill cranes.
- C. Recognize the potential for cumulative impacts when considering effects of small incremental activities and actions affecting critical habitat area resources, including high frequency public use activities. (Public use means commercial and public, non-agency use.)

Goal II. Public Access and Use

- A. Maintain and/or improve public access to the Dude Creek CHA for public use consistent with Goal I.
- B. Allow public uses when the uses are consistent with Goal I. These uses include: fishing, hunting, trapping¹, mechanized and non-mechanized public access, grazing, firewood harvesting, wildlife viewing, hiking, and berry picking.

Goal III. Management, Research, and Other Activities

- A. Encourage and support research and monitoring activities necessary to achieve the goals and policies of the Dude Creek CHA Management Plan, as funding allows.
- B. Foster interagency and community cooperation and coordination to assist in the implementation of this management plan.

¹ Legal hunting, fishing, and trapping are considered consistent with Goal I.

POLICIES

The policies provided in this plan will be used to guide ADF&G decisions on management activities and Special Area Permits for activities on land and water within the Dude Creek Critical Habitat Area. When reviewing a proposed activity to determine whether a Special Area Permit will be issued, the proposed activity must be evaluated against the applicable goals and policies of the management plan. The compatibility policy is always used to evaluate whether a proposed activity is compatible with the purposes for which the critical habitat area was established.

COMPATIBILITY

Uses and activities may be allowed in the critical habitat area when the uses and activities are compatible with the purposes for which the critical habitat area was established and with the goals and policies of the management plan. Uses and activities will be restricted as necessary to: (1) protect sandhill cranes and their habitat, especially wet meadow habitat, and protect other fish and wildlife populations and their habitats, and (2) maintain or improve public access to the critical habitat area.

ACCESS

The department will allow public access for continued public use in the critical habitat area. The department may allow improvements to public access within the critical habitat area under terms and conditions of a Special Area Permit.

ROADS/TRAILS

The department may, on a case-by-case basis, allow the construction of trails in the critical habitat area under terms and conditions of Special Area Permit. The department may, on a case-by-case basis, allow the construction of a road or utility line in the critical habitat area under terms and conditions of Special Area Permit, to provide access to the School Trust land or to provide access to oil, gas, and coal resources owned by the Mental Health Trust. The department will not allow the construction of new permanent roads, airstrips, and utility lines for other purposes in the critical habitat area.

MOTORIZED VEHICLES

The off-road use of a wheeled, tracked, or other ground effect motorized vehicle (ORV) is prohibited in the critical habitat area, except when used in support of an authorized habitat enhancement activity, or used in conjunction with a *hunting and trapping methods and means* exemption approved by the Board of Game (5 AAC 92.104), or to provide access to oil, gas, and coal resources owned by the Mental Health Trust. The use of ORVs in these instances may be authorized by Special Area Permit when dry, frozen, or other ground conditions will mitigate habitat damage.

Fixed wing aircraft and helicopter landings and take-offs are prohibited in the critical habitat area except that the department may, at its discretion, issue a Special Area Permit if there is a demonstrable need for which there is no feasible alternative.

RECREATIONAL AND HARVEST ACTIVITIES

The department will allow recreational activities, including hiking and wildlife viewing; and harvest activities, including fishing, hunting, trapping, and gathering of wild resources within the critical habitat area. Use levels may be managed through the issuance of Special Area Permits, if necessary, to avoid adverse impacts to fish and wildlife populations and their habitats. Activities for which Special Area Permits may be required to manage use levels include, but are not limited to, camping and group gatherings.

CAMPING

Camping will be managed in the critical habitat area to afford parties camping opportunities of up to two weeks in duration, with certain exceptions. Restrictions to camping may include

provisions for siting camps and associated activities, types of structures, number of camp occupants, access points, period(s) of use, and number of authorized camps within a particular area.

Establishment of a non-commercial camp for up to 14 consecutive days will be allowed in the critical habitat area without a Special Area Permit. Establishment of a non-commercial camp for more than 14 consecutive days at any one location, or relocating a camp within a two-mile radius of the original campsites requires authorization through a Special Area Permit.

Commercial camping in the critical habitat area may be allowed under terms and conditions of a Special Area Permit.

All camping equipment and materials must be removed from the critical habitat area after completion of the camping event. Solid waste disposal is prohibited within the critical habitat area. Food and garbage must be stored in a manner that prevents it from being an attractant to bears and other wildlife. Methods to isolate food and garbage may include the use of bear-resistant containers, electric fences, or food caches away from camp and suspended at least 10 ft. above the ground, or within a lockable and hard-sided section of a vehicle, vessel, or aircraft. Legally taken game and harvested fish are not required to be cached but should be hung away from camp locations. All garbage must be removed from the critical habitat area. Human waste disposal must be done in accordance with DEC requirements (18 AAC 60).

Camping Policy Definitions

For the purposes of implementing the camping policy:

“Commercial camping” means the activity is associated with the provision of assistance for compensation, or with the intent to receive compensation, to persons who camp in the critical habitat area.

“Solid waste” means garbage, refuse, abandoned or other discarded solid or semi-solid material, regardless of whether subject to decomposition, originating from any source, not including human waste.

TIMBER AND FIREWOOD HARVEST

The harvest of firewood for use in the critical habitat area does not require a Special Area Permit, but is limited to standing dead or downed trees. The department will prohibit timber harvest and the harvest of firewood for use outside of the critical habitat area, except as allowed by the “HABITAT ENHANCEMENT/RESTORATION” or “FIRE MANAGEMENT” policies.

FUEL AND HAZARDOUS MATERIALS STORAGE

The department will prohibit the storage or disposal of hazardous substances (as defined by AS 46.09.900) or petroleum-based fuels in the critical habitat area. This policy does not apply to fuel stored on board vessels, vehicles or aircraft, fuel used in an occupied camp (five gallons or less), or fuel contained in a structure permitted under section (B) of the “STRUCTURES” policy.

COMMERCIAL AND GROUP ACTIVITIES

The department may allow use of the critical habitat area by large or frequently returning groups of people under the terms and conditions of a Special Area Permit. A Special Area Permit is required for:

- or
- (A) Non-commercial or commercial groups of 12 or more persons, for any length of time,
 - (B) commercial groups of 5 or more people that return to the critical habitat area 3 or more times within a one week period.

STRUCTURES

The department may allow, on a case-by-case basis, the construction and use of temporary or permanent structures in the critical habitat area, under terms and conditions of a Special Area Permit. Materials and all garbage must be removed when use concludes.

The department:

- (A) may allow structures for the purpose of habitat maintenance and enhancement, fish and wildlife related research, and/or public use and enjoyment of the critical habitat area. Examples of these types of structures include a sandhill crane viewing tower, vegetation exclosures, structures associated with trail construction, and hydrological control or fish research weirs;
- (B) may allow new structures for the purpose to exercise reserved oil, gas, and coal rights held by the Mental Health Trust;
- (C) may allow temporary structures such as duck blinds, tree stands, or small structures associated with occupied camps. For the purposes of this policy "temporary" limits a structure's presence to seasonal use, except that structures associated with camps must abide by the 14 day limitation in the "CAMPING" policy. Use of temporary structures does not convey any future or exclusive rights and may not exceed one season's use; and
- (D) will prohibit permanent private structures including, but not limited to; cabins, trapping cabins, tent platforms, and tree stands.

GEOLOGICAL EXPLORATION AND DEVELOPMENT

The department will prohibit geological exploration and extraction in the critical habitat area, except that the department may allow, on a case-by-case basis, geological exploration and extraction of oil, gas, and coal resources owned by the Mental Health Trust. For the purposes of this policy, geological exploration and extraction includes mining, oil and gas exploration or development, and material extraction.

HABITAT ENHANCEMENT/RESTORATION

The department may allow habitat enhancement projects that further critical habitat area management goals, particularly for sandhill crane habitat, under terms and conditions of a Special Area Permit. Habitat enhancement projects may not introduce non-indigenous species to the critical habitat area.

GRAZING

The department may allow grazing leases or permits in the critical habitat area, under terms and conditions of a Special Area Permit. The department will manage grazing permit and lease areas to maintain existing habitat values based on guidelines established in consultation with the

Natural Resources Conservation Service and the Alaska Department of Natural Resources through the development of range management plans.

FIRE MANAGEMENT

The department will coordinate with the protection agency or incident command to ensure that appropriate authorization and mitigation is implemented for fire suppression and operation activities in the critical habitat area.

As designated in the Alaska Interagency Wildland Fire Management Plan, the fire management option for DCCHA is full suppression; a non-standard response will be required to allow wildland fire to burn. The protection agency will determine whether conditions allow for wildland fire use before implementing a non-standard response. Where there is minimal risk to human life and property, fires will be managed to improve wildlife habitat.

Emergency fire suppression and operation activities may be authorized under 5 AAC 95.940; actions to prevent and mitigate wildland fires shall be reviewed through the Special Area permitting procedures described in 5 AAC 95.700-770.

CULTURAL, HISTORICAL, AND ARCHEOLOGICAL RESOURCES

The department will protect cultural, archeological, and historical resources within the critical habitat area, in coordination with the Department of Natural Resources, State Historic Preservation Office. Where appropriate, the department will allow investigation of cultural, archeological, and historical resources under the terms and conditions of a Special Area Permit.

INFORMATION, EDUCATION, AND OUTREACH

The department will provide information to critical habitat area users and the general public regarding critical habitat area resources, activities, and use restrictions. The department will encourage education projects describing critical habitat area resources and their uses.

SCIENTIFIC RESEARCH

The department will encourage compatible scientific research of fish, wildlife, habitat, and other resources in the critical habitat area to facilitate management.

IMPLEMENTATION

The *Dude Creek Critical Habitat Area Management Plan* will be implemented by the Alaska Department of Fish and Game through its day-to-day management activities, annual budgetary process, and Special Area Permits issued for land use activities in the Critical Habitat Area.

SPECIAL AREA PERMITS: A Special Areas Permit is required for any activity that may affect fish and wildlife habitat, including any construction activity, or any activity which disturbs fish or wildlife other than lawful hunting, trapping, fishing, and viewing in a designated state Critical Habitat Area (5 AAC 95.420). Project reviews are conducted by habitat biologists in coordination with other department staff. Department biologists use available supporting scientific data and best professional judgment to determine if a proposed activity will be compatible with the statutory purpose of the refuge and the goals and policies identified in the management plan and hence should be permitted.

A Special Area Permit application form can be obtained from any ADF&G office or from the department's website at <http://www.adfg.alaska.gov/index.cfm?adfg=uselicense.main>. The completed application should be submitted to the Division of Habitat office in Douglas (5 AAC 95.700). General Permits (5 AAC 95.770) may be issued to the general public at large for specific small scale or frequent activities. These permits do not require an application and can be found at <http://www.adfg.alaska.gov/index.cfm?adfg=uselicense.gpareas>.

LOCAL KNOWLEDGE: Department staff will continue to work with users of the area to apply local information and knowledge to management of the CHA. Department staff will work to disseminate CHA information to local users.

HABITAT ENHANCEMENT: During the public comment periods and plan development, several methods were proposed for enhancing sandhill crane habitat in the DCCHA which may be suitable for implementation in the future. Various methods for increasing the amount of open areas included tree removal, timber sales, or selective firewood harvesting opportunities being opened to the community. It was also suggested that an effective means to arrest or reverse wetland afforestation would be to occlude some drainages. In previous instances where water has been naturally impounded in creeks on the Gustavus Forelands, wetlands have been successfully maintained with minimal tree advance.

BOUNDARY ADJUSTMENTS: In 2004, the State of Alaska acquired about 1,439 acres of wetlands located south of the CHA and extending to mean high tide line (Map 1). The parcels were purchased by The Nature Conservancy (TNC) from the Mental Health Trust, in part, using a National Coastal Wetland Conservation Grant from the U.S. Fish and Wildlife Service. To satisfy grant requirements, the deed included language stating that the lands be managed consistent with the management of the CHA. These lands were transferred to DNR under an agreement that DNR would issue a management right to ADF&G to manage the lands consistent with the Dude Creek CHA. The intent was that the lands would eventually be included in the Dude Creek CHA. Although these lands are now in state ownership, it requires an act of the Legislature to include these lands into the CHA. The lands to the east that were purchased and retained by TNC (using grant funding) are subject to a conservation easement held by the state.

Most of the western and northern boundaries of the CHA abut Glacier Bay National Park; the only potential for boundary changes is at the school trust parcel at the southwestern corner of the CHA.

Other potential areas where acquiring land, changing boundaries, or changing land status might benefit the CHA are at the terminus of the Good River Road on the "Schneider property" where a section line easement is currently used as an access point to the CHA.

The department will coordinate with DNR to prepare a recommendation to the legislature to amend statutory boundary descriptions to incorporate the adjacent state land acquired from the Nature Conservancy. Should the school trust parcel become available to the state, ADF&G would recommend that it also be included in the CHA.

AIRCRAFT OVERFLIGHTS: Aircraft overflights may be a source of disturbance to cranes; ADF&G cannot restrict the use of airspace above the CHA under ADF&G's Special Areas management authorities. The department will coordinate with the Federal Aviation Administration, the National Park Service, and the community of Gustavus to encourage pilots to maintain a minimum altitude of 500 feet above ground level (AGL) for fixed-wing aircraft and 1,000 feet AGL for rotary aircraft over the Dude Creek CHA from April 1 through May 15 and from September 1 to October 15, to avoid disturbance to migratory birds. The minimum altitude advisory does not apply to aerial surveys conducted for fish and wildlife management and research.

ACTIONS OF FEDERAL, OTHER STATE, AND LOCAL AGENCIES: This plan may also be used by other state, federal, and local decision-makers in planning for and making decisions for the CHA under their respective statutory authorities.

PROPOSED CHANGES TO 5 AAC 95

Regulations will be adopted pursuant to the Administrative Procedures Act and included in the final draft of the plan.

5 AAC 95.630. Dude Creek Critical Habitat Area Management Plan. The goals and policies stated in the Dude Creek Critical Habitat Area Management Plan dated November 2016 are adopted by reference. The plan presents management goals and policies for the Dude Creek Critical Habitat Area and its resources that the department will use in determining whether proposed activities in the critical habitat area are compatible with the protection of fish, wildlife, their habitats, and public use of the critical habitat area. Under 5 AAC 95.420, a special area permit is required for certain activities occurring in a designated state critical habitat area. The department will review each special area permit application for consistency with the goals and policies of the management plan adopted by reference in this section. A special area permit for an activity in the Dude Creek Critical Habitat Area will be approved, conditioned, or denied based on the criteria set out in the goals and policies stated in the Dude Creek Critical Habitat Area Management Plan and on the standards contained elsewhere in this chapter.

(Eff. ____/____/2017, Register ____)

Authority:	AS 16.05.020	AS 16.20.500	AS 16.20.530
	AS 16.05.050	AS 16.20.520	AS 16.20.610

Editor's note: Copies of the Dude Creek Critical Habitat Area Management Plan are available at the Douglas office of the Department of Fish and Game, Division of Habitat, 803 3rd Street, Douglas, Alaska 99824-5412. In addition, the management plan is available for inspection at the Lieutenant Governor's Office, Juneau Alaska.

5 AAC 95.632. Dude Creek Critical Habitat Area. (a) The following conditions apply to activities in the Dude Creek Critical Habitat Area:

(1) **Off-road use of wheeled, tracked, or other ground-effect motorized vehicles.** The off-road use of a wheeled, tracked, or other ground-effect motorized vehicle is prohibited within the critical habitat area, unless authorized by a special area permit issued before the use begins; the department may issue an individual special area permit for the off-road use on a case-by-case basis.

(2) **Aircraft Access.** A person must obtain a special area permit before landing an aircraft in the critical habitat area.

(3) **Structures.** A person may not construct a structure, including duck blinds, tree stands, or other hardened structure, within the critical habitat area without first obtaining a special area permit.

(4) **Camping.** The following restrictions apply to camping activities within the critical habitat area:

(A) a person may not engage in non-commercial camping on state land within the critical habitat area for more than 14 consecutive days at one location unless authorized by a special area permit issued before the camping activity begins;

(B) a person may not provide commercial camping services within the critical habitat area unless authorized by a special area permit issued before providing the services;

(C) a person may not place, deposit, or leave any solid waste, including garbage and litter within the critical habitat area; all waste must be removed at the time the camping activity ends.

(5) **Grazing.** A person may not engage in grazing activities within the critical habitat area unless authorized by a special area permit before the grazing activity begins.

(6) Fuel storage and hazardous substances. The following restrictions apply to fuel storage and the handling of hazardous substances within the critical habitat area:

(A) a person may not release or dispose of a hazardous substance as defined in AS 46.09.900, or petroleum-based fuel in the critical habitat area;

(B) a person may not store fuel in the critical habitat area unless authorized by a special area permit issued before the activity begins; this prohibition does not apply to

- (i) fuel contained in fuel tanks on board vessels, vehicles, or aircraft;
- (ii) fuel actively used in a camp; and
- (iii) fuel contained within permitted structures.

(b) In this section,

(1) "commercial camping service" means the provision of assistance for compensation, or with the intent to receive compensation, to persons who camp in the critical habitat area;

(2) "solid waste" means garbage, refuse, abandoned, or other discarded solid or semisolid material, regardless of whether subject to decomposition, originating from any source.

(Eff. ____/____/2017, Register ____)

Authority:	AS 16.05.020	AS 16.20.500	AS 16.20.530
	AS 16.05.050	AS 16.20.520	AS 16.20.610

Dude Creek Critical Habitat Area Management Plan

APPENDIX A

Resource Inventory

by
Division of Habitat
and
Division of Wildlife Conservation
November 2016



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INTRODUCTION

In 1988 (§ 1 ch 31 SLA 1988) the Alaska Legislature established the Dude Creek Critical Habitat Area (CHA) to protect and enhance wet meadow habitats for lesser sandhill cranes (*Grus canadensis*) and for the continued public use and enjoyment of the area (Map 1). The CHA is located on the Gustavus Forelands in Southeast Alaska and encompasses approximately 4,082 acres of open wetlands graduating to scrub pine and spruce forests.

GENERAL AREA DESCRIPTION

The Gustavus Forelands is a low elevation area lying along the coast of Icy Strait between Bartlett Cove and Excursion Ridge in northern Southeast Alaska. The town of Gustavus (population 451) is located to the east and the headquarters of Glacier Bay National Park are at Bartlett Cove, 2 miles to the northwest.

CLIMATE AND WEATHER

The Gustavus Forelands has a typical maritime climate, with cool summers and mild winters. Summer temperatures can range from 11° C to 17° C (52°F to 63°F); winter temperatures range from -3° C to 4° C (26°F to 39°F) (ADCED 2002). The area receives an average of 54 inches of precipitation annually, and the mean annual snowfall is about six feet (WRCC 2001, in Falls Creek EIS 2004). Snow cover and ground frost is not consistent throughout the winter.

PRE-HISTORY & HISTORY

The Gustavus Forelands are an alluvial plain underlain by marine silt formed during the late Little Ice Age (LIA), beginning about 1500 years ago, when the valley glacier's advance became stationary in the vicinity of the current Willoughby Island. An outwash plain aggraded seaward (southward) for the next 1200 years, culminating with the glacial advance of 250 years ago.

The area where the forelands currently lie was last glaciated about 13,000 years ago, at which time the retreating glacier opened a glacial fjord in the area. The area remained marine until the late LIA, at which time a glacial outwash plain gradually filled the fjord to create an emergent terrestrial environment, culminating about 250 years ago. All other land formation near the CHA was the result of the advance and retreat of glaciers within Glacier Bay itself (Strevler 1996). The terrain is very low relief, atypical of Southeast Alaska, and the soil is primarily silt and sand with little organic matter. Consequently, streams are entrenched and have a drier riparian corridor while the water table is relatively high elsewhere due to slow run-off and percolation of precipitation and meltwater. As the glaciers have retreated, isostatic rebound is occurring at a rate of 1 inch/year. The gain in elevation dries existing land areas by lowering the water table and accretes land as the shoreline generally moves further south.

Beginning about 1200 A.D., the outwash plain extended throughout Glacier Bay as a vegetated river valley, and was inhabited by Huna/Hoonah Tlingits who lived in two villages near the southern end of Glacier Bay. Beginning a little over 250 years ago, the glacier rapidly advanced down the valley to Icy Strait, driving the Tlingit to emigrate to new village sites at Hoonah and Excursion Inlet. By the time the Vancouver expedition arrived in the area in 1794, the glacier had retreated to the vicinity of present day Bartlett Cove. The Vancouver map depicts the CHA as a shallow marine, or tidally influenced, environment.

The lands encompassed within the CHA are relatively young— less than 1000 years old – and dynamic. They evolved from shallow marine to marine-terrestrial interface as the outwash plane aggraded (one can still see old drift wood lines where the old beach lines were); then evolved back to shallow marine during the LIA advance (isostatic depression); then gradually reverted back to marine-terrestrial interface. Currently, they have returned to terrestrial wetland. The Dude Creek CHA has never been suitable for permanent habitation, and human use of the area would have been restricted to limited and seasonal hunting and berry picking.

Gustavus was incorporated as a second class city in 2004. Although there was a fish saltery at Bartlett Cove in the late 19th century, the town itself originated as an agricultural homesteading area in 1914. The area of Gustavus was originally known as Strawberry Point; the actual Point Gustavus is 7 miles west along the coast from the town site. At the time of settlement, the primary Tlingit presence in the area consisted of several native allotments and camps for seasonal food harvesting, mostly on the Salmon River and Bartlett Cove. One clan also maintained a clan house at Strawberry Point. Although physical habitation ended, Natives in Hoonah retain strong spiritual and cultural ties to the Gustavus and Glacier Bay area. When Glacier Bay National Monument was first established in 1925 and expanded in 1939, all of the Forelands were incorporated. The future of the town was preserved when the area around the World War II airfield (the current airport) was excluded from the monument by a boundary alteration in 1955. Over time agricultural operations have decreased, and currently the community's economy is based on Gustavus's role as the "Gateway to Glacier Bay National Park," providing infrastructure, lodging, guiding and other services to visitors to the park.

The Dude Creek CHA was established in 1988, driven by the initiative from Gustavus residents to preserve habitat for the migratory sandhill cranes.

HABITAT TYPES

The vegetation of the Dude Creek CHA has been mapped and characterized at different times and utilizing different systems since the 1980's; the most current and area specific effort "Plant Community Dynamics of the Dude Creek Critical Habitat Area" was prepared by Icy Strait Environmental Services (G. Streveler, K. Bosworth, and B. Christensen) in 2002 for ADF&G (Map 2). The vegetation classes and conclusions summarized below are drawn from this report. Fifteen classes are organized in three categories based on predominant vegetation forms: conifer-dominated, deciduous thickets, and meadows. Wet meadows have the highest water table levels, with the water table becoming decreasingly lower in scrub, pine, and spruce forest communities. Wet meadow habitat, which is identified in statute as the important to sandhill cranes, is divided into two sub-categories; horsetail wet meadow and herbaceous wet meadow. Both of these areas are very wet, with surface water present, except for extreme dry periods in summer months or winter freezes, and are characterized by the presence of tussocks. The horsetail wet meadows have many more tussocks and thus, more dry areas for less water tolerant species (such as pine) to become established. The herbaceous wet meadows consist of areas of standing water with sedges, buckbean, *Equisetum palustre*, *E. arvense* and other herbaceous species. The horsetail wet meadows have more *E. variegatum* and mosses and while buckbean and aquatic sedge are prevalent between tussocks.

As isostatic rebound occurs, older land areas become drier and newer areas are accreted along the shore. In general vegetative succession is progressing from wet meadows, to drier more densely vegetated and closed areas, with more shrub and woody vegetation such as sweetgale

and shore pine (*Pinus contorta* var. *contorta*), a subspecies of lodgepole pine. Pine is often the only tree species growing on wetter portions of the CHA with a mixture of pine, black cottonwood (*Populus trichocarpa*), Sitka spruce (*Picea sitchensis*), and western hemlock (*Tsuga heterophylla*) growing on better drained sites. The oldest trees in the vicinity of Gustavus have been aged at 200 years.

Although present for many years, beginning in about 2010 a foliar fungus (*Dothistroma pini*) was noted to detrimentally affect shore pine trees across the Gustavus Forelands. If severe, infection by this fungus can result in complete defoliation and tree death. On better drained sites this infection may hasten forest succession from open pine dominated stands to more closed canopy stands dominated by spruce and hemlock. Pines may persist or regenerate on wetter sites less suited to other tree species (Robin Mulvey and C. Cleaver, pathologists, Forest Health Protection USDA Forest Service, Forest Health Assessment of a Foliage Disease Outbreak on Shore Pine *Pinus contorta* var. *contorta* in Gustavus and Glacier Bay National Park, unpublished report, 2014). Shore pine will likely persist on the Dude Creek CHA in wet meadow areas, even though high levels of tree mortality have occurred through 2014.

Dude Creek is the predominant hydrological feature of the Dude Creek CHA. It is listed in the Anadromous Waters Catalog as AWC # 114-23-10050 providing habitat for spawning and rearing coho salmon. This small stream has its source in the northwest corner of the CHA and drains approximately two miles to the southeast, into Icy Strait. Two tributary branches of the Good River cross the northeastern portion of the CHA. Both tributaries are cataloged as supporting spawning chum and coho salmon. The westernmost tributary is cataloged as AWC# 114-23-10070-2031-3005 and the more northern tributary as AWC #114-23-10070-2031. During odd years of high abundance, pink salmon may also be present in these tributaries (D. Teske, Sport Fish Biologist, ADF&G, Douglas, personal communication). Another smaller, uncatalogued stream flows into Icy Strait near the western boundary of the CHA. All of the streams in the Dude Creek CHA are low gradient, clear water streams, with sand and silt substrates. Streveler et al. (2002) measured stream entrenchment along Dude Creek in 2001; at that time, the creek was entrenched 1.8 feet upstream of the CHA boundary and 9.5 feet near the southern boundary.

Additional surface discharge is collected by a series of short manmade drainage ditches abutting the CHA on the eastern boundary. These ditches drain to the Good River after passing under a small bridge on the access road on the section line between Sections 11 & 14, T 40 S, R 58 E, C.R.M. The ditches are cataloged as an anadromous stream as well, AWC#114-23-10070-2009, for rearing coho salmon.

Streveler and Matkin characterized the beach south of the current Dude Creek CHA boundary as a wide, gently sloped "silt/sand/boulder beach" (Streveler and Matkin 1983). The beach surface is predominately sand in a narrow band closest to the vegetation line, shifts to predominately silt in the mid-tidal regions, and changes to patchy areas of sand below mean higher low water. Large ice-rafted boulders are scattered throughout, and provide attachment surfaces for rockweed, dulse, sea lettuce, barnacles, mussels and other species (Streveler and Matkin 1983). Silty areas of the beach may host other invertebrates such as burrowing anemones, soft shell clams, and polychaete worms. Surf clams and piddocks can be found in the low intertidal areas of the beach, but this area is not especially productive. The beach is used heavily by migrating shorebirds and waterfowl, as a travel corridor for wolves and other terrestrial mammals, and occasionally as a haul out area for harbor seals. Streveler et al. (2002) classifies the vegetation

closest to the beach as “mesic beach meadow.” The driest areas closest to tidal influence are sparsely covered by strawberries and other small herbs; which, moving shoreward or near estuarine areas, transition to beach rye grass, beach pea, and sedges.

AMPHIBIANS AND REPTILES

Amphibians believed to occur in or near the Dude Creek CHA (Table 1) include the roughskin newt (*Taricha granulose*), boreal or western toad (*Bufo boreas*), wood frog (*Rana sylvatica*), and northwestern salamander (*Ambystoma gracile*) (NPS 2002, Anderson 2004). Roughskin newts have been reported in Southeast Alaska as far north as Juneau (MacDonald 2003). The species is found in forested habitats adjacent to small permanent bodies of water (Hodge 1976; AK Heritage; MacDonald 2003).

The western toad has been documented in Glacier Bay National Park in various habitats, including intertidal areas, a flooded, manmade borrow pit, freshwater ponds, and wetland/bogs up to nearly 1,000 meters elevation (Anderson 2004). This species general occupies open, non-forested areas near water. In Southeast Alaska, breeding occurs during May to July in ponds, lakes, stream backwaters, and ephemeral pools (MacDonald 2003). Toads hibernate within burrows in forested cover, adjacent to wetland areas.

Local long-term residents of the City of Gustavus suggest that there was an abundant population of western toads in the area, but the population appears to have declined since the 1970's. Although there is no documented cause for a population decline, researchers suggest that drying of the wetlands resulting from post-glacial uplift could affect preferred habitat (Anderson 2004).

The wood frog occurs throughout much of Alaska, including the mainland of Southeast Alaska (MacDonald 2003), although there are no reports of individuals within the CHA. Two individuals were observed along the Tatshenshini River, about 15-20 kilometers upstream of Glacier Bay National Park (Anderson 2004). Within Alaska, the species occupies various habitat types, from grassy meadows to open forest, muskeg, and tundra. Wood frogs breed in early spring utilizing shallow, temporary or permanent water bodies (MacDonald 2003).

There was an undocumented report of a northwestern salamander along the outer coast of Glacier Bay National Park in 2000 (Anderson 2004; Gotthardt et al. 2007). In 2003, researchers investigated the same area, but were unable to locate the species. Northwestern salamanders typically live below ground and are generally active during daylight (MacDonald 2003). Adults are usually only active on the surface during rains and migrations to their aquatic breeding locations, including muskeg ponds and freshwater lakes.

Reptiles are not known to occur in the Dude Creek CHA. However, the marine waters adjacent to the CHA may lie within the range of the leatherback sea turtle (*Dermochelys coriacea*), which is also a federally listed endangered species (MacDonald 2003). This wide-ranging species typically forages in temperate waters, but non-breeding turtles seem to be more cold-tolerant and have been seen in higher latitudes. Between 1960 and 1998, at least 19 leatherback sea turtles were observed between Southeast Alaska and the Alaska Peninsula (MacDonald 2003; ADF&G 1994). Leatherbacks may reach Alaskan waters via the Japan and North Pacific currents (Hodge 2001).

BIRDS

The Dude Creek CHA is most notably used by sandhill cranes during spring and fall migrations, but also serves as a migratory stopover for other waterfowl and shorebirds (Map 3). Several

species of hawks, owls, and songbirds as well as bald eagles use the habitat found in or near the Dude Creek CHA (Table 2).

SANDHILL CRANES

Sandhill cranes (*Grus canadensis*) are tall birds, with long necks and long necks (height of 41 inches averaged across populations.) They are easily recognizable in flight, as the sandhill cranes migrate in flocks, flying with both legs and neck extended. Sandhill cranes also have a distinctive, resonate call. Adult cranes have mostly grey plumage that often appears rusty because mud transfer during preening results in reddish brown staining of the feathers. The head above and adjacent to the bill has reddish skin, and lighter colored feathers on the chin and throat. Juvenile cranes (≤ 2.5 years old) lack the red patch, have paler feathering on the head and neck, and more mottled, greyish bodies. Although sandhill cranes migrate and overwinter in large groups, nesting pairs on summer breeding grounds maintain territories around their nest sites. Individual pairs will often return to the same nest site from year to year. Cranes pair and begin nesting at around 3 to 6 years old and produce 1-2 young per clutch. Juvenile cranes will remain with their parents through the first migratory cycle (AKNHP 2016; ADF&G 2016).

Six recognized sub-species of sandhill crane inhabit the US and Canada. The cranes that use that the Dude Creek CHA as a migratory stopover are part of the Pacific Flyway Population (PFP) of lesser (or Arctic) sandhill cranes (*G. c. canadensis*). The PFP cranes breed on the northern side of the Alaska Peninsula and migrate along a coastal route to overwintering areas in the Pacific Northwest and California (Pogson et al. 1988). The more numerous Mid-Continental Population (MCP), which breeds in northern and western Alaska and Siberia, migrates along an inland route to overwinter in the southwestern U.S. and into Mexico. Small sub-specific populations of non-migratory cranes inhabit southeastern North America year-round; two of these sub-species are considered endangered. The most common sub-species of sandhill crane is the greater sandhill crane (*G.c. tabida*), which is well known for its migration across the Great Plains region. This sub-species very closely resembles the lesser sandhill cranes and is differentiated by a larger body size and its geographic distribution (Meine and Archibald 1996; Tacha et al. 1992).

Sandhill cranes are omnivorous and typically feed by probing the surface and subsurface in shallow wetlands or on land. They are somewhat opportunistic feeders and forage for a variety of materials ranging from tubers, seeds, and berries to small mammals, eggs and nestlings (Harvey et al. 1968), amphibians, and invertebrates. When available, cultivated grains are a preferred food source, as is evidenced by crane use of agricultural fields. A compilation of gizzard and contents studies in Tacha et al. (1992) provides further evidence that the majority of food consumed during migrations and by overwintering cranes consists of grains such as wheat, sorghum, barley, oats, and corn. Cranes in the Dude Creek CHA have been observed feeding on arrowgrass corms, bog blueberries, nagoon berries, dwarf cranberries, and lingon berries; they may also forage on crowberries, *Carex* spp. seeds, and freshwater invertebrates (Streveler et al. 1994; Bosworth 1985).

Food requirements appear to vary with breeding status, as well as food availability (Tacha 1987); during the spring and summer months, juveniles', females', and family groups' investment in foraging is greater than males, and during winter months there is little variation between the groups (Tacha 1987).

Dude Creek Cranes Migration

Studies of sandhill cranes on other staging areas have emphasized the physiological and social importance of these areas to migrating cranes (Krapu 1981, Lovvorn and Kirkpatrick 1981). The birds utilize staging areas to rest, feed, and put on additional fat deposits, to conduct courtship displays in spring, to renew or maintain pair bonds, and to strengthen family group associations. Because cranes are generally fair-weather migrants, staging may also occur when foul weather hinders further movement (Alerstam and Bauer 1973). Even though birds may remain on staging grounds for only a few days or weeks, the strategic location, food availability, and lack of disturbance on such areas may render these areas essential over the annual cycle of migrant cranes (Herter 1982).

A study of the altitude of migrating MCP sandhill cranes in interior Alaska recorded based on diurnal observations that during both the spring and fall migrations very few migrating cranes fly below 30 meters above ground level (AGL), and only a moderate number of cranes flew above 300 m AGL. However, a seasonal difference in AGL was noted. Spring migration was lower, with the majority of birds observed (12,000 of approximately 20,000 cranes) flying at 31 to 150 m AGL; during the fall, the majority of cranes (17,000 of 22,000) were observed at a higher altitude, flying between 151 and 300 m AGL (Cooper and Ritchie 1995).

During a 2001 ADF&G satellite telemetry study of cranes in the Pacific Flyway Population, individuals departed Bristol Bay in early September and traveled east through the Cook Inlet area, overflowed the Kenai Peninsula, then passed through Prince William Sound before reaching the Gulf of Alaska coast (Petrula and Rothe 2005). Some cranes used a more northerly route through Upper Cook Inlet and across the Chugach range to the Gulf. Either one of these pathways may intersect with sandhill cranes in the Cook Inlet nesting populations. The migration route continues along the coast and down the length of the Alaska Panhandle, veering inland near the Stikine River to reach overwintering grounds in Central California, via central Washington and Oregon. In 2001, this approximately 2,200 mile journey was completed in an average of 27 days (maximum 44 days; minimum 13 days); based on speeds for segments of this trip, individuals were able to average 48 miles per hour while in flight.

The fall migration of cranes through Dude Creek CHA peaks in mid-September (about September 5-20), with smaller numbers of cranes being observed from the end of August through the beginning of October (Streveler et al. 2004). Spring migration is more diffuse, with smaller groups of cranes traveling more slowly than the fall migration. PFP cranes leave wintering grounds in the Pacific Northwest in early March and arrive on summer breeding grounds in the first week of May (Petrula and Rothe 2005).

Petrula and Rothe (2005) identified five primary staging areas frequented by cranes during the fall migration through Alaska: the Yakutat Forelands, the Bering Glacier lowlands, the Stikine River Delta, the Copper River Delta, and the Gustavus Forelands. The area used for the longest duration was Gustavus Forelands, followed by the Yakutat Forelands. Streveler and Matkin (1983) suggest that, based on corresponding group sizes observed in Gustavus and the Copper River Delta, cranes take approximately a week to travel from the Copper River Delta to Gustavus.

Wetland meadows in the CHA are preferred areas for landing and overnighting; other open areas in town and the beach meadows are used when departure is delayed by unfavorable weather conditions. In favorable weather conditions during the fall migration, cranes typically do not stay in the Gustavus area for more than 24 hours. Favorable weather conditions are typified by winds to the south or east that form thermal updrafts during the morning, which cranes use to consolidate large flocks at several hundred feet elevation for late morning departures. Other cranes take advantage of low elevation winds that arise in Glacier Bay overnight for low level, early morning departures (Streveler et al. 2004).

WATERFOWL

Numerous species of waterfowl are known to utilize the Gustavus flats and nearshore marine waters (Table 2). Most are seasonal residents, although some species remain in the area year-round. The largest concentrations of ducks and geese occur during spring and fall migrations. The wet meadows, tidal flats, and river estuaries provide critical waterfowl habitats for spring and fall staging within the Gustavus lowlands areas (Streveler and Matkin 1983).

Migratory ducks begin arriving in the Gustavus region in early April utilizing foraging habitat that becomes free of ice and snow in the upper beaches. The migration extends through May to early June (Streveler and Matkin 1983). Spring migration includes a few duck species that are rare or absent during the fall migration; for example, harlequin ducks. Few duck species nest in the Dude Creek CHA vicinity. Mallard non-breeders are found during the summer and a few may nest (Streveler and Matkin 1983).

Migratory ducks move through the Gustavus area in the fall at various times, depending on the species. The fall migration for ducks extends from late August through November (Streveler and Matkin 1983). The most abundant fall migrants include mallards, northern widgeons, pintails, green-wing teal, surf scoters, and mergansers. Mallards are the most abundant fall migrant, foraging in the beach and tidal areas, especially sloughs and river estuaries. Pintails typically move through the area before mallards, occupying the sedge meadows of the upper beach. Mergansers (red-breasted and common) are year-round residents. During the spring, larger numbers are found in the Salmon River estuary (Streveler and Matkin 1983). During fall, mergansers (primarily red-breasted) concentrate in the larger estuaries and low-intertidal flats.

Some duck species overwinter in the area, including surf scoters, mallards, and mergansers. Surf scoters are found in the rocky shallow marine waters. U.S. Fish and Wildlife surveys observed several thousand scoters (species unidentified) annually from 1997-2002 (Hodges et al. 2008) in the nearshore waters. Mallards utilize similar habitats in winter and fall.

Canada geese are present in the Gustavus flats for most of the year. Geese winter in the area along the coastal beaches and estuaries, moving out to other locations (e.g., Bartlett Cove, in Glacier Bay National Park) during mid-winter cold periods (Streveler and Matkin 1983). Hodges et al. (2008) observed an average of 100-150 birds wintering in the vicinity from 1997-2002. After declining during late winter, bird numbers increase in March with an influx of non-resident birds that utilize the upper beaches opened up during the thaw period.

SHOREBIRDS

Several species of shorebirds (Table 2) primarily use the beaches of the Gustavus Forelands as stopover areas during spring and fall migrations. Dowitchers, dunlin, and least sandpipers can be

found in the fall along estuaries or the intertidal flats but are more common in the spring. Sanderling and rock sandpiper overwinter in some areas of the beaches. During the summer, the Dude Creek uplands received limited use by nesting least sandpipers, while nesting snipe are readily found in the meadows. The snipe may also use wetter areas of the meadows in September and October, for staging (Streveler and Matkin 1983).

RAPTORS

Northern harriers and sharp-shinned hawks are the most common raptors of the Gustavus Forelands. Bald eagles are present year round, while red-tailed hawks, osprey, great horned owls, short eared owls, northern hawk owls, and merlins can be found seasonally. Peregrine falcons have only been noted rarely during waterfowl migration, and northern goshawks may be present in the area but have not been confirmed (FERC and NPS 2004).

MAMMALS

TERRESTRIAL MAMMALS

Black Bears

Black bears (*Ursus americanus*) are common throughout Game Management Unit (GMU) 1C, and could be considered abundant in the area adjacent to Dude Creek CHA, including portions of Glacier Bay National Park and the community of Gustavus. Black bears are present in the CHA, but little is known about their use of this area. The beach zone provides strawberries during the mid-summer months of which bears probably take advantage. There are also highbush cranberries distributed throughout the drier portions of the CHA, as well as nagoon berries, blueberries, Devil's Club berries, and grasses and sedges available in other portions of the area as forage. Occasionally, bears may scavenge moose (Lafferty et al. *In press*) as well as marine mammal carcasses from the beaches; sea lion and sea otter carcasses have been found in this area, and beached humpback whales have been found in Glacier Bay National Park. During the spring of the year, black bears likely prey on moose calves throughout the Gustavus Forelands, including the CHA. Dude Creek is catalogued as a coho salmon stream, which might provide bears with another source of foraging in the CHA.

Little black bear research has been conducted in Southeast Alaska to help understand bears on the CHA; however, in 2012 the department radio collared two bears along Falls Creek east of the Gustavus Forelands. Both bears remained in the Falls Creek area and behaved similar to other bears collared in northern Southeast Alaska. Consequently, little was learned about how bears may use the unique habitat within the CHA. ADF&G will seek to collar bears on the Gustavus Forelands as opportunity allows. In 2011-2012, Pinjuv (2013) conducted a genetic mark-recapture study in an about 200 km² study area on the Gustavus Forelands that included the CHA. Pinjuv (2013) estimated 54.5 ± 10.3 black bears inhabited the area.

Black bears typically den in October or November, and then re-emerge in late April or early May. In Southeast, case studies from Mitkof Island, Prince of Wales Island, and near the community of Juneau indicate that black bears den at a variety of elevations, from nearly sea level to 2,100 feet. Dens range from hollow trees to excavated root wads and even rocky, cliff-like terrain. Although the CHA does have some heavy coniferous forest that could potentially provide denning habitat, it is unknown if denning occurs there.

Black bears are occasionally killed in the community of Gustavus surrounding the CHA, but few are ever taken in the CHA. From 2000–2014, 67 black bears were reported to have been taken by hunters near Gustavus. During that same period 13 black bears, mostly males, were taken in the Gustavus vicinity in defense of life and property. Twelve of those bears were killed during fall. In most cases bears were killed following repeated attempts to access improperly stored trash, pet food, or livestock.

Brown Bears

Like black bears, brown bears (*Ursus arctos*) are found throughout much of GMU 1C, including some of the area adjacent to Dude Creek CHA (especially Glacier Bay National Park), but few are ever seen or even detected on the CHA. Occasionally, brown bears are seen near Gustavus proper, and it is likely they travel through the CHA. In 2011-2013, Pinjuv (2013) conducted a genetic mark-recapture study in a 200 km² study area that included the CHA. While the study was focused on black bears (see above), the research effort determined that at minimum of 14 individual brown bears inhabited the study area; a much higher density that had been previously anticipated. During this same period, Lafferty et al. (*In press*) documented brown bear scavenging activity on natural and hunter killed moose carcasses using camera trapping methods. Brown bears probably take advantage of many of the same available food sources as black bears in this area, most notably moose calves, salmon, strawberries, highbush cranberries, nagoon berries, blueberries, Devil's Club berries, sedges, grasses, and an occasional marine mammal carcass.

Brown bears are rarely harvested in areas near the CHA. Brown bears are generally hunted and taken in the Point Couverden and Howard Bay areas south of Gustavus, and locations on the east side of the Chilkat Peninsula. During the period 2000-2014, only one brown bear was reported harvested by sport hunters in the Gustavus area. One brown bear was taken illegally in the community of Gustavus in 2010, and one brown bear was killed in defense of life and property in 2012.

Moose

Moose (*Alces alces*) are relative newcomers to the area. The first moose was observed in 1966 near Gustavus (G. Streveler, pers. obs.), and moose were not considered common until the mid-1980s. In 1988, biologists hypothesized that moose from the Chilkat River near Haines moved south to the Chilkat Peninsula and over Endicott Gap into Gustavus (Dinneford 1988). Recent genetic analyses are consistent with this hypothesis and further suggest that the Gustavus moose population may have been founded by as few as 6 individual moose from the Endicott River area (Colson 2013). The Gustavus moose population went through an irruptive growth stage, which climaxed in about 2004 with an estimated 500 animals (5 moose/km²). By 2010, the moose population was strategically reduced to a moderate density (2.5-3.0 moose/km²) via ADF&G administered antlerless moose hunts. The intent of the population reduction efforts was to maintain a moose population density that would be sustainable over the long term, relative to the habitat carrying capacity (see below). This population of moose not only inhabited the CHA, but also the surrounding areas on the Gustavus Forelands. Peak calving generally runs from May 20 to June 5, while peak rut is from September 20 to October 5.

The Gustavus moose population is partially migratory. Specifically, while the entire population winters on the Gustavus forelands (i.e. during October-April) about 65% seasonally migrates to the Beardslee Islands, Excursion Ridge, Beartrack River and surrounding areas during the

calving season and summer (White et al. 2014). The Dude Creek area contains some of the best winter habitat for moose on the Gustavus Forelands. The general pattern of snowfall in this area shows a substantial increase moving inland from the coast. Thus, those areas near the coast of the CHA get less snowfall, and are more attractive to moose during the winter (Map 4). Winter forage is generally limited to willow shrubs, horsetail, and sweet gale on the Gustavus Forelands. Moose take advantage of the willow communities that grow near the beach zone across the forelands in the CHA.

During summer, moose feed on a wider variety of plants, including willow and blueberry leaves, dwarf dogwood, fireweed, horsetail, sedges, and ferns (K. White, ADF&G, unpublished data). The forage species are much more nutritious than during winter. The abundant horsetail is also a very attractive forage to moose in the non-winter months, and they utilize this forage in the many wet meadows and forests in the CHA.

ADF&G began conducting moose browse studies in 1998, and began a moose research study in 2003 to monitor this population and the surrounding habitat. During this period, the moose population was experiencing an irruptive growth stage, increasing from an estimated 250 moose in 1998 to more than 500 animals by 2003, with densities on the winter range (including the CHA) of 5 moose/kilometer² (13/mile²). These are some of the highest densities ever recorded for moose in Alaska. With the increase in moose numbers, the department became concerned with the sustainability of this moose population, and noted extremely high utilization rates (90-95% of twigs were browsed) of the available willow browse (White et al. 2007). Due to the concern that this moose population would exceed the carrying capacity of the available habitat, ADF&G proposed an antlerless moose hunt to the Alaska Board of Game in 2000. The carrying capacity of the habitat was determined through moose body condition indices (i.e. rump fat thickness), moose reproductive performance (i.e. pregnancy and twinning rates), and browse survey data (willow twig biomass removal and diet selection). Since 2009, the moose population appears to have stabilized between 250-315 moose; the department believes to be a sustainable level for the Gustavus area.

The first antlerless moose hunt was held in 2002. During the period 2002-2008, the antlerless harvest ranged from 10 to 69 antlerless moose, and was managed under drawing permits; antlerless hunts were not held in 2007, 2009, or 2010. The intent of the antlerless hunts was to reduce the number of moose utilizing Gustavus area and Dude Creek CHA winter range. Recent data collected through research activities suggest the antlerless moose hunts had the desired effect. Pregnancy rates, body condition, and reproductive indices of marked female moose have all improved as moose density has lowered. Additionally, during spring 2009 and 2010, the willow communities showed less intensive browsing, which may allow these plants to recover from years of intensive browsing. Overall, data suggest the moose population is currently less vulnerable to a catastrophic population crash (i.e. due to severe winter conditions), as compared to the earlier period when the moose population was at extremely high density.

During 2000-2009, the bull moose harvest ranged between 51 and 14 animals. Guideline harvest levels were determined annually for the bull moose hunt, and were based on aerial survey data used to determine the number of bulls available for hunters. Through 2008, the bull moose hunt was managed as an any-bull hunt under a registration permit. Beginning in 2009, the bull moose hunt management strategy was changed to a selective harvest strategy (spike, fork, 3 brow tines, or 50-inch antler configuration being legal). This hunt strategy was implemented through an Alaska Board of Game change during fall 2008 to address lower bull numbers, by protecting an

adequate number for breeding while still providing a level of hunt opportunity exceeding what would be possible under the previous hunt management strategy.

Winter weather and predation are factors impacting moose in the Gustavus area. The winter of 2006/2007 was the most severe ever recorded in Juneau (based on snowfall). Gustavus also experienced deep snows during this time that resulted in mortality rates of approximately 16% of radio-collared cow moose at Gustavus. This was followed by another severe winter in 2008/2009 that resulted in higher than normal adult and calf mortality. The resulting effect of these three winters was that the Gustavus moose herd lost both adults and calves to winter weather conditions at a higher rate than in previous years, and recruitment of young animals into the population was reduced, relative to normal years. Survival estimates have improved since the period of severe winters. In addition to overwinter mortalities, Gustavus area calf survival is a concern for managers. Predation by bears and wolves, and potentially by domestic dogs, is believed to play a role in calf survival in Gustavus, though direct documentation is very limited. Research data indicate that survival of calves is quite variable from year to year (annual survival, 2004-2014 = 0.07-0.62; K. White, Wildlife Biologist ADF&G, Douglas, *unpublished data*) and depends on whether mothers are migratory or not (White et al. 2014). Overall, calf recruitment appears to have declined since the irruptive growth phase of the population (1998-2004) and will likely play a key role in moose management in Gustavus in the future years.

Sitka black-tailed deer

Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) are known to occur on Pleasant Island, which is located southeast of Dude Creek CHA. In the last few years, ADF&G has received reports of deer around Gustavus and in Glacier Bay National Park. While the presence of deer in the CHA has not been confirmed, it is likely deer move through the CHA to and from more forested habitats.

Wolves

Wolves (*Canis lupus*) are found throughout GMU 1C and much of mainland Southeast Alaska, including Dude Creek CHA. Wolf tracks are seen consistently along the beach that borders the southern end of the CHA, as this seems to be a major travel route for wolves. During 2003-2014, a wolf pack varying in size between 6-13 wolves has been occasionally seen on the Gustavus Forelands. In 2011, ADF&G attached a GPS radio-collar to a 2-yr old female wolf and monitored this animal for 1.5 years. During this time the animal routinely used an 800 km² home range that included the Gustavus Forelands, Beartrack River, and Adams Inlet. Thus, the Gustavus Forelands is likely just a fraction of the local wolf pack's home range. This home range is large compared with home ranges of wolves on Prince of Wales Island in southern Southeast where pack home ranges were only 200-300 km². This difference in home range size is likely related to much lower prey density in northern southeastern Alaska. Aside from these recent data, ADF&G has documented wolves in the Gustavus area and in the CHA on numerous occasions while capturing moose or conducting aerial and ground-based moose research. Residents of Gustavus occasionally hear wolves howling, yet direct observations of wolves are uncommon. The main food sources for wolves in this area are likely moose, beaver (*Castor canadensis*), small mammals (i.e. *Microtus* sp.), porcupine, deer, mountain goats (*Oreamnos americanus*), birds, and salmon (Lafferty et al. 2014, ADF&G, *unpublished data*). Wolves scavenge as well as directly prey on moose (Lafferty et al., *In Press*). Wolves also scavenge on marine mammal carcasses (i.e. seals, sea lions and sea otters) to an unknown degree. While

some of these prey species are found within Dude Creek CHA, all prey species can be found in the vicinity of the CHA.

Wolves are harvested opportunistically by moose hunters and by a few local trappers in and around the CHA. During the period 2000-2009, 11 wolves were taken. The majority of wolves are harvested by trapping. In 2002, the Alaska Board of Game implemented a regulation prohibiting the use of snares for taking wolves in the Gustavus area due to concerns with catching moose and domestic pets. In 2010, the Board implemented a regulation allowing the use of snares with breakaway mechanisms and diverter wires to prevent moose from being incidentally taken.

Furbearers

Dude Creek CHA is home to a number of furbearing species, although it is likely that only some are residents while many others are transient (Table 3). The most prevalent furbearer is probably the red squirrel, followed by the pine marten (*Martes americana*), beaver, mink (*Neovision vision*), river otter (*Lutra canadensis*), short-tailed weasel (*Mustela erminea*) and least weasel (*Mustela nivalis*), coyote (*Canis latrans*), and the occasional wolverine (*Gulo gulo*) and lynx (*Felis canadensis*). Information on furbearer abundance and distribution comes from trapper harvest reports. Of the furbearers present, only marten, beaver and wolverine are required to be sealed and represent the majority of known furbearer harvest information. During 2000-2009, 327 marten, 14 beaver, 5 wolverine, 5 river otter, and 1 lynx were taken in the CHA and surrounding areas.

Pine marten inhabit the heavily timbered portions of the CHA, but are especially prevalent along the banks of Dude Creek, and this is where most of the trapper harvest occurs. Much of the CHA is open wet meadow habitat, and it is unlikely marten use these areas. Other furbearers such as mink and river otter probably utilize the beach zone, but also utilize the water corridor of Dude Creek and other inland sloughs. River otter are scarce, mink are a relatively recent addition to the fauna (1970s), marten thrive in wooded areas, and short tailed weasel numbers likely track population fluctuations of voles (Fagerstone 1987). Beaver are found almost exclusively in the upper end of the Dude Creek water corridor, on the northwestern corner of the CHA. Here they have found a sufficient supply of food and building materials and have created an extensive dam and pond complex.

Coyotes are common in this area but, based on comments from local residents, their presence seems to oscillate between common and uncommon. It is possible that this could be related to the presence of wolves (Barten pers. comm.). Similarly, anecdotal evidence indicates that foxes were abundant in the early 1900s, but decreased until the last reported sighting in 1968. The first report of coyotes in the area occurred in 1919, and this population subsequently increased (Streveler 1996).

Wolverines and lynx are rare in the harvest data. Lynx in the CHA are likely displaced juvenile animals or adults searching for food. Wolverine harvests are not uncommon but occur at a low level. This low level of harvest pattern occurs in most Southeast Alaska areas. Little is known about the ecology of wolverines in Southeast Alaska. Recent and ongoing research conducted by ADF&G will provide valuable information to assist in the management of wolverines into the future.

Small mammals

Other small mammals found in the Dude Creek CHA include porcupine (*Erethizon dorsatum*), northern red-backed (*Clethrionomys rutilus*) and long-tailed (*Microtus longicaudus*) voles, Glacier Bay water shrew (*Sorex alaskanus*), unidentified species of shrews, red squirrel (*Tamiasciurus hudsonicus*), and possibly flying squirrels in the forested riparian areas.

MARINE MAMMALS

Marine mammals in the nearshore waters of the Gustavus forelands and Glacier Bay primarily include harbor seals (*Phoca vitulina*), sea otters (*Enhydra lutra*), and sea lions (*Eumetopias jubatus*). There are no known marine mammal haul-out sites on the coast adjacent to the Dude Creek CHA. However, in 2007 and 2008, researchers deployed satellite transmitters on 37 harbor seals in Johns Hopkins Inlet in Glacier Bay National Park and some of those animals did use the nearshore areas in the vicinity of the Dude Creek Critical Habitat Area (Jamie N. Womble pers. comm.).

HARBOR SEAL

Harbor seals are primarily a coastal inhabitant, but seals have been observed up to 87 miles offshore and in coastal rivers and lakes (Lowry et al. 2001; ADF&G 1983). Seals congregate on shoals and sandbars, with particularly high densities occurring during low tides. Harbor seals generally give birth to a single pup between late May and mid-July, with most young born during the first three weeks of June. Pups are usually weaned after three or four weeks. Within two weeks after females have stopped nursing mating occurs, primarily from late June to late July. From August to October harbor seals molt and haul out in large numbers.

FISH

SALMON/ANADROMOUS FISH

Streams on the Gustavus Forelands support small populations of coho salmon (*Oncorhynchus kisutch*), chum salmon (*O. keta*), and pink salmon (*O. gorbuscha*). Spawning coho salmon have been documented in Dude Creek. Spawning of coho and chum salmon has been reported in the Good River. Coho, pink, and chum salmon are found in the Salmon River. Steelhead trout (*O. mykiss*) and Dolly Varden (*Salvelinus malma*) have also been reported in Salmon River.

MARINE INVERTEBRATES

Surf clams and piddocks occur in the low intertidal beach areas of the Gustavus forelands, but the sand and silt flats are not especially productive.

THREATENED AND ENDANGERED SPECIES

There are several federally listed threatened or endangered species that are known to occur in the vicinity of the Gustavus Forelands (Table 4). In addition, the state Endangered Species Act (AS 16.20.190) establishes criteria for listing state endangered species, but the Act does not include criteria for "threatened" species, or any other categories. Of the 13 federally or state listed endangered species that have historically ranged in Alaska, the Steller sea lion (*Eumetopias jubatus*), humpback whale (*Megaptera novaeangliae*), leatherback sea turtle, green sea turtle

(*Chelonia mydas*), and Kittlitz's murrelet (*Brachyramphus brevirostris*) (candidate species) could occur in the vicinity of the Dude Creek CHA.

SPECIES FEATURED IN WILDLIFE ACTION PLAN

ADF&G has partnered with organization agency staff and individuals throughout the state to develop Alaska's Wildlife Action Plan. This plan identifies key habitats and species in the state that are of conservation concern (ADF&G 2006). The Dude Creek CHA lies within the distribution of 47 featured species or groups of species; these species are identified in Tables 1, 2, and 3.

HUMAN USE

SPORT HARVEST ACTIVITIES

Sport Fishing

The primary sport fishing activity in the Gustavus lowlands vicinity occurs in marine waters, with several sport fishing guides operating out of Gustavus. Guided sport fishing targets salmon and halibut in the waters of Icy Strait. The Good and Salmon Rivers attract some sport and personal use fishing for salmon.

Waterfowl Hunting

Although the CHA supports snipe, ducks and geese, it is most known for the sandhill crane migration that passes through this area each fall. The waterfowl season in the CHA vicinity runs from September 16 to December 31, and overlaps with the crane migration which generally occurs between September 10 and September 20. An estimated 20,000 cranes use this area in some years (Streveler et al. 2004; Kramer et al. 1983; Littefield and Thompson 1982), but generally their layover only lasts a few days. In spite of this resource, few hunters pursue cranes in this area. ADF&G knows of only 1-2 hunters who target cranes each year, accounting for 2-4 birds harvested annually. The one apparent reason for this lack of hunting pressure is that Gustavus residents generally prefer to view cranes rather than hunt them, and their presence is a source of pride in the community.

Canada geese are common on the CHA, and there is some hunting pressure for them. This is especially true during the annual moose hunt when some hunters hunt not only moose, but may target geese as well. Several local Gustavus hunters also are fairly ardent waterfowl hunters. Geese and cranes can be found in the open meadows known as the crane flats (the central portion of CHA), in some of the same areas people hunt for moose. Nearer the beach on the southern end of the CHA, both ducks and geese are hunted especially at the mouths of sloughs that provide resting areas for waterfowl and good cover for hunters. Mallards, in particular, are present in decent numbers. In spite of this, the waterfowl hunting pressure in this area could be considered light.

Big Game Hunting

Dude Creek CHA is located in Game Management Unit (GMU) 1C. Moose is the major big game species harvested in the area. Moose first moved into this area in the late 1950s, and the first moose was killed near Gustavus in 1989. From that point on, the moose population increased rapidly, and by the mid-1990s, the bull moose harvest was up to 30 per year, and by 2000, this increased to about 45 per year. Due to concerns with habitat degradation from high

moose densities and the potential for collapse of this moose herd, the department implemented antlerless hunts to lower the size of this herd beginning in 2001. During 2002–2006 the antlerless moose harvest ranged from 10–69 animals, while the bull moose harvest range from 37–52 (Barten 2008). With the decline in the moose population, the harvest declined during 2007–2010. Antlerless hunts were terminated, and the bull moose harvest declined to about 15 bulls per year. Today, the moose harvest is managed through three drawing permit hunts for cow moose and one registration permit hunt for bull moose. No antlerless hunts have been authorized since 2008 as the moose density has been sufficiently lowered to a level ADF&G believes is sustainable for the available habitat. The bull moose hunt remains open, but was revised from an “any bull” hunt to an antler restriction hunt “where only bulls with antler configurations of a spike, fork, 3 brow tines or a 50” or greater spread” are legal. This selective strategy was implemented in 2009.

Other big game species hunted on or adjacent to the CHA are black bears and wolves. The annual black bear harvest is generally 4–6 animals per year, while that of wolves ranges from 0–4 animals per year. The CHA accounts for just a fraction of this harvest.

The use of off-road vehicles (ORVs) for moose hunting in the Gustavus area (within Game Management Unit 1C) is currently prohibited under the authority of the Board of Game. This restriction has been in place since 1997 and has contributed to the very low incidence of ORV use in the Dude Creek CHA. The moose hunt permit carries a condition that states: “The use of motorized vehicles (except aircraft and boats) off of the highway system for the transportation of moose hunters, their gear, and/or parts of moose is prohibited within the Gustavus area between September 15 and October 15. ‘Highway’ means the drivable surface of a constructed road.” This language is not specific to the CHA, but covers all of the Gustavus hunt area.

TRAPPING

Trapping occurs both in the Dude Creek CHA area as well as the surrounding area in and around Gustavus. The department assesses harvest information from pelt sealing records and from trapper questionnaires for species where sealing is not required. Information gathered for unsealed species (coyote and mink) provides a rough, qualitative index to trends in populations of furbearers and trends in key prey species. Gathering trapping data specifically for the Dude Creek CHA was not always possible, so the reported harvest and number of trappers referenced below is an indication of activity on the CHA as well as for the entire Gustavus area (ADF&G reporting area minor 0701) and are not specific to the CHA.

With Glacier Bay National Park being adjacent to the community of Gustavus, and only about 25 square miles of non-park lands available for trapping, trappers target most available areas outside the park, including the Dude Creek CHA. Marten are found in the mature forests bordering Dude Creek, and this is where they are mainly targeted. Mink, otter, and beaver are taken along Dude Creek and at the beaver ponds in the upper part of this drainage. The beach zone just to the south of the CHA also provides opportunity for all species of furbearers. Wolves and wolverine, as well as coyotes, are also found in this area. Though there are not many trappers in Gustavus, trapping is important to a small number of residents of the community. During 2000–2010, 15 different trappers from Gustavus sealed 340 marten, 16 beaver, 1 lynx, 6 river otter, 5 wolverines, and 5 wolves, all of which were taken on the non-park lands around the community including the Dude Creek CHA. The exact take from the CHA is not discernible from the sealing data, as many trappers provide data at the resolution of the reporting area of minor 0701

only, which includes the Dude Creek CHA as well as other non-park lands adjacent to Gustavus. Based on our understanding of trapper effort in Gustavus, as well as some specific location data from sealing records, we estimate about 25% of the furbearer take comes from the CHA on any given year. This is especially true of marten.

Trappers access the Dude Creek CHA from the end of the Good River Road, from neighborhoods along the northeast boundary, and from along the beach to the south of the Dude Creek CHA.

COMMERCIAL FISHING

Commercial fishing near the Gustavus Forelands area is limited. The marine waters of Glacier Bay are under federal jurisdiction, and several commercial fisheries within Glacier Bay were either closed (e.g., for Dungeness crab) or restricted (e.g., to life-long fishers for salmon, halibut, and tanner crab). Commercial fishing is allowed in most of the non-wilderness areas of the Park.

SUBSISTENCE HARVEST (FISHING, HUNTING, AND GATHERING)

In 1987, the estimated average per capita harvest of subsistence resources for the Community of Gustavus, including hunting, fishing, and gathering, was 256 lbs. However this was prior to the establishment of the moose harvest (Kruse and Frazier 1988). Reported harvest included deer, salmon, invertebrates, and other finfish.

Clams (cockles), firewood, berries, and beach greens are harvested in the beach areas, although clam digging is typically done near the docks in Gustavus in more productive areas of the beach. The CHA itself is used more for berry picking and moose hunting than other gathering activities (Kruse and Frazier 1988). Small numbers of king and tanner crabs are harvested in nearshore waters. From 1984-1996, an estimated 0.84 lbs. per capita of king crab and 1.00 lbs. per capita of tanner crabs were harvested by the Gustavus community (Ratner and Turek 2009).

Residents of Hoonah also historically harvested subsistence resources in the Gustavus area.

LAND STATUS & MANAGEMENT

The State of Alaska manages state land and water within the CHA to protect and preserve habitat areas especially crucial to the perpetuation of sandhill cranes, and to restrict all other uses not compatible with that primary purpose. Uses of state CHA lands are managed to prevent habitat changes that would be harmful to the wildlife or habitat or degrade existing public use. Hunting, fishing, trapping, and recreational activities are encouraged so long as they are consistent with the primary purposes for establishing the CHA.

Managers of the Dude Creek CHA will need to consider how allowed uses and activities in the CHA may differ from those allowed on adjacent lands. The CHA is surrounded on the north and west by the Glacier Bay National Park and Preserve (Map 1). The federal area was originally designated as a National Monument in 1925, then was expanded and became the National Park & Preserve in 1980. The Park & Preserve encompasses over 3.2 million acres of marine, glacier, and terrestrial ecosystems. The marine waters in Glacier Bay were upheld as federal reserved waters. The purpose of the Park & Preserve is to protect these marine, glacial, and terrestrial ecosystems while providing a unique public experience and scientific study of tidewater glaciers and ecosystem development. The area surrounding Dude Creek CHA is park land. Glacier Bay Park regulations prohibit hunting and trapping; but hunting and trapping is allowed in the

Preserve. Glacier Bay staff has erected signs delineating the western and northern boundary between the CHA and the National Park to provide assistance to users when hunting and trapping in the Gustavus area. Sport fishing is permitted in the Park & Preserve as allowed under applicable state and federal laws and regulations.

Access to Dude Creek CHA is through the City of Gustavus, a second class city, which lies on the north shore of Icy Passage at the mouth of the Salmon River. The community encompasses approximately over 20,000 acres (29 square miles) of land which is owned or controlled by the State of Alaska, the federal government, Cook Inlet Regional Incorporated (a native corporation), The Nature Conservancy, and private individuals (Gustavus Strategic Plan 2005). The Mental Health Trust owns about 1,200 acres. The city maintains about 26 miles of public roads, but the roads leading to access points on private lands into Dude Creek along section line easements are privately maintained by households along the roads. Residents of Gustavus have been significant advocates for the CHA, promoting the recreational opportunities for the local and visiting populace.

The Nature Conservancy (TNC) purchased several tracts of land in the Gustavus area from the Mental Health Trust; the recording of the title included deed language stating that the land will be managed consistent with the management of the critical habitat area. These lands (Map 1) were transferred to the Alaska Dept. of Natural Resources for ADF&G under an agreement that the lands would be included in the Dude Creek CHA. The 1429.09 acres (Tracts A and B of Gustavus Flats, Trust Land Survey No. 2004-01, 1,279.09 acres and portions of Sec 14, T 40 S, R 58 E, CRM 160 acres) are located south of the CHA between the original boundary and the mean high tide line (MHT).

Subsurface ownership of the beach area south of the current CHA was retained by the Mental Health Trust when the land was sold to TNC. Subsurface ownership entails "all oils, gases, and coal of every name, kind, or description which may be in or upon" the land. In the quit claim deed transferring surface ownership to TNC, the Mental Health Trust also retained the right to enter "...at any and all times for the purpose of opening, developing, drilling and working mines or wells on these or other land and taking out and removing there from all such oils gases and coal."; specifically including the right to entry to "erect, construct, maintain, and use all such buildings, machinery, roads, pipelines, powerlines, and railroads, sink such shafts, drill such wells, remove such soil..." and occupy sufficient to exercise and retain the right to extract petroleum resources. Geologically, there is little potential for petroleum or mineral resources in the Dude Creek CHA.

In the interim, TNC prepared a stewardship report detailing how these lands would be managed pending the legislative designation (TNC 2007).

A School Trust parcel held by DNR in Section 16, T 40 S R 58 E, is the only potentially developable parcel of land south, west, or north of the CHA. School Trust lands came under litigation in 1999 in *Kasayulie v. the State*, Case No. 3AN 97-3782 Civil, Alaska Superior Court, which resulted in DNR Department Order 143, requiring that School Trust Lands be disposed of for at least the appraised fair market value, and the proceeds be deposited into a DNR trust account.

With the high rate of land surface uplift in the region (Eckert et al. 2006), the amount of accreted land will continue to increase along the coastal shore of Icy Strait, south of the CHA. The state owns the parcels directly south, between the CHA boundary and Icy Strait. Hence, ownership of

accreted lands to the south will remain with the state. If the adjacent state parcels are added to the CHA, the amount of land within the CHA may slightly increase over time.

INFRASTRUCTURE

Historically, the Prouty homestead occupied a portion of what is now the CHA near Dude Creek on the eastern side, and cattle grazing occurred on Dude Creek CHA. All that remains of the structures associated with this operation are a dike and road system on private property near the Good River Road and remnants of a small number of wooden fence posts in the CHA. Up to 200 head of cattle were grazed on lands in and near the CHA between 1916 and 1939, by the Parker family. Some ditch work and fencing was constructed at that time. Other dikes, ditches, and buildings were constructed in the 1950's as part of a failed homesteading effort. The homestead structures were eventually burned and debris was removed. Additional work may have been done to the dike in the early 1980's. Also, the lower meadows were considered as a potential White Alice site during the 1950's; communications cable was laid by helicopters (since removed) and a camp established near the creek. (Background information for proposed legislation, 1984, compiled by the Dude Creek Critical Habitat Committee, Gustavus, AK.)

Evidence of an agricultural clearing and tilling is visible in the vegetation growth at the northeast corner of the CHA.

ROADS AND TRAILS

Currently, there are no designated, developed public access points to the CHA. Almost all access is via foot traffic; some ORVS are used to reach the CHA via DNR lands. There are no docks, boat ramps, airstrips, roads, or developed trails. The two most commonly used routes are section line easements.

One of these access routes begins as a dirt road at the western end of Good River Road, and continues due west across private land, between Sections 11 and 14, T 40 S, R 58 E., Copper River Meridian. This road terminates in a small parking area, which was improved in 2015 by the City of Gustavus and ADF&G. From the parking lot a pedestrian bridge provides access towards the CHA. The route continues west as a wide foot path trail running on top of the dike parallel to the ditch, until it reaches the boundary of the CHA, approximately a third of a mile from Good River Rd. At the boundary, where the dike ends, the trail continues as an unimproved foot path towards the Dude Creek riparian area. From the parking area, a short secondary trail (old, flooded vehicle ruts) branches off to the northwest; when this is frozen it serves as a ski route. The other commonly used access point starts at a bend in the road in a residential area and runs south between Sections 13 and 14, T 40 S, R 58 E., CRM on the boundary between DNR and TNC lands, until it reaches the beach. This route has an unimproved, incised ATV width trail that is flooded in wet conditions.

Alternate modes of access are foot travel west from private property in the Tang Street, area and south from the Park road that parallels the northern boundary, across NPS land. The boundary between federal park lands and the CHA has been well marked by the NPS in this area.

INFORMATION NEEDS

- 1) Determine the probable successional changes within the next 10 years, particularly affecting wet meadow habitat, that may potentially affect sandhill crane use of the CHA;

a better understanding of these changes will allow more effective management of habitat, including the development of habitat enhancement options, as appropriate.

- 2) Determine the role of hunting and other human disturbance in the seasonal distribution and abundance of sandhill cranes and other wildlife, particularly given a projected increase in public use in the Gustavus area; a better understanding of these factors affecting wildlife populations will allow more effective management of public use and development.
- 3) Determine the critical habitat features that sandhill cranes select during spring and fall staging, and use this information in conjunction with the above identified needs to develop a sandhill crane habitat management plan.

REFERENCES

- ADCED (Alaska Department of Community and Economic Development). 2002. Alaska community database, community information summary. http://www.dced.state.ak.us/cbd/commdb/CF_CIS.cfm, accessed April 2010.
- ADF&G (Alaska Department of Fish and Game). 2006. Our Wealth Maintained: A Strategy for Conserving Alaska's Diverse Wildlife and Fish Resources. Alaska Department of Fish and Game, Juneau, Alaska.
- ADF&G (Alaska Department of Fish and Game). Sandhill Crane Species Profile. <http://www.adfg.alaska.gov/index.cfm?adfg=sandhillcrane.main> (Accessed February 2016).
- AKNHP (Alaska Natural Heritage Program). 2011. Element Occurrence for Rare and Endangered Species in Alaska. <http://aknhp.uaa.alaska.edu/maps/biotics.php> (Accessed April 29, 2011).
- AKNHP (Alaska Natural Heritage Program). *Grus canadensis* Status Report. <http://aknhp.uaa.alaska.edu/services/aknhp/aknhp.cfc?method=downloadSpeciesReport&elcode=ABNMK01010> (Accessed February 2016).
- Anderson, B.C. 2004. An opportunistic amphibian inventory in Alaska's national parks 2001-2003. National Park Service, Inventory and Monitoring Program, Anchorage.
- Barten, N.L. 2008. Unit 1C moose management report. Pp. 27-52 [in] P. Harper editor. Moose management report of survey and inventory activities 1 July 2005-30 June 2007. Alaska Department of Fish and Game, Project 1.0. Juneau, Alaska.
- Bosworth, K. 1985. Vegetation dynamics and habitat use by sandhill cranes on the Dude Creek flats, Gustavus, Alaska. Masters of Science dissertation to the University of Vermont Field Naturalist Program Burlington, VT 123pp.
- Carstensen, R., M. Willson and R. Armstrong. *Unpublished*. Habitat use of amphibians in northern southeast Alaska. 2003 report to Alaska Department of Fish and Game. Juneau.
- Cooper, B. A. and R. J. Ritchie. 1995. The altitude of bird migration in east-central Alaska: a radar and visual study. *Journal of Field Ornithology*. 66(4):590-608.
- Dinneford, B. 1988. Moose colonization of post-glacial sites in Southeastern Alaska. Proceedings of the Second Glacier Bay Science Symposium, held September 19-22, 1988, Glacier Bay National Park and Preserve, Gustavus, AK.
- Eckert, G., E. Hood, S. Nagorski, and C. Talus. 2006. Assessment of coastal water resources and watershed conditions at Glacier Bay National Park and Preserve, Alaska. U.S. Department of Interior, National Park Service, Technical Report NPS/NRWRD/NRTR-2006/353.
- Fagerstone, K.A. 1987. Black-footed ferret, long-tailed weasel, short-tailed weasel, and least weasel. Pp. 548-573 [in] Novak, M., J.A. Baker, M.E. Obbard, and B. Malloch, editors. Wild furbearer management and conservation in North America. Ontario Ministry of Natural Resources, Ottawa, ONT. 1150 pp. (cited in the Alaska Natural Heritage Program) http://www.adfg.alaska.gov/static/species/speciesinfo/_aknhp/Ermine.pdf
- Gotthardt, T., J. McClory, T. Fields, A. Jansen, C. Coray, M. Booz, H. Weigner, E. Davies and R. Pattison. 2007. Partnership in nongame wildlife research and data management for the state of Alaska's Wildlife Conservation Plan, 2004-2007. Alaska Natural Heritage Program, Environment and Natural Resources Institute, University of Alaska Anchorage. <http://aknhp.uaa.alaska.edu/zoology/publications/>
- Harvey, J. M., B.C. Lieff, C.D. MacInnes, and J.P. Prevett. 1968. Observations on behavior of sandhill cranes. *The Wilson Bulletin*, 80(4):421-425.
- Herter, D. R. 1982. Habitat use and harassment of sandhill cranes staging on the Eastern Copper River Delta, Alaska. Master of Science Thesis, University of Alaska, Fairbanks. 170 pp.
- Hodge, R.P. 2001. Alaska Department of Fish and Game wildlife notebook series: Turtle. Available online at: <http://www.adfg.alaska.gov/index.cfm?adfg=animals.listreptiles>. Accessed 27Feb2005.
- Hodges, J. I., D. J. Groves, and B. P. Conant. 2008. Distribution and abundance of waterbirds near shore in southeastern Alaska. *Northwestern Naturalist*, 89:85-96.

REFERENCES (Continued)

- Howell, W., D. Monteith, C. Connor, and G. Streveler. 2005. Huna Tlingit responses to rapid glacial advance and retreat in Glacier Bay, Alaska. ICSU conference on Rapid Landscape change and human response in the Arctic and Sub-Arctic, June 2005, Whitehorse, Yukon.
- FERC and NPS. 2004. Falls Creek hydroelectric project (FERC No. 11659) and Land exchange, final environmental impact statement FERC/FEIS-0167F NPS D-118A
- Kramer, G.W, B. Conant, G. Kaiser, C.D. Littlefield, R. W. Schlorff, and D. E. Timm. 1983. Pacific flyway Management Plan for the Pacific flyway population of the lesser sandhill crane. Pacific Flyway Council. Canadian Wildlife Service, U.S. Fish and Wildlife Service. 19 pp.
- Kruse, J. and R. Frazier. 1988. Report to the community of Gustavus, Tongass resource use cooperative survey. US Forest Service and Institute of Social and Economic Research, UAA. 26 pp.
- Lafferty, D. J. R., Z. G. Loman, K. S. White, A. T. Morzillo, and J. L. Belant. *In Press*. Moose (*Alces alces*) hunters subsidize the scavenger community in Alaska.
- Littlefield, C. D., and S. P. Thompson. 1982. The Pacific coast population of lesser sandhill cranes in the contiguous United States. Pages 288-294 [in] J. C. Lewis, editor, Proceedings 1981 crane workshop. National Audubon Society, Tavernier, FL. 296 pp.
- MacDonald, S.O. 2003. Amphibians and reptiles of Alaska, a field handbook. Alaska Natural Heritage Program web version, <http://www.alaskaherps.info/>
- Meine, C.D. and G.W. Archibald. Editors. 1996. The cranes: Status survey and conservation action plan. IUCN, Gland, Switzerland, and Cambridge, U.K. 294pp. Northern Prairie Wildlife Research Center. Online. <http://www.npwrc.usgs.gov/resource/birds/cranes/index.htm> (Version 02MAR98).
- Mickelson, P. G. 1987. Management of lesser sandhill cranes staging in Alaska. Pages 264-275 in Proceedings of the 1985 International Crane Workshop. Lewis, J. C., Editor. Distributed by U.S. Fish Wildlife Service, Grand Island, NE.
- National Park Service. 2002. Glacier Bay National Park and Preserve 2002 compendium. U.S. Department of Interior, National Park Service. Revised June 24, 2002.
- Nowacki, G., P. Spencer, M. Fleming, T. Brock, and T. Jorgenson. 2001. Unified ecoregions of Alaska. U.S. Geological Survey, Reston VA.
- Petrula, M.J. and T.C. Rothe. 2005. Migration chronology, routes, and winter and summer range of Pacific Flyway population of lesser sandhill cranes. Proceedings North American Crane Workshop 9:53-68.
- Pinjuv, K. 2013. Estimating black bear population size in Gustavus, Alaska: implications for determining the effect of human caused mortality on population size. Masters thesis, The Evergreen State College.
- Pogson, T.H., D.R. Herter, and R.W. Schlorff. 1988. Sightings of lesser sandhill cranes color-marked in California. Journal of Field Ornithology, Vol. 59 no. 3:252-257.
- Ratner, N.C. and M.F. Turek. 2009. Customary and traditional use worksheet: King and Tanner crabs in districts 13 and 14, Southeast Alaska. Alaska Department of Fish and Game, Special Publication No. BOF 2009-02. Juneau.
- Streveler, G. 1996. The Natural History of Alaska. 53 pp. Juneau, AK.
- Streveler, G. and C. O. Matkin. 1983. A Preliminary Evaluation of Wildlife Populations and Habitats on Gustavus Beaches and Dude Creek Uplands. Contract No. 82-0848 for ADF&G Regional Office Game Division Juneau.
- Streveler, G., K. Bosworth and B. Christensen. 2002. Plant community dynamics of the Dude Creek Critical Habitat Area. Icy Strait Environmental Services for the ADF&G.

REFERENCES (Continued)

- Streveler, G.P., J.T. Brakel, D.B. Brown, J. Crapella, and R.E. Christensen. 2004. Sandhill crane use of the Dude Creek Critical Habitat Area during fall migration. Report to ADF&G, Juneau, AK.
- Tacha, T. C. 1987. Foraging and maintenance behavior of Sandhill Cranes. Pages 93-106 [in] Proceedings of the 1985 International Crane Workshop. Lewis, J. C., Editor. Distributed by U.S. Fish Wildlife Service, Grand Island, NE.
- Tacha, T.C., S.A. Nesbitt, and P.A. Vohs. 1992. Sandhill crane (*Grus canadensis*). [in] The birds of North America, No. 31. A. Poole, P. Stettenheim, and F. Gill, Editors. Philadelphia: The Academy of Natural Sciences; Washington, DC: The American Ornithologists' Union.
- The Nature Conservancy. 2007. Stewardship Plan for the Gustavus Forelands Preserve (October draft). Contact Hank Lentfer, Gustavus, Alaska. 13pp.
- White, K. S., N. Barten, and J. Crouse. 2007. Ecology of moose on the Gustavus forelands: Population irruption, nutritional limitation, and conservation implications. Pages 25-28 in J. F. Piatt and S. M. Gende, editors. Proceedings of the Fourth Glacier Bay Science Symposium, 26-28 October 2004. U.S. Geological Survey, Scientific Investigations Report 2007-5047..
- White, K. S., N. L. Barten, S. Crouse, and J. Crouse. 2014. Benefits of migration in relation to nutritional condition and predation risk in a partially migratory moose population. Ecology 95(1):225–237.
- Womble, J. N. 2011. (personal communication) Department of Fisheries & Wildlife, Oregon State University Pinniped Ecology Applied Research Lab Hatfield Marine Science Center, Marine Mammal Institute.
- WRCC (Western Regional Climate Center). 2001. www.wrcc.dri.edu. June 4, 2001.

Table 1.—Amphibian species present in or near the Dude Creek Critical Habitat Area.

Common name	Scientific name	Occurrence
Boreal or western toad*	<i>Bufo boreas</i>	confirmed
Northwestern salamander*	<i>Ambystoma gracile</i>	probable
Rough-skinned newt*	<i>Taricha granulose</i>	probable
Wood frog*	<i>Rana sylvatica</i>	probable

*Featured species in the ADF&G Wildlife Action Plan (ADF&G 2006)

Table 2.--Bird species in and near the Dude Creek Critical Habitat Area.

Common name	Scientific name
White fronted goose	<i>Anser albifrons</i>
Snow goose	<i>Chen caerulescens</i>
Brant	<i>Branta bernicla</i>
Canada goose	<i>Branta canadensis</i>
Tundra swan	<i>Cygnus columbianus</i>
American Widgeon	<i>Anas americana</i>
Mallard	<i>Anas platyrhynchos</i>
Northern pintail	<i>Anas acuta</i>
Green-winged teal	<i>Anas crecca</i>
Harlequin	<i>Histrionicus histrionicus</i>
Surf scoter*	<i>Melanitta perspicillata</i>
Black scoter*	<i>Melanitta americana</i>
Long-tailed duck*	<i>Clangula hyemalis</i>
Bufflehead	<i>Bucephala albeola</i>
Goldeneye spp.	<i>Bucephala clangula</i> and/or <i>B. islandica</i>
Common merganser	<i>Mergus merganser</i>
Red-breasted merganser	<i>Mergus serrator</i>
Sooty grouse	<i>Dendragapus fuliginosus</i>
Common Loon *	<i>Gavia immer</i>
Horned grebe*	<i>Podiceps auritus</i>
Great blue heron	<i>Ardea herodias</i>
Osprey*	<i>Pandion haliaetus</i>
Bald eagle*	<i>Haliaeetus leucocephalus</i>
Northern harrier*	<i>Circus cyaneus</i>
Sharp-shinned hawk*	<i>Accipiter striatus</i>
Northern goshawk*	<i>Accipiter gentilis</i>
Red-tailed hawk*	<i>Buteo jamaicensis</i>
Merlin*	<i>Falco columbarius</i>
Peregrine falcon*	<i>Falco peregrinus</i>
Northern hawk owl*	<i>Surnia ulula</i>
Sandhill crane	<i>Grus canadensis</i>
Black-bellied plover	<i>Pluvialis squatarola</i>
American golden plover	<i>Pluvialis dominica</i>
Semipalmated plover	<i>Charadrius semipalmatus</i>
American black oystercatcher*	<i>Haematopus bachmani</i>
Greater yellow legs	<i>Tringa melanoleuca</i>
Spotted sandpiper	<i>Actitis macularius</i>
Whimbrel	<i>Numenius phaeopus</i>
Bar-tailed godwit	<i>Limosa lapponica</i>
Sanderling	<i>Calidris alba</i>
Western sandpiper	<i>Calidris mauri</i>
Least sandpiper	<i>Calidris minutilla</i>
Baird's sandpiper	<i>Calidris bairdii</i>
Pectoral sandpiper	<i>Calidris melanotos</i>
Rock sandpiper*	<i>Calidris ptilocnemis</i>
Dunlin	<i>Calidris alpina</i>
Short or Long billed Dowitcher	<i>Limnodromus griseus</i> or <i>scolopaceus</i>
Wilson's snipe	<i>Gallinago gallinago</i>
Red-necked phalarope	<i>Phalaropus lobatus</i>
Black-legged kittiwake*	<i>Rissa tridactyla</i>
Bonaparte's gull	<i>Larus philadelphia</i>
Mew gull	<i>Larus canus</i>

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Table 2.–Page 2 of 2.

Common name	Scientific name
Herring gull	<i>Larus argentatus</i>
Glaucous winged gull	<i>Larus glaucescens</i>
Parasitic jaeger	<i>Stercorarius parasiticus</i>
Great-horned owl*	<i>Bubo virginianus</i>
Short-eared owl*	<i>Asio flammeus</i>
Northern pygmy owl*	<i>Glaucidium gnoma</i>
Northern saw-whet owl*	<i>Aegolius acadicus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Hairy woodpecker*	<i>Picoides villosus</i>
Pacific slope flycatcher*	<i>Empidonax difficilis</i>
Northern shrike	<i>Lanius excubitor</i>
Steller's jay	<i>Cyanocitta stelleri</i>
Black-billed magpie	<i>Pica hudsonia</i>
Northwestern crow	<i>Corvus caurinus</i>
Common raven	<i>Corvus corax</i>
Horned lark	<i>Eremophila alpestris</i>
Tree swallow	<i>Tachycineta bicolor</i>
Barn swallow*	<i>Hirundo rustica</i>
Ruby-crowned kinglet	<i>Regulus calendula</i>
Chestnut-backed chickadee*	<i>Poecile hudsonicus</i>
Red-breasted nuthatch*	<i>Sitta canadensis</i>
Hermit thrush*	<i>Catharus guttatus</i>
Varied thrush*	<i>Ixoreus naevius</i>
American robin	<i>Turdus migratorius</i>
Water Pipit	<i>Anthus spinoletta</i>
Lapland longspur	<i>Calcarius lapponicus</i>
Snow bunting	<i>Plectrophenax nivalis</i>
Wilson's warbler*	<i>Wilsonia pusilla</i>
American Tree Sparrow	<i>Spizella arborea</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Fox Sparrow	<i>Passerella iliaca</i>
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Rusty blackbird*	<i>Euphagus carolinus</i>
Red crossbill*	<i>Loxia curvirostra</i>
White-winged crossbill*	<i>Loxia leucoptera</i>
Pine siskin*	<i>Spinus pinus</i>

*Featured species in the ADF&G Wildlife Action Plan (ADF&G 2006)

Table 3.—Mammal species in and near the Dude Creek Critical Habitat Area.

Common name	Scientific name
Terrestrial	
Shrews	<i>Sorex spp.</i>
Glacier Bay water shrew*	<i>Sorex alaskanus</i>
Coyote	<i>Canis latrans</i>
Gray wolf	<i>Canis lupus</i>
Lynx	<i>Lynx canadensis</i>
River otter	<i>Lutra canadensis</i>
Wolverine	<i>Gulo gulo</i>
Pine marten*	<i>Martes americana</i>
Short tailed weasel*	<i>Mustela erminea</i>
Mink	<i>Mustela vison</i>
Black bear	<i>Ursus americanus</i>
Brown bear	<i>Ursus arctos</i>
Moose	<i>Alces alces</i>
Sitka black-tailed deer	<i>Odocoileus hemionus sitkensis</i>
Red squirrel	<i>Tamiasciurus hudsonicus</i>
Beaver	<i>Castor canadensis</i>
Northern red-backed vole	<i>Clethrionomys rutilus</i>
Long-tailed vole*	<i>Microtus longicaudus</i>
Porcupine	<i>Erethizon dorsatum</i>
Little brown myotis*	<i>Myotis lucifugus</i>
Keen's myotis*	<i>Myotis keenii</i>
California myotis*	<i>Myotis californicus</i>
Silver-haired bat*	<i>Lasionycteris noctivagans</i>
Marine	
Sea otter*	<i>Enhydra lutris</i>
Humpback whale*	<i>Megaptera novaeangliae</i>
Harbor porpoise	<i>Phocoena phocoena</i>
Steller sea lion	<i>Eumetopias jubatus</i>
Harbor seal	<i>Phoca vitulina</i>

*Featured species in the ADF&G Wildlife Action Plan (ADF&G 2006)

Table 4.—Species listed as threatened or endangered under state or federal law.

Federally Endangered (as of January 2011)

Short-tailed albatross *Diomedea albatrus*
 Eskimo curlew *Numenius borealis*
 Humpback whale *Megaptera novaengliae*
 North Pacific right whale *Eubalena glacialis*
 Aleutian shield fern *Polystichum aleuticum*
 Steller sea lion *Eumetopias jubatus* (west of 144°)
 Bowhead whale *Balaena mysticetus*
 Fin whale *Balaenoptera physalus*
 Leatherback turtle *Dermochelys coriacea*
 Cook Inlet beluga whale *Delphinapterus leucas*
 Blue whale *Balaenoptera musculus*
 Sei whale *Balaenoptera borealis*
 Sperm whales *Physeter macrocephalus*

Federally Threatened (as of January 2011)

Spectacled eider *Somateria fischeri*
 Steller's eider *Polysticta stelleri*
 Northern sea otter (SW AK pop.) *Enhydra lutris kenyoni*
 Steller sea lion (east of 144°) *Eumetopias jubatus*
 Polar bear *Ursus maritimus*
 Loggerhead turtle *Caretta caretta*
 Green turtle *Chelonia mydas*
 Olive ridley turtle *Lepidochelys olivacea*

**APPENDIX B: PUBLIC SCOPING MEETINGS FOR DUDE
CREEK CRITICAL HABITAT AREA MANAGEMENT
PLAN**

Summary of Public Scoping Comments

Public scoping meetings were held in 2010 in the following communities: Gustavus (February 16), Hoonah (February 17), and Juneau (February 18). These meetings were designed to inform Critical habitat area (CHA) users about the planning process and to solicit their input on 1) how they use the CHA; 2) what they value about the CHA resources; and 3) what concerns they might have about future CHA management. The meetings were sparsely attended with between three and fifteen members of the public participating.

Each meeting began with a short introduction by ADF&G staff explaining the Special Areas Program, the management planning process, and what information we would like the public to share with us. The floor was then opened for public comments. All statements were paraphrased and recorded onto a large tablet visible to the entire group, as the meeting progressed. Staff facilitated discussion by introducing topics for comments.

Written questionnaires were distributed to meeting participants, and extra copies were left with a community representative for those unable to attend the meeting. Written and verbal comments from the public scoping meetings, as well as verbal comments from local residents outside the meeting session, were transcribed with minor edits for clarity and brevity; then sorted by the issue and CHA to which they pertain. This list is included below.

Appendix B.—Summary of public scoping comments

Issue	Comment
Aircraft	Aircraft at certain times of the year (e.g., moose hunt) may disturb cranes. Can the plan regulate frequent overflights?
Aircraft	Airplanes do seem to disturb cranes; the birds take flight and resettle. (Restrictions on overflights during the hunting season might be a good way to limit this.
Camping	No one really camps on the CHA typically, except during hunting season when there are sometimes large moose camps which are not well cleaned up.
Firewood harvesting	If firewood cutting is allowed, it should be done properly to ensure that: Bark beetles do not have the opportunity to spread (from National Park).
Firewood harvesting	Not much good to allow firewood harvest without allowing vehicle access. Might be okay when ground is snow covered or when birds are not present.
Firewood harvesting	Firewood harvest in the CHA is not an issue, there are better sources elsewhere.
Grazing	One of the people on the original Dude Creek committee had an agricultural interest in the lands and a compromise was reached that included grazing in the statute. Most uses specifically listed in the statute were included for the same reason. Ag units in town have essentially been abandoned. There is still some grazing use on the land from mental health trust on the E side of the Good River.
Grazing	Intensive grazing can open landscape to invasives; grazing is not a current problem within the boundaries.
Grazing	Grazing is also a sticky issue for TNC land because of the introduction of invasives on disturbed land, and changes in vegetation. Users continue to stake out their horses on the beach meadows. They had done it previously and continue to do it.
Habitat/Enhancement	Have heard elder tell stories/remember rowing to near Bartlett Cove when there were no trees, “just sand blowing around” like a desert.
Habitat/Enhancement	Successional change, particularly the invasion of lodge pole pines, threatens to render the Gustavus forelands unsuitable for cranes. We believe active maintenance of open country and wet habitat will be necessary to sustain the open wet meadow characteristics critical to cranes here.
Habitat/Enhancement	Successional change, particularly the invasion of lodge pole pines, threatens to render the Gustavus forelands unsuitable for cranes. We believe active maintenance of open country and wet habitat will be necessary to sustain the open wet meadow characteristics critical to cranes here.

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Appendix B.—Summary of public scoping comments, Page 2 of 6.

Issue	Comment
Habitat/Enhancement	Pine tree encroachment on the open areas is contrary to the purpose statement in the CHA statute about maintaining wet meadow habitat for cranes.
Habitat/Enhancement	There are also major ditches at the edges of the CHA which drain water coming in. This is a man made disturbance rather than a natural change.
Habitat/Enhancement	Vegetation alteration to maintain clear areas and fill ditches should be considered.
Habitat/Enhancement	Would want to know if vegetation changes would affect the creek and the fish? Can people guarantee that cranes would use the habitat if the vegetation was altered?
Habitat/Enhancement	For example, acquisition of the emerging habitat at the forelands as rebound brings it up could be included to provide habitat.
Information/Outreach	More signs and enforcement of regulations would be good.
Information/Outreach	Signs at the ferry landing might be a good idea.
Information/Outreach	State ferry service to Gustavus will increase use to the CHA. Signs should be installed before service starts.
Information/Outreach	A cross section of the town should be involved the planning process. This will affect use of CHA after plan is complete.
Information/Outreach	There are existing groups in the community that might be good starting places for establishing a "Friends of Dude Creek CHA" group.
Information/Outreach	There is no good place to put a sign, since the main access point to the CHA is on private property
Information/Outreach	Education about the cranes importance throughout the flyway would help people appreciate the value of the CHA
Information/Outreach	One thing that would be good would be signs clearly stating prohibited uses in the CHAs.
Invasive plants	Reed canary grass is especially a threat; it is already present in the town. It spreads fast and is hard to kill. A survey of invasives should be done soon.
Land ownership	Two thirds of the money for purchase of original land came from the FWS fund for coastal wetlands. Money comes with tie that if the wetlands are damaged the money must be given back to the FWs, so that is why the state holds the conservation easement on TNC lands.

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Appendix B.—Summary of public scoping comments, Page 3 of 6.

Issue	Comment
Land ownership	Grazing is also a sticky issue for TNC land because of the introduction of invasives on disturbed land, and changes in vegetation. Users continue to stake out their horses on the beach meadows. They had done it previously and continue to do it.
Land ownership	TNC property boundary extends to the 15 ft. tide line; it's DNR below the 15 ft. tide line, which is a long way to the vegetation line. Above the 15 ft there is good sand, but below it is pretty muddy. ORV use on the sand might be okay.
Land ownership	TNC cannot do anything about incompatible uses on DNR lands adjacent to TNC lands. DNR is the gov't manager of section line easements; they are involved in the planning process.
Land ownership	TNC was originally invited to be involved in the Dude Creek creation by the community of Gustavus. The land TNC holds should be managed similar to how the CHA is managed.
Land ownership	CHA lands act as a sort of "buffer" between the town (private lands with other uses) and the National Park (which is inaccessible to those wanting to hunt, etc.) which is valuable to the people in the community.
Land ownership	One of the major concerns is the "lands in limbo" i.e. those S of the CHA transferred to the DNR from TNC.
Material extraction	Cell towers and gravel pits might be okay...don't seem to be plausible need.
Material extraction	Material extraction would be considered an egregious and incompatible use.
Material extraction	There is no historical interest and there is a gravel pit right by the airport....maybe okay as part of enhancement project.
Motorized vehicle use	Unauthorized ORVs do currently use the CHA. Some used for trapping, others used for joy riding (tracks with no pattern or destination), some used to haul tree stand materials.
Motorized vehicle use	ORV use is a serious problem because of damage to vegetation and creation of ruts and widening of trails.
Motorized vehicle use	An airboat has been used in the CHA, there is currently one parked at the harbor, but very rare occurrence.

-continued-

Appendix B.–Summary of public scoping comments, Page 4 of 6.

Issue	Comment
Motorized vehicle use	Outside of moose season ORV use, especially along the beach: one person with trap line; adults with trucks joy riding
Motorized vehicle use	If ORV users in town were provided with a hardened path, they would not necessarily want to use it.
Motorized vehicle use	ORV restrictions should be blanket and year round.
Motorized vehicle use	ORV restrictions should be based on habitat value and season.
Motorized vehicle use	ORV use on sand may be okay from habitat damage perspective.
Other	What will come from the plan that will make enforcement of regulations better/easier/more effective? How can the plan help to control uses? The steps of solutions should be identified in detail in the plan.
Recreational activities	Crane viewing is highly valued.
Recreational activities	By far greatest harassment comes from moose hunters. Main problem is that hunting season is the same time at migration.
Recreational activities	There is a standing conflict between moose hunters and cranes. It would take a lot more work due to previous conflict over moving around the timing of the hunt.
Recreational activities	Moose meat is an important source of food for many locals, and accommodation of outside hunters provides fall income to some resident businesses. We support the continuance of moose hunting in the Critical Habitat Area.
Recreational activities	Moose meat is an important source of food for many locals, and accommodation of outside hunters provides fall income to some resident businesses. We support the continuance of moose hunting in the Critical Habitat Area.
Recreational activities	There are a few trappers in Gustavus with ATV's. Trapping is not an essential economic activity for anyone in Gustavus and we believe it is both unnecessary and environmentally unsustainable here. Frankly, we would be happy to see trapping prohibited in the Critical Habitat Area. But, if it is to continue, trappers should work their lines on foot, or find another hobby.
Research	What will the plan do to evaluate the scientific needs of cranes? Is there a systematic assessment of whether there is adequate information to manage for these needs?

-continued-

Appendix B.—Summary of public scoping comments, Page 5 of 6.

Issue	Comment
Research	Citizen science could be a possibility, community seems willing to volunteer time and has local expertise to reduce research costs.
Resources	There used to be a lot more cranes using the area...some attribute decreases to the lack of solitude.
Resources	The beach is probably the most useful area to Hoonah residents...can land on the beach, get beach asparagus.
Resources	Some current participation from Hoonah in the moose hunt.
Resources	There is little Native use of cranes, and they are available near Hoonah so no reason to travel to harvest them.
Resources	There is broad support in the community for maintaining the cranes.
Resources	The biggest threat to sandhill cranes is probably the loss of suitable wetland and riparian areas to use as stopovers during their migration. Indeed, the growth of our own community displaced cranes from the open meadows they originally used near the Gustavus Airport.
Resources	Land is rebounding about 1 to 1.5 inches per year. All accreted land becomes uplands [? Supreme court decision]
Resources	The old proposal for the nature center originated with Schneider and Van Dyke, the permit for it was denied by the Corps of Engineers. Schneider owns the property north and south of the ditch running east to west. HE was approached about selling the land to TNC and was agreeable but the appraisal estimate was not enough money.
Resources	Smaller tributaries don't freeze over in winter.
Resources	Greg Streveler is one of the most important sources of information about the CHA, he was one of the original founders.
Resources	Crane season is simultaneous with moose hunting season.
Resources	No one really shoots the cranes; there seems to be a local taboo.

-continued-

Appendix B.—Summary of public scoping comments, Page 6 of 6.

Issue	Comment
Resources	Crane stop here in between Yakutat and the Stikine; seems to be more of a resting ground than a feeding area. Cranes only migrate during the day, so they must have a stopping point between the two.
Resources	Dude Creek/smaller coastal streams nearby provide lots of Coho rearing habitat but little to no spawning habitat. Fry possibly come from Good, Salmon, or Bartlett Rivers.
Resources	CHA is valued by users for importance to cranes, primarily, hunting, hiking, berry picking, and skiing.
Resources	CHA is valued by users for wildlife abundance, solitude, and berries.
Resources	Ground does not freeze continuously/consistently over winter.
Roads	Roads are not really an issue for Dude Creek. The only place to go would be to Bartlett Cove and they already have a road there. A hardened path might be something that should be addressed.
Structures	Hunting stands are not really used by moose hunters (from Hoonah)
Structures	Currently there are lots of tree stands for moose hunters.
Structures	An observation tower might be a good idea.
Structures	Cell towers and gravel pits might be okay...don't seem to be a plausible need.
Structures	Tree stands do need to be addressed. They are not so much a problem in and of themselves but because of the trash produced. That's not necessarily a habitat issue.
Structures	There was an older proposal for building an observation tower for bird watching- that could be an allowable use.
Structures	A trail from the park headquarters to the NW to an observation tower might be a possibility.
Timber	Timber harvest for commercial uses should not be allowed, it would open ATV access.
Utility lines/Pipelines	There is talk about extending lines from Falls Creek hydro into the park...might someday involve installing power lines in CHA but road corridor around CHA seems a much more logical option.

APPENDIX C
SCOPING QUESTIONNAIRE



DUDE CREEK CRITICAL HABITAT AREA MANAGEMENT PLANNING

PUBLIC SCOPING COMMENTS

The Alaska Department of Fish and Game, Division of Habitat and Division of Wildlife Conservation invite the public to share information and concerns about the Dude Creek Critical Habitat Area (CHA) near Gustavus. This is the first step in ADF&G's year long planning process to write a Management Plan for the Dude Creek CHA.

We would like to know how you use the area and its resources, and are looking for ideas on how to manage activities and public uses that are compatible with the CHA's mission to protect sand hill cranes, their habitat, and other fish and wildlife. Some issues that have been addressed in other CHA management plans are: trails, resource development (e.g. forestry, water withdrawals, material extraction), motorized access, duck blind construction, etc.

1) What are your concerns and interests about the future of the Critical Habitat Area? Are there other topics you feel we should consider?

2) What actions would you like to see us consider taking to address the issues or to deal with other concerns you have about the Critical Habitat Area?

3) Finally, what is it about the Critical Habitat Area, their resources and uses that you value the most? Are these values being protected or do you feel they are threatened?

4) Do you have any other comments?

For more information contact:

Habitat Division –Mark Fink or Tammy Massie (907)-267-2342

Please send comments by March 15, 2010:

Fax: 907-267-2499

Email: dfg.hab.specialarea@alaska.gov

Or mail to: Habitat Division, ADF&G

333 Raspberry Rd.

Anchorage,

AK

99518-1555

APPENDIX D
ADF&G SPECIAL AREA REGULATIONS

Appendix D

ADF&G SPECIAL AREA REGULATIONS

**Title 5 Alaska Administrative Code
Part 5, Protection of Fish and Game Habitat**

**Chapter 95, Fish and Game Habitat
Articles 4, 7, and 8**

Article 4. Special Areas (5 AAC 95.400 – 5 AAC 95.440)
Article 7. Permit Procedures (5 AAC 95.700 – 5 AAC 95.770)
Article 8. General Provisions (5 AAC 95.900 – 5 AAC 95.990)

Note to Readers: As of Register 148, January 1999, textual cross-references and authority citations to the following statutes were changed as follows, to reflect renumbering of those statutes by the Revisor of Statutes: AS 16.20.120 was renumbered AS 16.20.094; AS 16.20.130 was renumbered AS 16.20.096; AS 16.20.170 was renumbered AS 16.20.162; AS 16.20.250 was renumbered AS 16.20.520; and AS 16.20.260 was renumbered AS 16.20.530.

**This chapter is implemented by the Alaska Department of Fish and Game,
Division of Habitat.**

Points of contact in the Division of Habitat are:

Juneau (Douglas)

802 3rd Street, Juneau, Alaska 99824-5412; telephone: 907-465-4105

Anchorage

333 Raspberry Road, Anchorage, Alaska 99518-1565; telephone: 907-267-2342

Fairbanks

1300 College Road, Fairbanks, Alaska 99701-1551; telephone: 907-459-7289

~~~~~This material is not an official copy of these regulations. ~~~~~

## Article 4. Special Areas

### Section

- 400. Implementation of authority
- 410. Notice requirements
- 420. Activities requiring a special area permit
- 430. Conditioning, approval, or denial of special area permits
- 440. Limitations on special area permits

**5 AAC 95.400. Implementation of authority.** The commissioner will implement the authorities vested in AS16.20.050, 16.20.060, 16.20.094, 16.20.162, 16.20.520, and 16.20.530, excluding hunting, trapping, and fishing, in accordance with procedures established in this chapter. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.060 |
|                   | AS 16.05.050 | AS 16.20.094 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.520 |
|                   | AS 16.05.270 | AS 16.20.530 |
|                   | AS 16.20.050 |              |

**5 AAC 95.410. Notice requirements.** (a) Before a lease or other disposal of land under state jurisdiction and control in a special area, or private land in a critical habitat area, the responsible state department or agency or private landowner shall notify the commissioner.

(b) No person or governmental agency may undertake an activity listed in 5 AAC 95.420(a) within a special area unless the commissioner has been notified and a permit for the activity has been issued by the commissioner under 5 AAC 95.700 - 5 AAC 95.760. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.520 |
|                   | AS 16.20.050 |              |

**5 AAC 95.420. Activities requiring a special area permit.** (a) No person or governmental agency may engage in the following uses or activities within a special area without first obtaining a special area permit following the procedures of 5 AAC 95.700 - 5 AAC 95.760:

- (1) construction, placement, or continuing use of any improvement, structure, or real property within a special area;

- (2) destruction of vegetation;
- (3) detonation of an explosive other than a firearm;
- (4) excavation, surface or shoreline altering activity, dredging, filling, draining, or flooding;
- (5) natural resource or energy exploration, development, production, or associated activities;
- (6) water diversion or withdrawal;
- (7) off-road use of wheeled or tracked equipment unless the commissioner has issued a general permit under 5 AAC 95.770;
- (8) waste disposal, placement, or use of a toxic substance;
- (9) grazing or animal husbandry; and
- (10) any other activity that is likely to have a significant effect on vegetation, drainage, water quality, soil stability, fish, wildlife, or their habitat, or which disturbs fish or wildlife other than lawful hunting, trapping, fishing, viewing, and photography.

(b) The commissioner makes the final determination as to whether a specific activity is subject to the provisions of this chapter. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.430. Conditioning, approval, or denial of special area permits.** If the procedural requirements of 5 AAC 95.700 - 5 AAC 95.760 are met, the commissioner will permit a use or activity listed in 5 AAC 95.420 that meets or can be conditioned to meet the following standards:

- (1) the use or activity is consistent with the protection of fish and wildlife and their use, protection of fish and wildlife habitat, and the purpose for which the special area was established; and
- (2) the use or activity does not unduly restrict or interfere with the public use and enjoyment of the resource values for which the special area was established; and

(3) any adverse effect upon fish and wildlife, and their habitats, and any restriction or interference with public use, is mitigated in accordance with 5 AAC 95.900. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.440. Limitations on special area permits.** A permit issued under 5 AAC 95.700 - 5 AAC 95-760.

(1) does not convey an interest in state land or grant any preference right for the lease or purchase of state land; and

(2) does not allow the permittee to restrict or interfere with public access across or public use of a special area unless specified in the permit. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

## **Article 7. Permit Procedures**

### **Section**

- 700. Application procedures
- 710. Permit decision
- 720. Permit conditions and assignments
- 730. Permit term
- 740. Amendments to the permit
- 750. Retention of permit; inspection of permit sites
- 760. Renewal of permit
- 770. General permits

**5 AAC 95.700. Application procedures.** (a) An applicant for a permit shall submit a completed application on a form or in a manner approved by the commissioner. The application must be correct and complete to the best of the applicant's knowledge and be signed and dated by the applicant or the applicant's designee. The submission of a completed application satisfies any related notification required by AS 16 and this chapter. An application form is available from the department's offices.

(b) The completed application must include the anticipated commencement date, duration, and area of proposed activity including a scaled map, identification of waterbodies at the site, description of type of activity, description of any proposed facility, the description of proposed access route and means and time of travel, and other information necessary for the commissioner to determine whether the activity will comply with the applicable provisions of this chapter.

(c) A completed application must be submitted to the department's habitat division office representing the region or area in which the proposed activity will occur. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.520 |
|                   | AS 16.20.050 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.710. Permit decision.** (a) The commissioner will issue a permit if he or she determines that the requirements of this chapter are met.

(b) The commissioner will notify an applicant in writing of any denial. The notice will include

- (1) the reason for the denial; and

(2) a statement that the applicant may appeal under 5 AAC 95.920 or submit new or additional information and ask for reconsideration under (c) of this section.

(c) The commissioner will, in his or her discretion, reconsider a denial of an application if the applicant submits, to the appropriate habitat division office, factual information which is new or additional to that supplied with the original application. An applicant may submit the new or additional information as an amendment to the original application, or the applicant may submit a new application. The procedures of 5 AAC 95.700 - 5 AAC 95.760 apply to reconsideration. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.520 |
|                   | AS 16.20.050 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.720. Permit conditions and assignment.** (a) To provide for the proper protection and management of fish and wildlife, and their habitats, the commissioner will consider and will, in his or her discretion, include as conditions of the permit

(1) the duration of the proposed activity, including any provision for changing the time period during which the permit is valid and any provision for changing the effective time period of the permit;

(2) any other seasonal use restrictions on a specific activity;

(3) limitation of the a real extent of the activity;

(4) any provision for the mitigation of damage to fish or wildlife, or their habitats;

(5) any provision to facilitate periodic monitoring of the proposed land or water use or activity by an authorized representative of the state, including inspection and sampling;

(6) reporting requirements;

(7) any provision for the posting of a performance bond or other surety as authorized in 5 AAC 95.950.necessary to insure compliance with the provisions of this chapter or conditions of the permit; and

(8) any other necessary condition.

(b) A permit may not be transferred but may be assigned upon written consent by the commissioner.

(c) The commissioner will, in his or her discretion, require a permit applicant to sign and date the permit before its validation as acknowledgement of the permittee's agreement to, and full understanding of, all conditions of the permit. (Eff. 6/5/86, Register 98)

|            |              |              |
|------------|--------------|--------------|
| Authority: | AS 16.05.020 | AS 16.20.094 |
|            | AS 16.05.050 | AS 16.20.096 |
|            | AS 16.05.251 | AS 16.20.162 |
|            | AS 16.05.255 | AS 16.20.530 |
|            | AS 16.20.060 |              |

**5 AAC 95.730. Permit term.** (a) Except as provided in (b) and (c) of this section a permit will in the commissioner's discretion be issued for a fixed term not to exceed two years, subject to the provisions of this chapter.

(b) A permit for a personal use cabin issued concurrent with 11 AAC 65 will, in the commissioner's discretion, be issued for up to six years.

(c) A permit will, in the commissioner's discretion, be issued for a fixed term exceeding two years if the commissioner determines that the activity meets the purposes and requirements of this chapter and the activity is permanent in nature. (Eff. 6/5/86, Register 98)

|            |              |              |
|------------|--------------|--------------|
| Authority: | AS 16.05.020 | AS 16.20.094 |
|            | AS 16.05.050 | AS 16.20.096 |
|            | AS 16.05.251 | AS 16.20.162 |
|            | AS 16.05.255 | AS 16.20.530 |
|            | AS 16.20.060 |              |

**5 AAC 95.740. Amendments to the permit.** (a) The commissioner will, in his or her discretion, initiate action to amend a permit to correct any condition or change any method authorized by the permit which was reasonably unforeseeable at the time of permit approval and which threatens to cause a substantially adverse effect upon

(1) fish or wildlife, or their habitat; or

(2) if the permit is a special area permit, the purpose for which the special area was established.

(b) Any action a permittee desires to take which increases the overall scope of the project or which negates, alters, or minimizes the intent or effectiveness of any condition contained in a permit, is a deviation from the approved plan and requires an amendment before initiation of the action.

(c) A permittee may request amendment of a permit by submitting, to the department's habitat division office where the permit was issued, a written statement explaining why the amendment is necessary, including the amended plan, the location, commencement time, duration, and type of activity requiring amendment.

(d) The commissioner will issue an amendment to the permit if he or she determines that the requirements of this chapter will be met. Review of a request for amendment after receipt of the written statement in the appropriate habitat division office will not exceed 30 days. The procedures of 5 AAC 95.700 - 5 AAC 95.760 apply to a request for amendment.

(e) An amendment approved by the commissioner becomes effective upon receipt by the permittee, or at a later date specified by the amendment. An amendment is valid for the duration of the permit or for a shorter specified period. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.750. Retention of permit; inspection of permit sites.** (a) A permittee shall keep a copy of the permit, including any amendments, at the work site until completion of the project, and shall make it available for inspection upon request by an authorized representative of the state.

(b) For the purpose of inspecting or monitoring compliance with any condition of the permit or the requirements of this chapter, a permittee shall give an authorized representative of the state free and unobstructed access, at safe and reasonable times, to the permit site. A permittee shall furnish whatever assistance and information as the authorized representative reasonably requires for monitoring and inspection purposes. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.760. Renewal of permit.** (a) A permittee may request renewal of an existing permit before the expiration of the current term of the permit. Procedures in this chapter apply to renewal, except that the filing of a new application under 5 AAC 95.700 is not required.



(b) If an existing permit expires or is revoked, a permittee may obtain a new permit only by filing a new completed application in accordance with 5 AAC 95.700. (Eff. 6/5/86, Register 98)

|            |              |              |
|------------|--------------|--------------|
| Authority: | AS 16.05.020 | AS 16.20.094 |
|            | AS 16.05.050 | AS 16.20.096 |
|            | AS 16.05.251 | AS 16.20.162 |
|            | AS 16.05.255 | AS 16.20.530 |
|            | AS 16.20.060 |              |

**5 AAC 95.770. General permits.** Notwithstanding 5 AAC 95.700 and 5 AAC 95.750 - 5 AAC 95.760, the commissioner will, in his or her discretion, issue a permit to the public at large for a specific activity in a specific area. (Eff. 6/5/86, Register 98)

|            |              |              |
|------------|--------------|--------------|
| Authority: | AS 16.05.020 | AS 16.20.094 |
|            | AS 16.05.050 | AS 16.20.096 |
|            | AS 16.05.251 | AS 16.20.162 |
|            | AS 16.05.255 | AS 16.20.530 |
|            | AS 16.20.060 |              |

## **Article 8.**

### **General Provisions**

#### **Section**

- 900. Mitigation of damages.
- 910. Failure to adhere to standards.
- 920. Appeals.
- 930. Exclusion periods.
- 940. Exemption for emergency and police power activities.
- 950. Bonding or security.
- 990. Definitions.

**5 AAC 95.900. Mitigation of damages.** (a) Each permittee shall mitigate any adverse effect upon fish or wildlife, or their habitat, which the commissioner determines may be expected to result from, or which actually results from, the permittee's activity, or which was a direct result of the permittee's failure to

(1) comply with a permit condition or a provision of this chapter; or

(2) correct a condition or change a method foreseeably detrimental to fish or wildlife, or their habitat.

(b) Mitigation techniques must be employed in the following order of priority:

(1) avoid an impact altogether by not taking a certain action or parts of an action;

(2) minimize an impact by limiting the degree of magnitude of the action;

(3) rectify the impact by repairing, rehabilitating, or restoring the affected environment;

(4) reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action;

(5) compensate for the impact by replacing or providing substitute resources or environments.

(c) The duty to mitigate in (a) of this section does not apply to unavoidable adverse effects upon fish or wildlife populations, or their habitat, arising from an overwhelming force of nature with consequences not preventable by due and reasonable precautions.

(d) The commissioner will, in his or her discretion, specify, by permit amendment, additional provisions for mitigating damage to fish and wildlife populations, and their habitat.

(e) Notwithstanding the expiration or revocation of a permit, a permittee is responsible for the obligations arising under the terms and conditions of the permit, and under the provisions of this chapter. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.910. Failure to adhere to standards.** The commissioner will in his or her discretion require in writing that a permittee correct a condition or remove a structure or installation constructed under permit by the permittee, which is not in accordance with a provision of the permit. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.920. Appeals.** An interested person may initiate an appeal of a decision made under this chapter in accordance with the provisions of AS 44.62.330 - 44.62.630 by requesting a hearing under AS 44.62.370. (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.930. Exclusion periods.** (a) The commissioner will notify a permittee that the term of the permit is, or will be, interrupted for a period of time if the commissioner determines that

(1) a temporary environmental condition exists which was reasonably unforeseeable at the time of permit approval and the permitted activity, if allowed to continue, threatens to cause a substantial adverse impact;

(2) the permittee has failed to implement a required mitigating or preventative measure; or

(3) the permittee has failed to comply with a provision of this chapter, or a condition of the permit.

(b) The exclusion period established under (a) of this section will be as long as necessary for abatement of the temporary condition, completion of the required mitigating or preventive measure, or compliance with the permit condition or the provisions of this chapter, and will not exceed a total of 30 days in any calendar year, without the consent of the permittee.

(c) The commissioner will, by notice to the permittee, terminate an exclusion period after the permittee demonstrates abatement, compliance, or implementation of the required mitigating measures.

(d) If the commissioner finds, before or during an exclusion period, that corrective action is unlikely to be completed within any available exclusion period, the commissioner will, in his or her discretion, initiate a revocation proceeding under AS 44.62.330 – AS 44.62.630. (Eff. 6/5/86, Register 98)

|            |              |              |
|------------|--------------|--------------|
| Authority: | AS 16.05.020 | AS 16.20.094 |
|            | AS 16.05.050 | AS 16.20.096 |
|            | AS 16.05.251 | AS 16.20.162 |
|            | AS 16.05.255 | AS 16.20.530 |
|            | AS 16.20.060 |              |

**5 AAC 95.940. Exemption for emergency and police power activities.** In an emergency, the commissioner may issue an oral permit for emergency or police power activities before receiving the completed application required in 5 AAC 95.700. A completed application must be submitted within the time specified by the commissioner, whether before or after the emergency or police power activity takes place. (Eff. 6/5/86, Register 98)

|            |              |              |
|------------|--------------|--------------|
| Authority: | AS 16.05.020 | AS 16.20.094 |
|            | AS 16.05.050 | AS 16.20.096 |
|            | AS 16.05.251 | AS 16.20.162 |
|            | AS 16.05.255 | AS 16.20.530 |
|            | AS 16.20.060 |              |

**5 AAC 95.950. Bonding or security.** (a) The commissioner will, in his or her discretion, require a performance bond with a surety company authorized to transact business in Alaska, or other specified security to secure the performance of the terms and conditions of a permit issued under this chapter.

(b) A performance bond or security required under (a) of this section is limited to an amount reasonably necessary to ensure compliance with the provisions of this chapter or the terms and conditions of a permit issued under this chapter.

(c) The commissioner will inspect or review actions taken under each applicable term or condition of a permit issued under this chapter, and will make a written finding that each applicable term and condition of the permit has been completed, before the permittee's performance bond or security is released.

(d) The posting of a performance bond or the taking of other security under (a) of this section does not limit the department's right, under applicable law, to seek further compensation from the permittee for actual damages to fish or wildlife, or their habitats, or for a violation of the permit. (6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.520 |
|                   | AS 16.20.050 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**5 AAC 95.990. Definitions.** In addition to the definitions set out in AS 16.05.940, as used in this chapter:

(1) "authorized representative of the state" means one who is legally empowered to enforce a statute under which regulations in this chapter are promulgated;

(2) "completed application" means the submission of full plans, specifications and notifications required by AS 16.20, and includes a form, series of forms, letter or other documents that provide all of the information necessary for the commissioner to issue, condition or deny a permit;

(3) "emergency" means an unforeseeable situation that presents an imminent threat to life or property;

(4) "mitigate" means to compensate fully for damage to fish and wildlife populations and their habitat by employing the most appropriate techniques;

(5) "permittee" means the holder of a permit and includes anyone employed, contracted, or assigned by the person or the organization to whom the permit was issued to conduct a land or water use operation;

(6) "permit" means the approval of plans and specifications required by AS 16.20.060 or 16.20.530, and any authorization made under AS 16.20.094, 16.20.096, or 16.20.162;

(7) "special area" means a state game refuge, a state game sanctuary, or a state fish and game critical habitat area, established under AS 16.20;

(8) "wildlife" means any species of bird or mammal as described in AS 16.05.940 (14). (Eff. 6/5/86, Register 98)

|                   |              |              |
|-------------------|--------------|--------------|
| <b>Authority:</b> | AS 16.05.020 | AS 16.20.094 |
|                   | AS 16.05.050 | AS 16.20.096 |
|                   | AS 16.05.251 | AS 16.20.162 |
|                   | AS 16.05.255 | AS 16.20.530 |
|                   | AS 16.20.060 |              |

**DUDE CREEK CRITICAL HABITAT AREA  
MANAGEMENT PLAN**

**Appendix E  
MAPS**

**By Frances Inoue  
and  
Jason Graham**

**Division of Sport Fish**

**2015**

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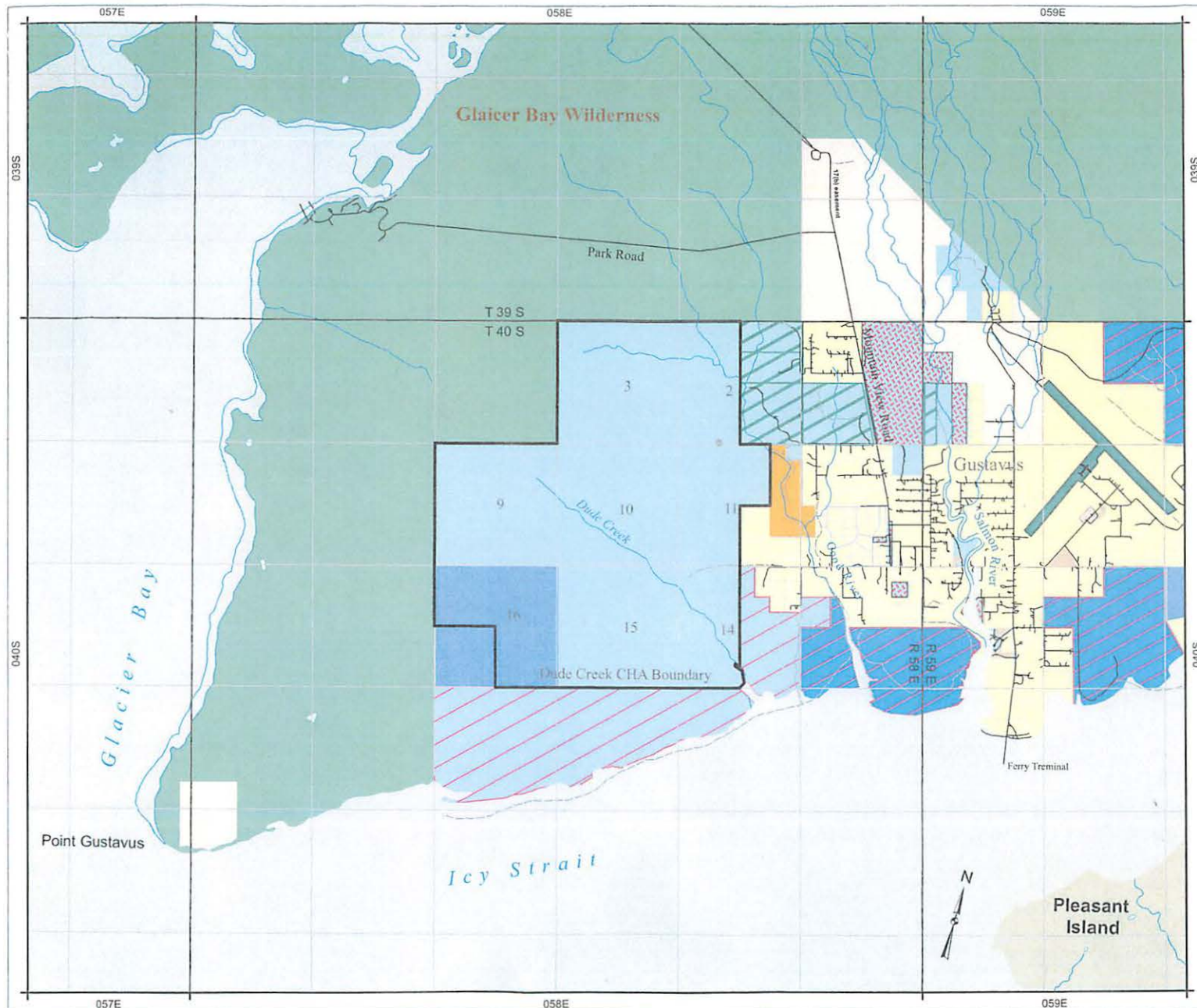
**Alaska Department of Fish and Game**

**Divisions of Habitat and Wildlife Conservation**



**DUDE CREEK CRITICAL HABITAT AREA MAPS**

| <b>Map</b>                                                         | <b>Page</b> |
|--------------------------------------------------------------------|-------------|
| Map 1. Dude Creek Critical Habitat Area Land Status.....           | E-1         |
| Map 2. Dude Creek Critical Habitat Area Vegetation.....            | E-2         |
| Map 3. Dude Creek Critical Habitat Area Fish, Birds, Mammals ..... | E-3         |
| Map 4. Dude Creek Critical Habitat Area Moose.....                 | E-4         |



# Map 1 Dude Creek Critical Habitat Area Land Status

Dude Creek CHA Boundary

## Legend

### Federal Lands

- National Park Service
- USFS

### State Lands

- State
- Mental Health (MH)
- MH Subsurface/ State Surface
- MH Subsurface/ The Nature Conservancy
- Interagency Land Management Agreement (ILMA)
- School Trust
- Agricultural rights

### Private Lands

- Native
- Private
- The Nature Conservancy
- Municipal Entitlements

- Main Roads
- Gravel Roads
- Trails



0 0.5 1 2 Miles



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May 2016



## Map 2 Dude Creek Critical Habitat Area Vegetation (2003)

### Legend

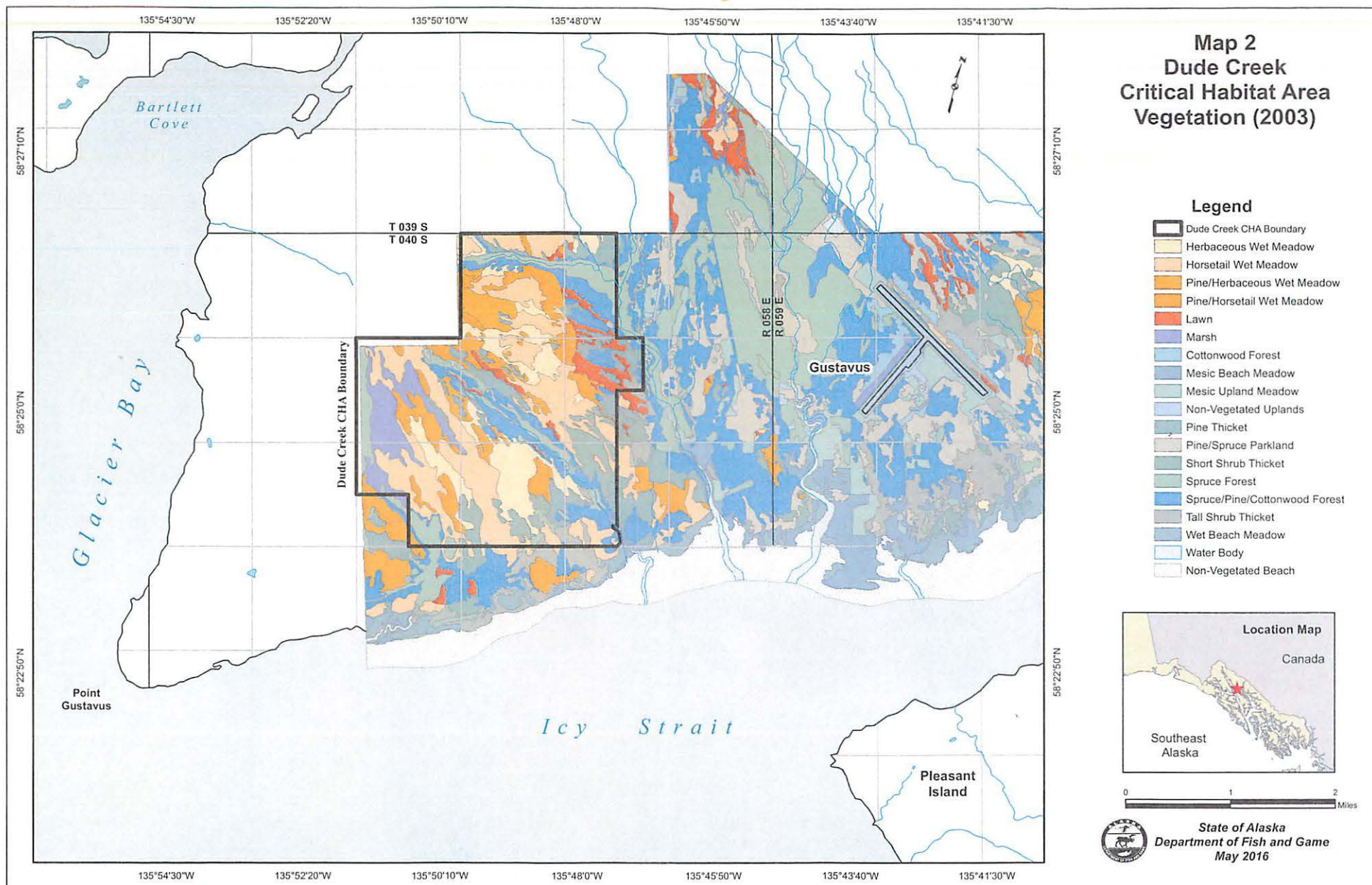
-  Dude Creek CHA Boundary
-  Herbaceous Wet Meadow
-  Horsetail Wet Meadow
-  Pine/Herbaceous Wet Meadow
-  Pine/Horsetail Wet Meadow
-  Lawn
-  Marsh
-  Cottonwood Forest
-  Mesic Beach Meadow
-  Mesic Upland Meadow
-  Non-Vegetated Uplands
-  Pine Thicket
-  Pine/Spruce Parkland
-  Short Shrub Thicket
-  Spruce Forest
-  Spruce/Pine/Cottonwood Forest
-  Tall Shrub Thicket
-  Wet Beach Meadow
-  Water Body
-  Non-Vegetated Beach



0 1 2 Miles














State of Alaska  
Department of Fish and Game  
May 2016





# **MAP 3** **Dude Creek** **Critical Habitat Area** **Fish, Birds, Mammals**

## **Legend**

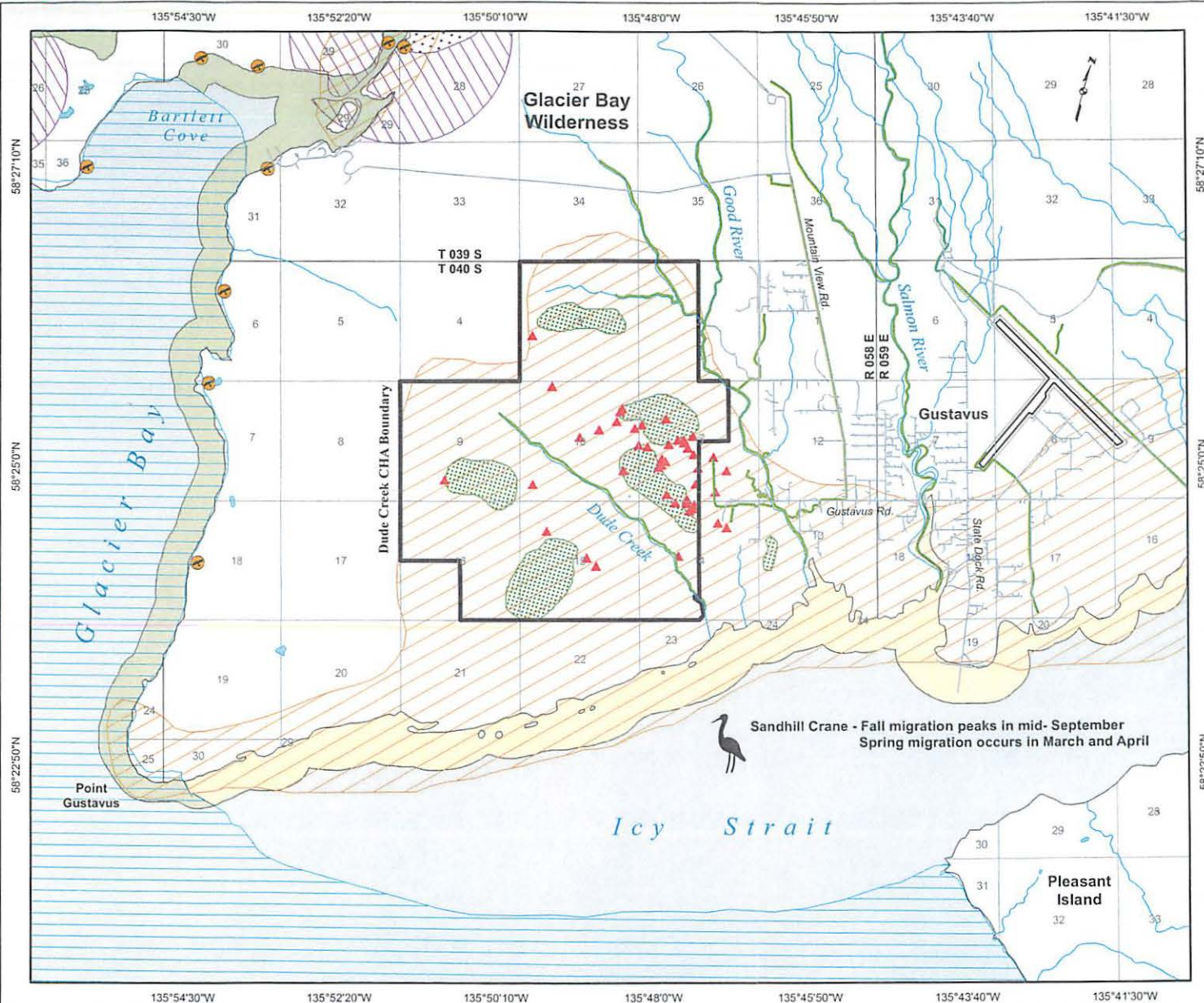
-  Anadromous Streams
-  Bald Eagle Nest Sites
-  Waterfowl Spring/Fall Concentration Area
- Sandhill Crane**
  -  Fall Concentration
  -  GPS Site Locations
- Sea Otter**
  -  High Concentration Areas
  -  Medium Concentration Areas
- Humpback Whale**
  -  May - October
- Bear**
  -  Spring Concentrations
  -  Spring/Summer Concentrations
-  Dude Creek CHA Boundary



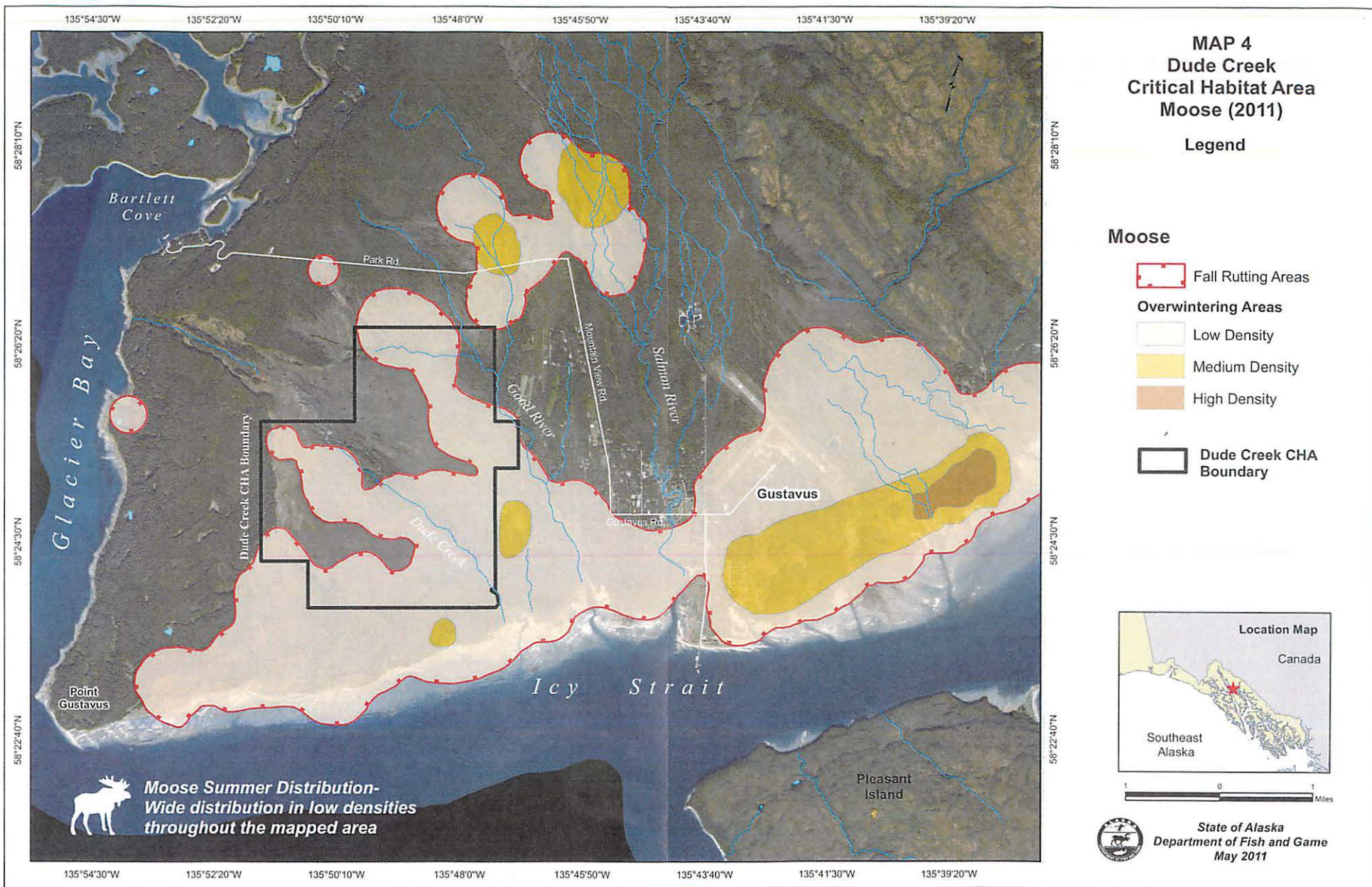
1 0 1 Miles



State of Alaska  
 Department of Fish and Game  
 March 2016







**Land Status:** Base land status for this project comes from the DNR<sup>1</sup>. This coverage has been edited to reflect the land status information on DNR's status plats<sup>2</sup>, BLM's MTP's<sup>2</sup>, the states recorders office<sup>3</sup>, and documented case reports<sup>4</sup>. Because Alaska is a non-recording state, there is no guarantee that additional undocumented land transfers have occurred that could potentially alter the data we have compiled. Land ownership is not static; consequently, even in the time it took to compile this information, some parcels may have changed ownership.

1. [http://www.asgdc.state.ak.us/metadata/vector/landstat/statewide/akstat\\_c63.html](http://www.asgdc.state.ak.us/metadata/vector/landstat/statewide/akstat_c63.html)
2. <http://www.dnr.state.ak.us/cgi-bin/lris/landrecords>
3. <http://www.dnr.state.ak.us/ssd/recoff/search.cfm>
4. <http://www.dnr.state.ak.us/las/lasmenu.cfm>
5. [http://sdms.ak.blm.gov/acres/acres\\_menu](http://sdms.ak.blm.gov/acres/acres_menu)

**Sandhill Crane:** Streveler, G. P., J. T. Brakel, D. B. Brown, J. Crapella, and R. E. Christensen 2004. Sandhill Crane Use of the Dude Creek Critical Habitat Area During Fall Migration, Icy Strait Environmental Services, Gustavus, Alaska.

**Waterfowl:** Most Environmentally Sensitive Areas Atlas 2000. Habitat and Restoration Division, Alaska Department of Fish and Game, Anchorage.

**Bald Eagle:** Research Planning Institute, Inc. 2003. ESI Atlas. Southeast Alaska. Vol. 2. Geographical Information Systems Data. Prepared for the National Oceanic and Atmospheric Administration, Hazardous Materials Response and Assessment Division, Seattle, Washington.

**Anadromous Fishes:** Atlas to the Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes: Southeast Region. 2009. Division of Sport Fish, Alaska Department of Fish and Game, Anchorage.

**Bear:** Research Planning Institute, Inc. 2003. ESI Atlas. Southeast Alaska. Vol. 2. Geographical Information Systems Data. Prepared for the National Oceanic and Atmospheric Administration, Hazardous Materials Response and Assessment Division, Seattle, Washington.

**Moose:** Barten, N. 2011. Personal communication and hard copy maps. Wildlife Biologist, Division of Wildlife Conservation, Alaska Department of Fish and Game, Juneau.

**Sea Otter:** Research Planning Institute, Inc. 2003. ESI Atlas. Southeast Alaska. Vol. 2. Geographical Information Systems Data. Prepared for the National Oceanic and Atmospheric Administration, Hazardous Materials Response and Assessment Division, Seattle, Washington.

**Humpback Whale:** Wynne, K. Guide to Marine Mammals of Alaska, 1993. University of Alaska, Fairbanks.

**Vegetation:** Streveler, G. P., K. Bosworth, and R. E. Christensen 2002. Plant Community Dynamics of the Dude Creek Critical Habitat Area, Icy Strait Environmental Services, Gustavus, Alaska.

Research Planning Institute, Inc. 2003. ESI Atlas. Southeast Alaska. Vol. 2. Geographical Information Systems Data. Prepared for the National Oceanic and Atmospheric Administration, Hazardous Materials Response and Assessment Division, Seattle, Washington.