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# **Willow Mountain Critical Habitat Area Management Plan**

by

**Habitat Section**

and

**Division of Wildlife Conservation**



July 2023

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Alaska Department of Fish and Game

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

WILLOW MOUNTAIN  
CRITICAL HABITAT AREA  
MANAGEMENT PLAN

Prepared by

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Habitat Section and Division of Wildlife Conservation  
Alaska Department of Fish and Game  
Anchorage, Alaska

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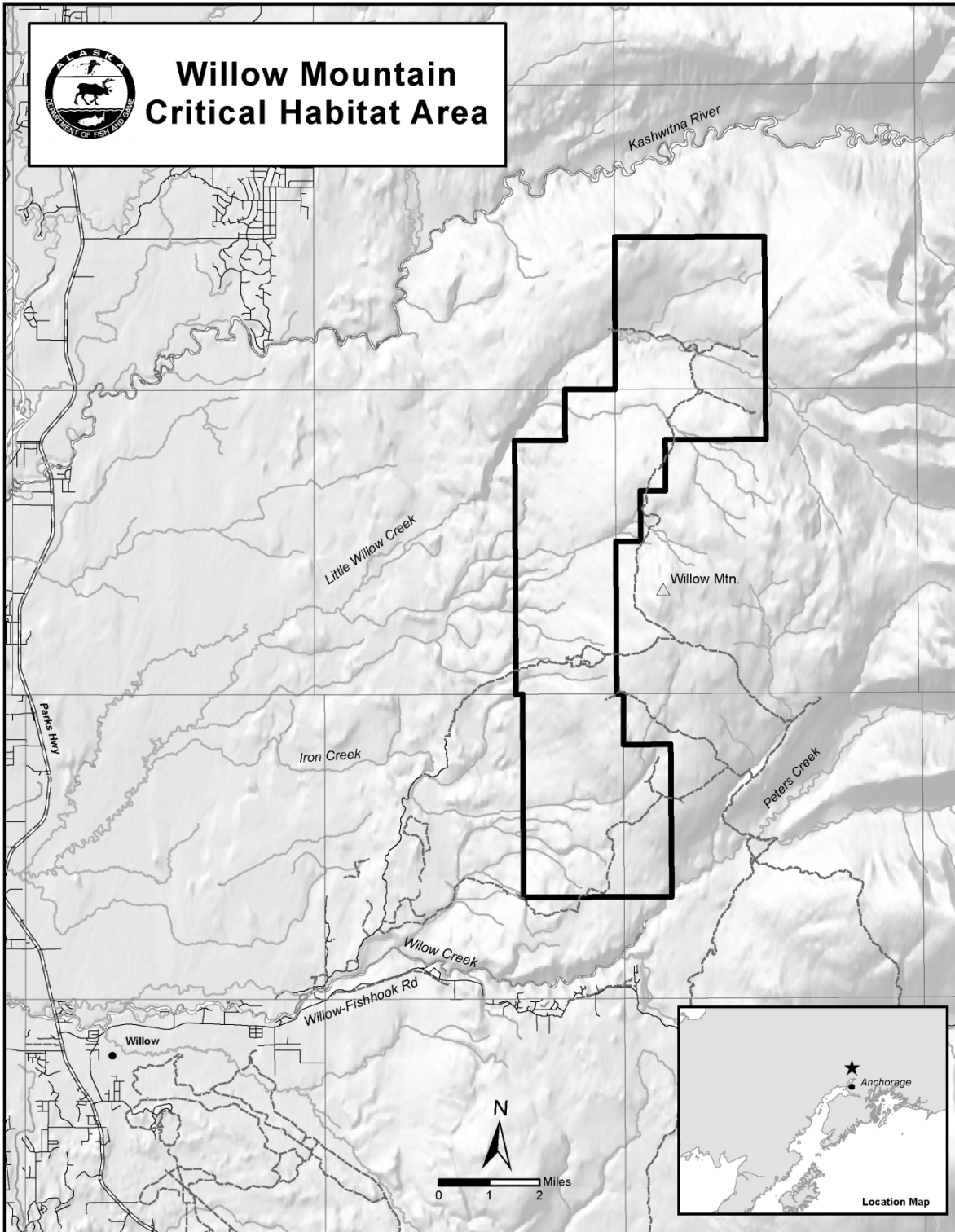


Figure 1.— Map of Willow Mountain Critical Habitat Area.

## INTRODUCTION

In 1989 the Alaska Legislature established the Willow Mountain Critical Habitat Area (CHA) to protect and enhance the exceptional post-rut moose habitat found on the western slopes of Willow Mountain and for the continued public use and enjoyment of the area (§ 2 ch 28 SLA 1989). The Willow Mountain CHA is located in the Susitna River valley of Southcentral Alaska, northeast of the community of Willow, and northwest of the City of Wasilla. The CHA encompasses approximately 23,000 acres of state land in the southwestern Talkeetna Mountain Range, stretching from Willow Creek in the south up to the Kashwitna River in the north.

The Willow Mountain CHA is co-managed by the Alaska Department of Fish and Game (ADF&G) in accordance with Alaska Statutes 16.20.520-530, and the Alaska Department of Natural Resources (DNR) per AS 38.05. The purpose of the *Willow Mountain Critical Habitat Area Management Plan* is to provide consistent, long-range guidance to ADF&G in managing the CHA. The 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 in the CHA.

This plan presents management goals for the CHA and its resources, and it also defines policies that determine whether proposed activities are compatible with the purposes of the CHA; namely, the protection of fish and wildlife habitat, and continued public use of the CHA. Both the goals and policies of this plan are adopted into 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 or affect hunting, trapping, or fishing regulations, which are the purview of the Alaska Boards of Fisheries and Game.

## 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 the following state and local entities: the State of Alaska Departments of Fish and Game, Natural Resources, and Environmental Conservation, and the Matanuska-Susitna Borough.

The ADF&G initiated the planning effort by holding public scoping meetings in Willow, Wasilla, and Anchorage to explain the planning process and solicit input on the issues, interests, and concerns of users of the Willow Mountain CHA. The planning team considered public input from these meetings while formulating the list of issues that would be addressed in the plan's policies. Concurrently, the department 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 Willow Mountain CHA. This information, presented in both map and narrative form, comprises the plan's Resource Inventory.

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



The public review draft was distributed widely to solicit comments and suggestions to strengthen the plan and make it useful to the department and the public. A final plan was prepared taking into consideration the comments received during the public review process. The Commissioner of the ADF&G will adopt the plan and corresponding regulations, pursuant to the Administrative Procedures Act, for use by the department in managing the CHA. At that point, the plan will be implemented by ADF&G.

## **IMPLEMENTATION OF THE PLAN**

The ADF&G will implement the final, adopted plan in several ways. Research programs, public use facilities, and other department projects will be consistent with the goals and policies presented in this plan. Similarly, future land use activities within the CHA, 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 the management plan and applicable state statutes and regulations.

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). A Special Areas Permit application form can be obtained from any ADF&G office or the department website (<http://www.adfg.alaska.gov/index.cfm?adfg=uselicense.main>); the completed application should be submitted to the Habitat Section Office in Palmer.

Other state, federal, and local agencies have management responsibilities that affect the Willow Mountain CHA as well. Many uses, including leasing, permitting, or disposal of resources on state land within the CHA may also require DNR authorization. Activities affecting air or water quality may require authorization from the Alaska Department of Environmental Conservation (DEC). The U.S. Army Corps of Engineers evaluates applications for permits which authorize activities affecting navigable waters and for the discharge of dredged and fill material in waters of the United States, including wetlands. Various federal and state agencies, along with local governments, review proposals for federal permits, pursuant to the Fish and Wildlife Coordination Act (16 USC 661-667 et. seq.).

The Willow Mountain CHA overlaps with state lands managed by DNR under the Hatcher Pass Management Plan, Willow Mountain Management Unit. DNR and ADF&G act as co-managers of this area; both agencies retain their individual regulatory authorities. Authorizations must be obtained from both DNR and ADF&G for any activity that is regulated by both departments. Upon adoption of the Willow Mountain CHA Management Plan by ADF&G, DNR management will be conducted consistent with the CHA management plan. Uses not controlled by the CHA management plan are to be authorized by DNR consistent with DNR's current land use plan for the area. For uses not specifically identified in the CHA Management Plan, ADF&G authorizations will be based on the "All Other Uses Policy." In situations where department requirements are not the same, the most restrictive authorization must be obtained before the activity can proceed.

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 Willow Mountain Critical Habitat Area are codified in Title 16, Chapter 20. The management direction for all state critical habitat areas, AS 16.20.500, became law in 1972 (§ 2 ch 140 SLA 1972). The enabling legislation for the Willow Mountain Critical Habitat Area (AS 16.20.620) became law in 1989 (§ 2 ch 28 SLA 1989).

**AS 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.

**AS 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.

**AS 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.

**AS 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.

**AS 16.20.620. Willow Mountain Critical Habitat Area established.** (a) The following described area is established as the Willow Mountain Critical Habitat Area:

- (1) Township 20 North, Range 2 West, Seward Meridian  
Section 7  
Sections 18-19;
- (2) Township 20 North, Range 3 West, Seward Meridian  
Sections 1-2  
Sections 11-14  
Sections 23-24
- (3) Township 21 North, Range 2 West, Seward Meridian

Sections 4-7  
Section 18: W1/2;

(4) Township 21 North, Range 3 West, Seward Meridian  
Section 1  
Sections 11-14  
Sections 23-26  
Sections 35-36

(5) Township 22 North, Range 2 West, Seward Meridian  
Sections 19-21  
Sections 28-33.

(b) Notwithstanding AS 16.20.510-16.20.530, the commissioner of fish and game, in consultation with the commissioner of natural resources, shall prepare a management plan for the Willow Mountain Critical Habitat Area. The commissioner of fish and game and the commissioner of natural resources shall exercise their respective authorities over the area in a manner consistent with the management plan. (§ 2 ch 28 SLA 1989)

## ALLOWED USES IN WILLOW MOUNTAIN CHA

The following activities can be conducted in the Willow Mountain CHA without either an individual special area permit or a special area general permit. Users are ultimately responsible for ensuring that their activities comply with all statutes and regulations. Off-road vehicle access will only be authorized by general or individual permit. Copies of current general permits are available on the ADF&G website or by contacting the Habitat Section Office in Palmer. If there are any questions about whether or not a specific activity is allowed, users should contact ADF&G, Habitat Section at 907-861-3200.

These allowed uses are specific to ADF&G's management of the Willow Mountain CHA. In instances where allowed uses in the CHA conflict with DNR's Generally Allowed Uses on state lands, the most restrictive standard must be met.

Allowed uses:

- Walking, hiking, skiing, dog sledding, other foot travel, and bike riding provided that no new trails are created.
- Hunting, trapping, and fishing as allowed under other regulations.
- Berry-picking, and plant and mushroom gathering for personal use. Dead and down timber may be used for firewood but harvesting live timber or vegetation clearing is not allowed.
- Camping for 14 consecutive days or less in the same location. See "Camping" and "Structures" policies for long term camps or building hardened structures.
- Transporting or storing small amounts (10 gallons or less) of fuel in appropriate containers. See "Hazardous Materials and Fuel Storage" policy.
- Gold panning, small-scale non-mechanized mining, and non-invasive activities such as metal detecting. It is the user's responsibility to confirm that a specific location is open to mining.
- Landing and take-off of ski mounted aircraft when sufficient snow is present.
- Non-commercial wildlife photography.

## **GOALS**

Activities occurring within the Willow Mountain Critical Habitat Area (CHA) will be consistent with the following goals in accordance with the purpose for which the area was established (AS 16.20.620). All department management decisions in the Willow Mountain 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 Willow Mountain CHA to conserve moose habitat, especially the fall post-rut congregation areas, and to maintain the productivity of that habitat for moose.
- B. Manage the Willow Mountain CHA to conserve and enhance the habitat for other naturally occurring fish and wildlife populations, such as upland game birds.
- C. Encourage habitat enhancement projects.
- D. Minimize harmful disturbance to fish and wildlife, with special attention to moose, especially during the fall post-rut period.
- E. Maintain water quantity, natural substrates, and water circulation patterns sufficient for the growth and propagation of fish and wildlife populations.

### **GOAL II. PUBLIC ACCESS AND USE**

- A. Encourage opportunities for public access to the Willow Mountain CHA for public uses consistent with Goal I, including hunting, trapping, and other dispersed recreational activities.
- B. Allow other public uses when those uses are consistent with Goal I.

### **GOAL III. MANAGEMENT, RESEARCH, AND OTHER ACTIVITIES**

- A. Consider opportunities to enhance the quantity or quality of moose habitat in the Willow Mountain CHA.
- B. Encourage and support research and monitoring activities necessary to achieve the goals and policies of the Willow Mountain CHA Management Plan, as funding allows.
- C. Foster interagency and community cooperation and coordination to assist in the implementation of this management plan.
- D. Consider and evaluate the potential for the cumulative impacts of incremental activities to negatively affect critical habitat area resources, and minimize harmful disturbances associated with those cumulative impacts.

## **EXPLANATION OF TERMS**

**Minimize Harmful Disturbance:** To reduce activities that displace animals from their natural habitat, or interrupt their seasonal activities, to a level that does not have a significant impact on fish and wildlife or their habitat. Harmful disturbance does not refer to the legal harvest of fish and wildlife.

## **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 Willow Mountain CHA. 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.

These policies have been evaluated for their ability to meet CHA management goals, effects on major critical habitat area uses and activities, and impacts on department management responsibilities. The evaluation of the effects of each policy includes the types and degrees of effect that could reasonably be expected to occur under each policy. Special Area permits based on these policies will mitigate potential project impacts using the mitigation sequence found at 5 AAC 95.900.

### **COMPATIBILITY**

Uses and activities will be allowed in the Willow Mountain CHA when those uses and activities are compatible with the purposes for which the critical habitat area was established (AS 16.20.500 and AS 16.20.620) and with the goals and policies of the management plan. Uses and activities may be restricted in consideration of the legislative intent of the CHA, which includes, in part, to: (1) conserve the area's fish and wildlife habitats and populations; and (2) ensure that the area will be managed primarily to maintain the productivity of the habitat for moose and will provide opportunities for hunting, trapping, and other dispersed recreational activities.

### **HAZARDOUS MATERIALS AND FUEL STORAGE**

The storage of small amounts of petroleum-based products (ten gallons or less, not including fuel in vehicle tanks) properly contained in an occupied camp or stored in appropriate containers in an authorized off-road vehicle or trailer, is generally allowed. No petroleum based product can be disposed of within the critical habitat area.

The storage or disposal of hazardous substances (as defined by AS 46.09.900) within the critical habitat area is prohibited. Storage of more than ten gallons of petroleum-based products within the critical habitat area is prohibited, except that the department may, in its discretion, issue a Special Area Permit authorizing the storage of petroleum-based products within the critical habitat area. Exceptions will only be authorized if the fuel storage occurs in association with a permitted habitat enhancement or trail improvement project. Disposal of petroleum based products within the critical habitat area is prohibited.

### **CAMPING**

Non-commercial camping within the critical habitat area for up to 14 consecutive days in the same location is allowed without a Special Area Permit. Establishment of a non-commercial camp for more than 14 consecutive days at any one location within the critical habitat area, or relocating a

non-commercial camp within a two-mile radius of the original campsite within 14 days of its establishment, is prohibited, except under the terms and conditions of a Special Area Permit.

Any campsite must be marked with the responsible party's full name and date of arrival if there are no people present in the campsite.

Commercial camping within the critical habitat area is prohibited, except under terms and conditions of a Special Area Permit.

While camping within the critical habitat area, all food and garbage must be stored in a manner that does not attract bears or other wildlife. Methods to isolate food and garbage may include, but are not limited to: bear-resistant containers, electric fences, and food caches suspended at least 10 feet off the ground and hung at least 100 feet away from camp. After camping, all camping equipment and associated materials (including garbage) must be removed from the critical habitat area. Solid waste disposal is not allowed within the critical habitat area. Human waste must be disposed of in accordance with DEC's Temporary Camp Practices. Only dead and down trees or brush may be utilized for campfires or other camping purposes.

The following definitions apply for the purposes of implementing this camping policy:

“Commercial camping” refers to any activity that is associated with the provision of assistance for compensation, or with the intent to receive compensation, to a person who camps in the critical habitat area.

“Solid waste” refers to garbage, refuse, or abandoned or otherwise discarded solid or semi-solid materials (excluding human waste), regardless of source or level of decomposition.

## **MOTORIZED ACCESS**

The off-road use of a wheeled, tracked, ground contact or other ground effect motorized vehicle is prohibited within the critical habitat area, except that the department may authorize motorized use through one, or a combination of more than one, of the following permits:

- 1) A General Permit authorizing off-road vehicle (ORV) use on designated trails within the critical habitat area. This General Permit will include restrictions on vehicle weights and types, timing of vehicle use, and/or trail access, as needed, to minimize impacts on vegetation, soils, and surface hydrology. These restrictions will be used as necessary to minimize trail deterioration or the creation of new unauthorized trails; where the department is unable to repair ORV damage from on or off trail use, additional limitations on vehicle weight or seasonal use may be implemented.
- 2) A General Permit authorizing ORV use throughout the critical habitat area when there is sufficient snow cover and ground frost to prevent the penetration of or disturbance to the soil surface or plant roots. This General Permit will indicate when snow cover and frost conditions are sufficient to satisfy this standard.
- 3) An individual Special Area Permit for off-trail ORV use within the critical habitat area in association with an authorized habitat enhancement or trail improvement activity.



Ski-mounted fixed-wing aircraft may land and take-off in the critical habitat area without a permit when sufficient snow cover is present.

Wheeled, fixed-wing aircraft and rotary aircraft landings are prohibited without an individual Special Area Permit or authorization under a General Permit.

In all cases, the department will restrict motorized access when necessary to conserve fish and wildlife habitat, minimize disturbance or displacement of fish and wildlife populations, or to maintain the compatibility of public recreation with the critical habitat area's purposes. The department will cooperate with user groups and other agencies on trail restoration projects as described in the Trails policy of this plan.

#### **Definitions for this policy:**

**Vehicle weight-** Gross vehicle weight is the weight of the vehicle with cargo and passengers. Weight of a trailer is not included in the vehicle's gross weight, but the weight of the loaded trailer should not exceed the ORV weight restriction identified in the permit.

**Designated trail-** trail identified on a map included in a special area permit and/or identified by ADF&G trail markers in the Willow Mountain CHA.

**Off-road vehicle-** wheeled, tracked, or other ground effect motorized vehicle including but not limited to: an all-terrain vehicles such as four wheeler, dirt bikes, dune buggies, side-by-sides; full sized vehicles including trucks or jeeps; a utility vehicle with wheels or tracks or a combination of both; or wheeled aircraft. Bicycles are not considered ORVs in this policy.

### **HABITAT ENHANCEMENT**

The department will allow habitat enhancement projects—including vegetation clearing or prescribed fire—within the critical habitat area under the terms and conditions of a Special Area Permit. The department may also require that vegetation clearing or re-vegetation incidental to other permitted projects – such as timber clearing or trail restoration – be conducted in such a way as to enhance habitat. Any habitat enhancement projects must further the area's management goals, particularly with respect to moose habitat, and must take appropriate measures to avoid introducing non-indigenous species into the critical habitat area.

### **TRAILS**

The department will, in its discretion, issue a Special Area Permit for the improvement, maintenance, and re-routing of authorized trails within the critical habitat area in order to minimize negative habitat impacts (e.g., damage to vegetation and alterations of surface hydrology) due to continued ORV traffic. The department may, in its discretion, restrict the use of trails within the critical habitat area when necessary in order to mitigate impacts to fish and wildlife or habitat damage. The department will restrict trail use within the critical habitat area on a seasonal basis when necessary. Construction of new trails may be authorized, under the terms and conditions of a Special Area Permit, if they are suitably designed to minimize habitat damage, and if the trails meet public need that is not otherwise addressed.

## **STRUCTURES**

The construction of permanent commercial or private structures, including cabins, within the critical habitat area is prohibited.

The department may, in its discretion, allow for the construction of structures associated with an authorized habitat enhancement, trail improvement project, or other department management actions under the terms and conditions of a Special Area Permit.

The department may, in its discretion, authorize the construction and use of temporary, non-commercial structures, (such as tent platforms, bear bait stations and associated stands) that remain in place for up to six months, under the terms and conditions of a Special Area Permit.

The department may issue a general permit authorizing the installation of prefabricated, portable tree stands for less than 14 consecutive days in the same location.

## **INFORMATION AND EDUCATION**

The department will provide information to critical habitat area users and the general public regarding its resources and use restrictions. The department will encourage educational projects involving critical habitat area resources and their uses.

## **MINING PETROLEUM RESOURCE EXTRACTION AND MATERIAL SALES**

Mining, including any activities on active mining claims or leaseholds within the critical habitat area, conducted without a Special Area permit is prohibited. Mining may only occur under the terms and conditions of a Special Area permit.

For the purposes of implementing this policy, conditions under which mining activity may be considered compatible with the critical habitat area's goals may include, but are not limited to, the following: not adversely affecting water quality, not introducing invasive plant species, not resulting in the construction of permanent or proprietary trails, not disrupting wildlife or recreational use patterns due to noise, and mitigating any land clearing activity by re-vegetating the affected area in a manner that enhances moose habitat.

Recreational mining using mechanically-powered equipment (for example, suction dredges and power sluices) is prohibited within the critical habitat area, except that mining may occur under the terms and conditions of a Special Area permit. Gold panning and other manual, minimally invasive mining activities are generally allowed without a Special Area permit within the critical habitat area.

Surface activities associated with petroleum resource extraction within the critical habitat area are prohibited. Material sales within the critical habitat area are prohibited.

## **ROADS AND AIRSTRIPS**

The construction of roads and airstrips within the critical habitat area is prohibited, except that the department may, in its discretion, allow for the construction of a new temporary road in conjunction with an authorized habitat enhancement project under the terms and conditions of a Special Area Permit.

## **UTILITY LINES**

The construction of any new utility lines in the critical habitat area is prohibited, except that the department may, in its discretion, allow for the construction of a utility line under the terms and conditions of a Special Area Permit. Terms and conditions of the permit may include provisions to minimize the potential for creating unauthorized off-road vehicle access routes.

## **WATER QUALITY**

Activities in the critical habitat area shall be conducted in a way that does not alter the natural occurring water quality and complies with state water quality standards.

Cumulative effects of discharges will be considered when determining whether to allow multiple activities within the critical habitat areas that individually meet the above specified standards, or whether to require mitigation such as riparian buffers or stream crossing structures.

## **RECREATIONAL ACTIVITIES**

Lawful recreational activities—including wildlife viewing, fishing, trapping, hunting, and the gathering of wild resources—within the critical habitat area are generally allowed. Use levels may be managed through the issuance of Special Area Permits, if necessary, to avoid adverse impacts to fish and wildlife and their habitat. Activities for which Special Area Permits may be required to manage use levels include, but are not limited to, motorized access and camping.

## **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. The department will review suppression repair plans for critical habitat area management concerns.

As designated in the Alaska Interagency Wildland Fire Management Plan, the fire management option for Willow Mountain CHA is mixed limited, modified, and full. The protection agency, during a wildland fire response, will determine whether conditions will allow for wildland fire use for habitat improvement. Where there is minimal risk to human life and property in limited and modified response areas, fires will be managed to improve wildlife habitat, with a priority for moose habitat (willow stands).

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

### **ALL OTHER USES**

To conserve fish and wildlife populations and their habitats in the critical habitat area from the potential impacts of other uses not explicitly described in this plan, the department may allow, by permit, only those activities compatible with the purposes for which the critical habitat area was established, the terms and standards of 5 AAC 95, and the goals and policies of the management plan. Activities other than those specifically identified in this management plan may be authorized by Special Area Permit only when consistent with the goals and policies of this plan.

## IMPLEMENTATION

The *Willow Mountain 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 Willow Mountain CHA.

### SPECIAL AREA PERMITS

A Special Area Permit is required for any habitat-altering activity within the Willow Mountain Critical Habitat Area, including the construction of infrastructure, or any other activity that may disturb fish or wildlife other than lawful hunting, trapping, and fishing (5 AAC 95.420). Department biologists review applications for proposed projects in coordination with other department staff and use available data and their best professional judgement to determine if a proposed project will be permitted. Only those projects that are compatible with the statutory purpose of the CHA, as well as the goals and policies of this management plan, may be permitted. The policies in this plan also provide specific guidance to the permitting biologist on the terms, conditions, and limitations that should be incorporated in the permit's stipulations (5 AAC 95.720), to ensure that any impacts to fish and wildlife or their habitats caused by a permitted project are mitigated (5 AAC 95.900). The permitting biologist often reviews similar previously issued permits to maintain consistency. A Special Area Permit application form can be obtained from any Alaska Department of Fish and Game office or from the department's website.

The completed application shall be submitted to the Habitat Section Office in Palmer (5 AAC 95.700).

The department may also issue a General Permit (GP), allowing a specific activity that would otherwise be prohibited in the Willow Mountain CHA (5 AAC 95.770). A GP is issued in response to a public need in order to facilitate access to or uses of the CHA that would otherwise be too cumbersome to permit on an individual basis. The authorized activity is typically a small-scale activity with minimal impacts, such as the use of certain motorized vehicles on designated trails within the CHA. Each GP is issued to the general public, contains specific stipulations on the permitted activity, and is reviewed annually by the permitting biologist to determine if it should be issued again. Individual members of the public do not need to apply for a GP, but they are still responsible for abiding by the stipulations and restrictions described in the permit, as well as for securing other state, federal, and local permits that may be required for other associated uses. Copies of current GPs for the Willow Mountain CHA can be obtained from the department's website or by contacting the Habitat Section Office in Palmer. General Permits are required to be in the possession of the individual conducting the authorized activity.

Violations of permitting requirements, terms and conditions of permits and other Special Area statutes in AS 16.20 and regulations in 5 AAC 95 are class A misdemeanors under AS 16.05.925. A person who violates a provision of 5 AAC 95 is strictly liable for the offense, regardless of that person's intent. (5 ACC 95.902)

Certain violations may have bail amounts assigned under AS 16.05.165. Equipment and paraphernalia used in violation may be seized or disposed of as described in AS 16.05.190 and AS 16.05.195.

## **MINING**

The department may propose, after coordination with DNR, a Mineral Order (under AS 38.05.185-38.05.300) or a leasehold location order for the Willow Mountain CHA, recommending that the CHA be closed to new locatable mineral entry, mineral prospecting, and mineral leasing.

Members of the public may stake a mining claim on any state lands, including a critical habitat area, unless that location has been closed to mineral entry or placed under a Leasehold Location Order (LLO). The Commissioner of DNR has the authority to close up to 640 acres of land within the CHA to new mineral entry under AS 38.05.185-38.05.275, Closing the entire CHA would require approval from the legislature.

The Commissioner of DNR can also establish an LLO for the CHA that would only allow mining that is consistent with critical habitat area values, and that is compatible with the purposes for which the CHA was established. Under an LLO, an individual who makes a mineral discovery within the CHA would receive a *leasehold location* rather than a *mining claim*. A leasehold location is subject to mining under lease stipulations, in addition to the required permits and operational review by DNR.

## **TRAILS**

As funding and staffing levels allow, the department will coordinate with user group organizations and other agencies to maintain existing, authorized trails within the critical habitat area in order to minimize negative impacts to habitat, including the cumulative impacts of off-road highway vehicle (OHV) traffic. The department will cooperate with other agencies and organizations pursuing trail rehabilitation and restoration projects that are compatible with the CHA's goals and statutory intent, and other projects that promote stewardship of the CHA by its users.

## **ACTIONS OF FEDERAL, OTHER STATE, AND LOCAL AGENCIES**

This plan may also be used as appropriate by other state, federal, and local decision-makers in planning for and making decisions for the CHA under their respective statutory authorities.

The Willow Mountain CHA overlaps with state lands managed by DNR under the Hatcher Pass Management Plan, Willow Mountain Management Unit. DNR and ADF&G act as co-managers of this area; both agencies retain their individual regulatory authorities. Authorizations must be obtained from both DNR and ADF&G for any activity that is regulated by both departments. Upon adoption of the Willow Mountain CHA Management Plan by ADF&G, DNR management will be conducted consistent with the CHA management plan. Uses not controlled by the CHA management plan are to be authorized by DNR, consistent with DNR's current land use plan for the area. In situations where department requirements are not the same, the most restrictive authorization must be obtained before the activity can proceed.

WILLOW MOUNTAIN  
CRITICAL HABITAT AREA  
MANAGEMENT PLAN

**APPENDIX A: RESOURCE INVENTORY**

by  
Habitat Section  
and  
Division of Wildlife Conservation



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## **INTRODUCTION**

In 1989 the Alaska Legislature established the Willow Mountain Critical Habitat Area (CHA) in order to protect the exceptional moose habitat found on the western slopes of Willow Mountain (§ 2 ch 28 SLA 1989). The Willow Mountain CHA encompasses approximately 23,000 acres of state land in the southwestern Talkeetna Mountain Range, stretching from Willow Creek in the south up to the Kashwitna River in the north. The Willow Mountain CHA ranges from 1,000 to 2,600 feet in elevation and includes some of the highest quality moose habitat in the Matanuska-Susitna River valley. Large concentrations of moose gather in the dense willow thickets of Willow Mountain—particularly during the early winter post-rut period—to take advantage of the high quality forage found there.

In addition to preserving the habitat of the area, the Willow Mountain CHA is also intended to provide opportunities for the public to participate in hunting, trapping, and other dispersed recreational activities.

These purposes were noted by the Alaska Legislature in the session law associated with the establishment of the Willow Mountain CHA. The session law states that “The Willow Mountain Critical Habitat Area is established to (1) protect the area's exceptional fish and wildlife habitats and populations; (2) ensure that the area will be managed primarily to maintain the productivity of the habitat for moose and will provide opportunities for hunting, trapping, and other dispersed recreational activities.”

## **GENERAL AREA DESCRIPTION**

Willow Mountain (3,168 ft. elevation) is the southwestern-most peak of the Talkeetna Mountain Range, and its western slopes look out over the Susitna River Valley. The Willow Mountain CHA runs north-south along the tree line of those slopes, approximately 10 miles east of the Parks Highway and 2 miles north of the Willow Fishhook Road. The CHA lies along the western edge of the Hatcher Pass Management Plan area, which is managed by the Alaska Department of Natural Resources (DNR). The town of Willow (population 2,156) lies approximately 10 miles south of the CHA, and the city of Wasilla (population 8,064) lies approximately 25 miles to the east.

## **PRE-HISTORY & HISTORY**

The Talkeetna Mountain Range was formed at least 65 million years ago, during the mid-to late-Cretaceous period, as the result of the Talkeetna superterrane pushing against the ancient North American continental plate (Csejtey 1992). Receding glaciers and increasing streamflow created the Susitna River valley, which runs along the western edge of the Talkeetna Mountains, approximately 9,000 years ago. After glaciation, vegetative succession colonized the newly exposed landscape, which likely came to resemble current-day conditions as early as 2,000 years ago.

The area was first settled by the Dena'ina Athabascans, whose semi-nomadic lifestyle brought them to the Susitna River valley seasonally thousands of years ago (Stirling 1985). There is also evidence that the Alutiiq people inhabited the lowlands toward the mouth of

the Susitna River around the same time, though the Dena'ina came to dominate the upper Cook Inlet area some time before Russian explorers landed there in the late 1700s (Cohen 1982).

Robert Hatcher discovered gold in the Willow Creek Mining District in 1906, which ushered in an era of exploration and rapid development in the region (Stirling 1985). Most traffic into the area arrived by boat at the small port at Knik, branching out from there into the Hatcher Pass and Willow Mountain areas on a network of trails. In 1920, the Alaska Railroad built a station at what would become the location of the town of Willow and began laying tracks north toward Talkeetna (ADCCED 2012). The railroad made exploration easier, which brought even more miners to the area, and by the 1950s, Willow Creek was the most productive mining district in Alaska, having produced over 400,000 ounces of gold in just over 50 years (Cohen 1982).

Timber clearing during the early settlement of the Matanuska-Susitna Valley, as well as multiple large wildfires in the area, increased the browse available to herbivores, and the region quickly became known for its high density of moose (Peltier 2010). Recognizing the importance of these moose populations to the residents of the state, the Alaska Department of Fish and Game (ADF&G) recommended during DNR's development of the 1986 Hatcher Pass Management Plan that the Willow Mountain area be managed with habitat as the top priority. The Willow Mountain CHA was created by the Alaska Legislature in 1989, in recognition of the important role that this habitat plays in the productivity of the area's wildlife populations.

## **PHYSICAL ENVIRONMENT**

The landscape encompassed by the Willow Mountain CHA lies at the heart of the transition from the maritime climate of upper Cook Inlet to the continental climate of the alpine peaks in the Talkeetna Mountain Range. At lower elevations, the landscape is characterized by mixed stands of conifers interspersed with boggy wetlands, while at higher elevations unusually large stands of willow and alder give way to grasslands on the ridges of Willow Mountain (Grauvogel 1988).

### **CLIMATE AND WEATHER**

The upper slopes of Willow Mountain are influenced primarily by the continental climate of the Talkeetna Mountain Range, with warm summers and cold, dry winters. Winter temperatures can range from -33 to 33°F, while summer temperatures vary from 42 to 83°F. Annual rainfall is only 16 to 27 inches, though 48 to 150 inches of snow have been recorded, at nearby Willow, Alaska (ADCCED 2012).

### **GEOLOGY & SOILS**

The western slopes of Willow Mountain are underlain by the eastern edge of a geological formation known as the Susitna sedimentary basin. Little is known about the geology of this formation, which is separated from the well-studied Cook Inlet basin to the south by a major fault line, but preliminary exploration indicates that both basins have similar upper strata of tertiary rock, which is composed of sediments deposited from ancient rivers and

lakes. This upper stratum is likely not more than 2,000 feet thick near Willow Mountain, in contrast to the tertiary rock of Cook Inlet basin, which is up to 25,000 feet thick in some areas. Beyond that, almost nothing is known about the Mesozoic rock that lies below the Susitna basin's tertiary layer.

To the east of the Susitna sedimentary basin, the geology is dominated by a crystalline complex of primarily quartz diorite that extends under most of the rest of the Hatcher Pass area. This quartz formation dates from the Middle Jurassic period and contains mineral deposits – such as gold, silver, and assorted ores – that have been extracted in the past century by mining activity in the area.

While coal deposits have been found within the upper stratum of the Susitna sedimentary basin in other locations, the Willow Mountain area is generally thought to have low potential for coal, or oil and gas. Similarly, while the nearby Willow Creek mining area has been found to be rich in gold, Willow Mountain itself appears to have little in the way of potential mineral deposits.

## **HYDROLOGY**

The headwaters of several tributaries to the Susitna River flow from the western slopes of Willow Mountain. Purches Creek, as well as several other tributaries of Willow Creek, flow through or have their headwaters in the southern end of the Willow Mountain CHA. Likewise, Iron Creek and two unnamed tributaries of Little Willow Creek flow through the central section of the CHA. Little Willow Creek and three more of its tributaries run through the northern end of the CHA, and the Kashwitna River – the largest stream in the area – runs just north of the CHA's border.

## **BIOLOGICAL RESOURCES**

### **ECOREGIONS & HABITAT TYPES**

The Willow Mountain CHA lies at the north-eastern edge of the Cook Inlet Basin ecoregion, which is a transitional zone between the Aleutian and Alaska Mountain ranges, characterized by wetlands, glacially-fed rivers, and mixed black spruce forests (Nowacki 2001). The lower slopes of Willow Mountain are covered with stands of mixed timber (white spruce, birch, cottonwood, and aspen), and wetlands dominated by black spruce are found in the area's lowlands (Grauvogel 1988). The north- and south-facing slopes of Willow Mountain tend to support more mature spruce communities with understories dominated by shrubs and mosses, while the western aspect has mostly mixed deciduous conifer forests with herbaceous understories, transitioning upslope to gradually more open stands of scrub willow and alder (Map 4). These stands of willow and alder have been described as unusually extensive for the area and are the primary reason the area is classified as important moose habitat (Grauvogel 1988). Above tree line, the western slopes of Willow Mountain are covered with bluejoint-dominated forb meadows that are interspersed with dwarf shrubs and ericaceous heath. The upper slopes of Willow Mountain merge into the cooler continental climate of the Alaska Range ecoregion, but the Willow Mountain CHA itself does not extend into the steep, icy slopes of the Talkeetna

Mountains, and likely experiences milder temperatures than the peaks further inland (Nowacki 2001).

## **AMPHIBIANS & REPTILES**

The Willow Mountain CHA lies well within the range of wood frogs (*Rana sylvatica*) in Alaska. Suitable habitat for wood frogs exists at lower elevations, although there have been no documented occurrences of wood frogs in the CHA. No other amphibians or reptiles are likely to occur in the vicinity of the CHA.

## **BIRDS**

### **Migrant songbirds**

The Willow Mountain CHA lies within the ranges of several species of migrant song birds, the following of which have been recorded in or near the CHA in various reports: common ravens (*Corvus corax*), black-billed magpies (*Pica hudsonia*), Stellar's jays (*Cyanocitta stelleri*), rosy finches (*Leucosticte arctoa*), white-crowned sparrows (*Zonotrichia leucophrys*), Wilson's warblers (*Wilsonia pusilla*), Swainson's thrushes (*Catharus ustulatus*), downy woodpeckers (*Picoides pubescens*), larks (*Eremophila alpestris*), American pipits (*Anthus rubescens*), gray-checked thrushes (*Catharus minimus*), hermit thrushes (*Catharus guttatus*), savannah sparrows (*Passerculus sandwichensis*), and golden-crowned sparrows (*Zonotrichia atricapilla*).

### **Raptors**

Several species of raptor have been recorded in the Willow Mountain CHA, including: northern goshawks (*Accipiter gentilis*), sharp-shinned hawks (*Accipiter striatus*), merlins (*Falco columbarius*), red-tailed hawks (*Buteo jamaicensis*), gyrfalcons (*Falco rusticolus*), golden eagles (*Aquila chrysaetos*), and bald eagles (*Haliaeetus leucocephalus*).

### **Nesting shorebirds**

There are no known species of nesting shorebirds that have been observed within the Willow Mountain CHA.

### **Migrant shorebirds**

Two species of migrant shorebirds – whimbrels (*Numenius phaeopus*), and American golden plovers (*Pluvialis dominica*) – have been observed in the Willow Mountain CHA.

### **Upland game birds**

The Willow Mountain CHA encompasses suitable habitat for at least two species of upland game birds; namely, ptarmigan (*Lagopus lagopus*) and spruce grouse (*Falcipennis canadensis*).

## **Other**

Various other species of birds, including long-tailed jaegers (*Stercorarius longicaudus*), and American dippers (*Cinclus mexicanus*), have also been observed in or near the Willow Mountain CHA.

## **MAMMALS**

### **Moose**

Moose (*Alces alces*), the largest members of the deer family, are browsers and grazers that feed on the leaves and twigs of willow, birch, and aspen trees, as well as on various sedges, pond weeds, grasses, and equisetum. Most moose migrate seasonally between preferred calving, rutting, and wintering areas, which may be up to 60 miles apart.

Adult male moose engage in the "rut" each fall – typically during September and October – in which they joust with their antlers in order to establish dominance. This agonistic behavior rarely leads to mortal injuries, but the winner of these rutting battles typically goes on to mate with several females, to the exclusion of the less dominant males. The period just after the rut is an important time in the life history of moose, as it is their last opportunity to consume large quantities of food before the coldest weather and heaviest snows of winter set in. Males, their body conditions depleted by fasting and vigorous physical competition during the rut, need to replenish their energy stores, while females need to ensure that they have the metabolic resources necessary to sustain pregnancy overwinter. After a gestation period of just under eight months, female moose give birth to calves in the spring. These calves are generally weaned the following fall in time for the females to breed, and then chased off the following spring before the female gives birth again.

Areas like the upper slopes of Willow Mountain host dense congregations of moose during this important post-rut period each year (Grauvogel 1988). Research has shown that the willow browse found in the alpine regions like the Willow Mountain CHA is an important early winter food-source for moose from the Susitna and Matanuska River valleys (Modafferi 1995). Additionally, moose from the Palmer Hay Flats area have been found to migrate to Willow Mountain during the late fall and early winter (Mastellar n. d.).

The Willow Mountain CHA falls within Game Management Unit (GMU) 14B, which encompasses a total of 2,152 square miles (of which the CHA comprises only 35 square miles). A 1987 survey of GMU 14B estimated its moose population at between 2,566 and 3,062 moose at a confidence interval (CI) of 80% (Masteller 1995). A 1999 survey estimated that from 1,443 to 1,931 (80% CI) were present in GMU 14B (Masteller 1998). The most recent survey, conducted using a different method in 2005, estimated the moose population of GMU 14B at between 1,197 and 1,627 moose (80% CI) (Peltier 2006).

### **Wolves**

Wolves (*Canis lupus*) are members of the Canidae family and range throughout mainland Alaska and most of the major islands in Southeast Alaska. They are highly social

carnivores that typically live in packs that include parents and pups of the year. Social order in the pack is characterized by a separate dominance hierarchy among males and females. Wolves normally breed in February or March, and a litter of 4 to 7 pups is usually born in May or early June. Young adult wolves disperse when they are yearlings and seek suitable, unoccupied habitat from 20 to 700 miles from their original range.

No exhaustive wolf studies have been conducted in the Willow Mountain CHA and no packs have been identified as using the Willow Mountain CHA exclusively. However, hunting and trapping harvest reports for the last ten years for the drainages between Willow Creek and Little Willow Creek, show a relatively consistent wolf harvest which indicates the area supports a sustainable wolf population.

## **Bear**

Both black and brown bears are known to inhabit the Willow Mountain area (Clausen 1992); however, there is no current estimate for the population size of either species in GMU 14B, though the most recent management report notes that members of the public have been “concerned about an increase in the brown bear population” in GMU 14B (Peltier 2010). The Hatcher Pass Management Plan (HPMP 2010) notes that both species of bear are known to use the Willow Mountain area.

## **Furbearers**

Furbearers found in the Willow Mountain area include mink, weasels, beavers, coyotes, lynx, and river otter (Grauvogel 1988). Beaver are relatively scarce and would only be found in the southern and northern portions of the CHA where large, low-gradient streams and adequate forage trees are located.

## **Small mammals**

Other small mammals found in the Willow Mountain area are species that are typical to Southcentral Alaska, such as porcupine, voles, mice, pika, and snowshoe hare.

## **FISH**

Seven streams that support salmon populations have their headwaters in, or pass through, the Willow Mountain CHA (Table 4). Of the three named streams, coho salmon spawn and rear in Peters Creek; both coho salmon and Chinook salmon rear in Iron Creek; chum salmon, coho salmon, Chinook salmon, and pink salmon spawn, rear, or are present in Little Willow Creek. The four unnamed streams host either rearing coho salmon or rearing Chinook salmon, or both.

## HUMAN USE

### ACCESS

#### Trails

There are many recreational trails in the Willow Mountain area, used by ORVs, hikers, skiers, snowmachines, and dog mushers. Several of these trails cross into the Willow Mountain CHA: one from the south, three from the east, and two from the west. Of these, only two trails are authorized by General Permit for use by ORVs. These trails have been designated on maps accompanying the Willow Mountain General Permits since 1989. The current General Permit allows OHVs of less than 1,000 lbs. gross vehicle weight to travel on designated trails, and allows off-trail access to the CHA when there are at least 12 inches of snow.

Additionally, there is an RS 2477 trail that runs north-south just east of the CHA boundary. This trail is known as the Talkeetna River trail (RST 1620) and is based on a route used by a USGS survey crew returning to Knick [sic] from a trip through the pass between the Chickaloon River and the Talkeetna River (USGS 1907).

Erosion and habitat degradation have been concerns on these trails since the establishment of the Willow Mountain CHA.

#### Motorized Access

Most motorized vehicle use in the CHA currently occurs primarily by small off-road vehicles (ORVs), such as all-terrain vehicles (ATVs) during the summer and fall, and snowmachines during the winter – though the areas east and south of the CHA have several trails that appear to be used regularly by larger ORVs. There may be rare fixed wing aircraft landings in the CHA, but there have been few known helicopter landings, and there is no motorized vessel traffic in the CHA's streams. Habitat impacts due to motorized use in the CHA, then, primarily arise from ORV traffic, and this has been a concern of ADF&G biologists since the area was established in 1989.

These concerns mostly center on damage to soil, surface hydrology, and vegetation, but also include habitat fragmentation due to noise and wildlife disturbance caused by motorized traffic in remote areas. Research has shown that ORV traffic can compress soil matrices, which decreases the productivity and diversity of native vegetation and increases the chances of invasion by exotic species – especially when their seeds are introduced to an area by vehicle traffic. Lower vehicle weights can also be generally correlated with less powerful engines and narrower trail footprints, both of which mitigate the extent of ground disturbance. Ruts caused by conventional ORVs damage the vegetative mat and affect the hydrology of a watershed by channelizing runoff. Over time, this channelization can increase rates of soil erosion and contribute to sedimentation of streams. Some larger (six- or eight-wheeled) vehicles cause greater damage to vegetation and soils because they steer by spinning their wheels on either side at different speeds, thereby dragging the slower wheels across the ground (also known as "skid-steering"). ORV traffic can fragment wildlife habitat, altering the movement patterns of affected species and limiting a



population's use of available cover or food sources, as individual animals seek to avoid noise and disturbance.

Historically, the maximum weight limit for motorized vehicles in the CHA had been high enough to allow full-size vehicle traffic. A General Permit (GP) for motorized access has been issued almost every year since the CHA's establishment in 1989. From 1989-1991, the GP carried a 6,000 lb. *gross* vehicle weight restriction. From 1997-2007 the GP carried a 10,000 lb. *gross* vehicle weight restriction (there is no record of a GP being issued for the Willow Mountain CHA from 1992-1996). From 2008 to 2016, the GP carried a 1,000 lb. *dry* weight vehicle restriction; after 2016 this was amended to gross vehicle weight. All Willow Mountain CHA GPs have restricted motorized use to designated trails unless there is sufficient snow cover to protect the soil and vegetation from erosion as specified in the GP.

There are currently two designated trails traversing the CHA. One designated trail approaches the western border of the CHA from the Willer-Kash Road and bisects the CHA before crossing out through its eastern border. Trail condition surveys in 2016 found this trail to be deeply rutted as it approaches the CHA, with one significant stretch within the CHA where the soil and vegetative mat have been severely impacted by ORV traffic. As this trail ascends Willow Mountain, it travels across drier ground and trail conditions improve. The second designated trail branches off the first trail near the top of Willow Mountain and heads north, where it crosses back into the CHA, descends the northern slope of the mountain, and ends at the southern bank of Little Willow Creek. The trail itself appears to continue north after an unauthorized crossing of Little Willow Creek before it branches and leads out of the CHA to the east and the west. These two trails have been designated for ORV use since the area's establishment in 1989, though their condition on the ground appears to have deteriorated since that time due to increased traffic and greater impact of today's ORVs.

### **Parking & Roads**

There are currently no roads, airstrips, or hardened trails within the Willow Mountain CHA. The Willow-Fishhook Road runs approximately two miles south of the CHA, and the gravel-topped Willer-Kash Road branches off that to run north-south approximately two miles west of the CHA. One dirt spur road branches off the Willer-Kash Road near the southwestern corner of the CHA boundary. These dirt roads were originally built to access timber stands at the base of Willow Mountain and are now used to gain access to ORV trails in the area, some of which lead into the CHA.

### **Public Use Facilities**

There are no developed public use facilities within the boundaries of the Willow Mountain CHA. The Independence Mine State Historical Park lies approximately 15 miles east of the southern end of the Willow Mountain CHA.

## **Cabins and Other Structures**

There are currently no private, non-commercial structures, within the Willow Mountain CHA. Three private cabins were removed from the area by ADF&G and DNR in early 1988, just before the CHA's enabling legislation was passed. Another private cabin was removed from the northern end of the CHA by its owner at the request of ADF&G and DNR in 2009. Tent platforms and tree stands have been built and used by moose hunters in the CHA during the fall.

There are currently no permanent or temporary commercial structures within the boundary of the Willow Mountain CHA.

## **RECREATION & HARVEST**

### **Game Hunting**

Hunting within the Willow Mountain CHA has historically been primarily for moose, though some bear may be taken opportunistically by moose hunters (Peltier 2010). Approximately 85% of the CHA lies within the subunit (UCU 801) defined as the drainages between Willow Creek and Little Willow Creek of Game Management Unit (GMU) 14B, which in turn represents approximately 15% of the area of subunit 801. From 2001 to 2010, 344 hunters used subunit 801. Of those 344, 78 of the hunters successfully harvested a moose. This means that approximately 34 hunters per year take approximately 8 moose per year in subunit 801; however, there is no reliable way to determine how many of those hunters or moose kills are within the Willow Mountain CHA boundary.

Between 2002 and 2011, 10 brown bear and 19 black bear were taken in UCU 801, and 10 black bear and 43 brown bear were taken in UCU 901. During the same time period 80 moose were taken in UCU 801 and 43 moose were taken in UCU 901.

### **Trapping**

Trapping is known to occur in the Willow Mountain area, and between 2001 and 2011 there have been 110 beavers, 3 lynx, 9 otters, 18 wolves, 9 wolverines, and 186 martens reported as trapped in portions of GMU 14B that may include the CHA.

### **Sport Fishing**

There is no known sport fishing within the boundaries of the Willow Mountain CHA, though the area is approximately 10 miles upstream from the popular Willow Creek Public Use Area.

### **Subsistence Fishing & Hunting**

The Willow Mountain CHA does not fall within a subsistence use area.

## **Wildlife Viewing, Photography and Education**

There is no known use of the Willow Mountain CHA for wildlife viewing, photography, or educational purposes.

## **EXISTING & HISTORICAL RESOURCE DEVELOPMENT**

The potential for mineral resources within the Willow Mountain CHA is considered low. The area's geology is best described as a transition zone from the mineral-rich quartz deposits near Hatcher Pass to the coal-rich Susitna sedimentary basin to the west. Given the lack of quartz in the rock that underlays the CHA, and the relative shallowness of its sedimentary layer, it is unlikely that the area has significant mineral or coal deposits. The state owns the sub-surface resources underlying lands in the CHA.

There are no known instances of resource development (e.g., oil and gas leases, pipelines or utilities, timber sales) or other infrastructure or commercial facilities within the Willow Mountain CHA. At various times since the 1960's, mining claims have been recorded in the area of the Willow Mountain CHA, (mostly along streambeds). All have been relinquished or expired without having been patented; only one remains currently. There is a Leasehold Location Order (LLO No. 9), along the length of Little Willow Creek that includes the northwest corner of the CHA, and a Mineral Order (MO No. 160) that closes lands along the western border of the CHA to mining. There is history of placer mining efforts near the CHA, and of more extensive and successful gold mining operations in other areas of the Hatcher Pass region. Mineral Opening Order 921, for the Iron Creek Remote Parcel Area overlaps a parcel in the northwest portion of the CHA (Map1).

## **LAND STATUS AND MANAGEMENT**

The entirety of the Willow Mountain CHA lies within the Hatcher Pass Management Plan area, abutting the area's far western edge (HPMP 2010). As of 2011, all land within the boundary of the CHA has been transferred to state ownership. At the time this plan was developed, there was one mining claim (ADL 668724) that falls within the boundary of the Willow Mountain CHA, at its far south-eastern corner (Township 20N, Range 2 West, Section 19). The mining claim is subject to state laws and regulations. There are no known easements or rights of way, private inholdings, or water reservations.

## **FIRE MANAGEMENT**

The lower slopes of Willow Mountain are covered with stands of mixed timber (white spruce, birch, cottonwood, and aspen). The north- and south-facing slopes of Willow Mountain tend to support more mature spruce communities, while the western aspect has mostly mixed deciduous and conifer forests transitioning upslope to gradually more open stands of scrub willow and alder. These stands of willow and alder have been described as unusually extensive for the area and are the primary reason the area is classified as important moose habitat.

Wildland fires could impact mature trees and controlled burns could also be used to manipulate species and age composition of trees to benefit moose, by promoting willow

and alder growth, or spruce grouse by promoting more aspen growth. Fire can be managed in two ways: either through deliberate use of controlled burns or by selective responses to wildfires.

The Alaska Interagency Wildland Fire Management Plan dictates the level of response for the region around Willow Mountain, based on infrastructure and other factors. The Willow Mountain CHA includes a mixture of fire suppression areas: mostly of “limited” protection at higher elevations and “modified” protection at lower elevations. Extremely small portions of the “full” protection area cross the boundaries at the southern portion of the CHA. Limited protection is the lowest level of fire protection and is typified as areas where suppression cost exceeds the value of natural resources and areas with the best opportunities for fire to help achieve land and resource protection objectives. Modified protection is for areas where suppression costs should be minimized without compromising adjacent higher-valued resources and responses may vary by season. Full protection requires controlling the fire at the smallest acreage reasonably possible.

### **RESEARCH AND PUBLICATIONS SPECIFIC TO AREA**

There has been no research conducted specific to the Willow Mountain CHA, though two studies have been conducted on moose populations that likely make use of the habitat on Willow Mountain:

Modafferi, R. D. 1995. Lower Susitna Valley moose population identity and movement study. Alaska Department of Fish and Game, Division of Wildlife Conservation. Research Final Report, Anchorage.

Mastellar, M. A. n.d. Seasonal ranges and movements of cow moose wintering on Palmer Hay Flats State Game Refuge. Alaska Department of Fish and Game, Division of Wildlife Conservation, Anchorage.

### **INFORMATION NEEDS**

There are two primary information needs regarding the Willow Mountain CHA. The first is an accurate assessment of the area’s moose habitat quality and timing of use. The second is a better understanding of impacts of ORV traffic on the quality of moose habitat in the area.

## TABLES

**Table 1:** Vegetation communities in the Willow Mountain CHA (per Viereck et al. 1992), see Map 4.

Alaska Vegetation Classification - Viereck

<b>Level I</b>	<b>Level codes</b>	<b>Class name</b>	<b>Dominant species (by % ground cover)</b>	<b>Sub dominant species (by % ground cover)</b>	<b>Classified from</b>
Scrub	IIB1	Closed tall scrub	Salix pulchra, S. alaxensis	Calamagrostis canadensis, ferns, Carex spp.	Site visit July 24-25, 2012
Herbaceous	IIIA2	Mesic graminoid herbaceous	Calamagrostis canadensis	Cornus canadensis, Spirea beauverdiana, moss	
Scrub	IID2	Ericaceous dwarf shrub	Empetrum nigrum, Vaccinium vitis-idaea	Ferns, moss, graminoids	
Herbaceous	IIIB	Forb herbaceous	Forbs (ferns & Epilobium angustifolium )	Calamagrostis canadensis	
Scrub	IIA2	Open dwarf tree scrub	Forbs	Alnus rubra & Salix spp. , Calamagrostis canadensis	
Scrub	IIA1	Closed dwarf tree scrub	Salix spp. & A. rubra	Graminoids	
Scrub	IIB1	Closed tall scrub	A. rubra & Salix spp.	Forbs, Populus trichocarpa	
Scrub	IIA2	Open dwarf tree scrub	A. rubra, Salix spp. & Picea spp.	Forbs, graminoids	
Forest	IC3	Mixed wood land	Forbs, moss	Cornus canadensis, Calamagrostis canadensis. Picea spp. & A. rubra	
Forest	IC1	Closed mixed forest	Picea glauca	mixed alder/willow/other broadleaf tress >10ft., understory with mixture of shrubs and herbaceous vegetation, with stands of Picea mariana	Satellite imagery (0.5m resolution)
Herbaceous	III A,B,C 2 or 3	Wet (graminoid/forb/bryoid) herbaceous	patchy, partially wet sites, low growing vegetation --possibly lichen, moss, or tussock tundra with ericaceous spp.		

**Table 2:** Bird species that may occur in the Willow Mountain CHA.

Common name	Scientific name
Ptarmigan	<i>Lagopus lagopus</i>
Northern goshawk	<i>Accipiter gentilis</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Golden eagle	<i>Aquila chrysaetos</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Merlin	<i>Falco columbarius</i>
Gyr Falcon	<i>Falco rusticolus</i>
Whimbrel	<i>Numenius phaeopus</i>
American golden plover	<i>Pluvialis dominica</i>
Long-tailed jaeger	<i>Stercorarius longicaudus</i>
Downy woodpecker	<i>Picoides pubescens</i>
American pipit	<i>Anthus rubescens</i>
Hermit thrush	<i>Catharus guttatus</i>
Gray-cheeked thrush	<i>Catharus minimus</i>
Swainson's thrush	<i>Catharus ustulatus</i>
American dipper	<i>Cinclus mexicanus</i>
Common raven	<i>Corvus corax</i>
Stellar's jay	<i>Cyanocitta stelleri</i>
Horned lark	<i>Eremophila alpestris</i>
Rosy finch	<i>Leucosticte arctoa</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Black-billed magpie	<i>Pica hudsonia</i>
Wilson's warbler	<i>Cardellina pusilla</i>
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>

**Table 3:** Mammal species that may occur in the Willow Mountain CHA.

Common name	Scientific name
Moose	<i>Alces alces</i>
Brown bear	<i>Ursus arctos</i>
Black bear	<i>Ursus americanus</i>
Mink	<i>Mustela vison</i>
Weasel	<i>Mustela nivalis</i>
Beaver	<i>Castor canadensis</i>
Wolf	<i>Canis lupus</i>
Wolverine	<i>Gulo gulo</i>
Coyote	<i>Canis latrans</i>
Lynx	<i>Lynx canadensis</i>
River otter	<i>Lutra canadensis</i>
Porcupine	<i>Erethizon dorsatum</i>

**Table 4.** Anadromous streams in the Willow Mountain CHA.

Stream name	AWC number	Species
Peters Creek	247-41-10200-2120-3055	Coho salmon (rearing, spawning)
Unnamed stream 1	247-41-10200-2120-3043	Coho salmon (rearing)
Iron Creek	247-41-10200-2130-3030	Coho salmon (rearing), Chinook salmon (rearing)
Unnamed stream 2	247-41-10200-2130-3030-4025	Chinook salmon (rearing)
Unnamed stream 3	247-41-10200-2130-3036	Coho salmon (rearing), Chinook salmon (rearing)
Unnamed stream 4	247-41-10200-2130-3050	Chinook salmon (rearing)
Little Willow Creek	247-41-10200-2130	Chum salmon (present), coho salmon (spawning, rearing), Chinook salmon (spawning, rearing), pink salmon (spawning)

**Table 5:** Historical furbearer harvest in GMU 14B, UCU 801 and UCU 901, in and near the Willow Mountain CHA.

Year	Beaver	Lynx	Otter	Wolf	Wolverine	Marten	Grand Total
2001	3			2	2	16	23
2002	1						1
2003	14		1			3	18
2004	19				1	2	22
2005	43		2	1	1	31	78
2006	4		6			17	27
2007				6		20	26
2008	4			1	3	23	31
2009	13			7	1	30	51
2010	9	2		1		5	17
2011		1			1	39	41
Grand Total	110	3	9	18	9	186	335



## REFERENCES

- ADCCED (Alaska Department of Commerce, Community, and Economic Development). 2012. Alaska Community Directory. <http://commerce.alaska.gov/dca/MuniDirPublic/ MODP.htm>
- ADNR (Alaska Department of Natural Resources). 2010. Hatcher Pass Management Plan. Prepared by the Division of Mining, Land, and Water for the Department of Natural Resources. Anchorage, Alaska.
- Csejtey, B. 1992. Discrepancies between geologic evidence and rotational models. Pages 71 - 80 [*In*] Geologic Studies in Alaska by the U.S. Geological Survey. U. S. Geological Survey.
- Cohen, K. 1982. Independence Mine and the Willow Creek Mining District. Alaska Department of Natural Resources, Division of Parks. Juneau, Alaska.
- Grauvogel, C. 1988. Willow Mountain Critical Habitat Area Proposal. Alaska Department of Fish and Game. Anchorage, Alaska.
- Modafferi, R. D. 1995. Lower Susitna Valley moose population identity and movement study. Alaska Department of Fish and Game, Division of Wildlife Conservation. Research Final Report, Anchorage.
- Martin, G. C. 1906. A reconnaissance of the Matanuska coal field, Alaska, in 1905. U. S. Geological Survey Bulletin No. 289.
- Mastellar, M. A. n.d. Seasonal ranges and movements of cow moose wintering on Palmer Hay Flats State Game Refuge. Alaska Department of Fish and Game, Division of Wildlife Conservation, Anchorage.
- Nowacki, G. 2001. Ecoregions of Alaska: 2001. U. S. Geological Survey. Anchorage, Alaska.
- Peltier, T. 2010. Furbearer management report of survey-inventory activities 1 July 2006 - 30 June 2009. P. Harper, editor. Alaska Department of Fish and Game, Division of Wildlife Conservation. Juneau, Alaska.
- Stirling, D. 1985. Historic uses of trails in the Hatcher Pass region, Southcentral Alaska. Department of Natural Resources, Division of Land and Water. Anchorage, Alaska.

Viereck, L.A., C. T. Dyrness, A. R. Batten, and K. J. Wenzlick. 1992. The Alaska vegetation classification. General Technical Report. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Portland, OR.

APPENDIX B: PUBLIC SCOPING  
MEETINGS FOR WILLOW MOUNTAIN  
CRITICAL HABITAT AREA MANAGEMENT  
PLAN

## **SUMMARY OF PUBLIC SCOPING COMMENTS**

Public scoping meetings were held in 2012 in the following communities: Willow (April 3), Wasilla (April 9), and Anchorage (April 11). 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 to which they pertain. This list is included below, and a copy of the written questionnaire has been included for reference.

Appendix B.—Summary of public scoping comments

Issue	Comment
Access	Potential future restrictions are a concern (currently managed under general permit)
Access	Is motorized access a sustainable use given the current trail conditions? For example the area to the east of the CHA has tons of trails on wetlands that are visible on Google Earth
Access	Atv trail users on east side during the summer have no need to go all the way to the top (in the CHA) in terms of view/recreation
Access	It would be nice to leave atv use open for hunting purposes
Access	Even one atv pass can create long term evidence/ruts in wet, alpine tundra
Access	Wheeled vehicles that create ruts, disturb the ground and deposit seeds from other areas, allowing invasive plants to spread
Access	Motorized access affects hunting
Access	Want to maintain current use of trails
Access	Motorized access is necessary because the average person can't access all of the CHA for hunting and early season trapping otherwise
Access	Use motorized vehicles other than atvs in the vicinity (trucks, snow machines, etc.)
Access	Weight restrictions are too low, they need to be reconsidered
Access	Restrictions should be based on psi of any vehicle rather than gvw and restricted to atvs
Access	Suggest standard for generally allowed uses on state lands be used as limit for vehicles (namely as long as it doesn't cause a deeper than 6" rut)
Access	There is no air or water access to the WMCHA and the area is too large for foot only access, so vehicles should be permitted
Access	Citing the equal access clause of the state constitution, the commenter would consider closing the CHA to vehicle access would eliminate his right to hunt in the area
Access	Should be allowed for Alaskans with disabilities
Access	Want to preserve access via rst1620 to Little Willow Creek, or have alternate access established to reach the stream crossing and beyond.
Access	Want access at a level consistent with the state generally allowed uses

<b>Issue</b>	<b>Comment</b>
Access	1000 lb weight limit in gp is not sufficient for today's vehicles. It should be increased.
Admin	There should be an appropriately vetted and established standard of what is considered habitat damage
Admin	The damage standard should be described in the plan and be specific to WMCHA
Admin	"management plans have a hidden agenda to close access" and they shouldn't
Admin	There should be an advisory council of members of the public either on the planning team or for the WMCHA
Admin	Want a guarantee written into the plan that any stream crossing permits will be renewed annually (specific to vehicle crossings of salmon streams)
Admin	How effective is the current level of management in terms of helping the moose population? Does the management need to be changed?
Admin/ goals	Plan should stick to the statutory purpose and not include other goals
Aircraft	Aircraft landings are a non-issue for this area, though frequent flyovers occur during the hunting season
Cabins	Public use cabins have been beneficial in other areas in emergency situations
Cabins	No cabins in the CHA, it leads to too much intensive use. There are already cabins available in the general vicinity
Cabins	If a private individual wants to build a cabin and make it available to public, they should be allowed to do so, with restrictions on never locking the cabin, where the cabin is located, and the total number of cabins allowed in the CHA
Cabins	Trapper cabins should be allowed
Camping	14 days in one site, non-exclusive use. Typical generally allowed state land use rules for camping are reasonable.
Camping	No restrictions to camping, i.e. The same as generally allowed uses, no more than 14 days in the same location
Commercial facilities	Any commercial project needs to provide hardened trail access to the public
Education/outreach	Overall increased awareness of CHA would be good. Specifically, trail markers, signs and kiosk at trail/head, something beyond warning in hunting regs.
General	F&G should be aware of the potential and trend for population expansion and subdivision growth in the willow area
General	Any development that is disruptive to moose habitat should be prohibited

Issue	Comment
General	Target shooting should be regulated somehow based on bad experiences with people shooting into nearby mining claim but others think that it would interfere with hunting
Grazing	Grazing is detrimental to habitat on large or commercial scales, use of pack animals while hunting could be an acceptable use
Grazing	All domestic animals have to the potential to introduce weeds to the CHA; using heat processed feed only before and while in the CHA can stop seed transfer
Grazing	Only allowed if free range (no fences installed, etc.)
Habitat enhancement	Habitat enhancement should be allowed, but only if it is 1) useful to moose meaning it is an appropriate type of feed and reflects seasonal habitat use 2) the enhancement does not harm other species or the ecosystem
Habitat enhancement	One time willow cutting (and allowing moose to maintain willow height by browsing) would be the only useful habitat enhancement that could be done.
Habitat enhancement	Any intensive habitat enhancement would cause more damage... enhancement should be "minimal" such as selective tree felling using hand tools and done by crews on foot.
Habitat enhancement	Fish habitat could be enhanced by projects
Habitat enhancement	No - why fix something that is already working
Habitat enhancement	Yes-but only with access improvements
Habitat enhancement	Only species re-introductions
Habitat enhancement	Should only occur in response to a specific problem (for example if disease wiped out population and it needed to be rebuilt)
Habitat enhancement	Any enhancement that occurs should be focused on maximizing moose utility of the area for it designated purpose (e.g. Seasonality and browse types)
Implementation	Plan should make the recommendation that any data gathered in the CHA (as part of larger studies) be set aside for CHA management

<b>Issue</b>	<b>Comment</b>
Info education	Concern that there is no publication of fact that regulations change from general dnr land to adf&g regulations at the boundary of the area. Also, concerned that it is difficult to manage an "island" of stricter regulations within the larger area
Info outreach	Signs with responsible trail use tips might be good, especially at main trail heads
Info outreach	Trails should be marked at boundaries
Info outreach	There should be one spot on a website where someone could find all the permits for an area
Invasive species	Has there been any research on the effects of invasive weeds consumed by wildlife? For example, squirrel grass seed heads lead to infections in dogs, what do they do to moose?
Invasive species	Clover was introduced and has spread from a recent DOT road corridor project in the Nancy Lakes Rec area
Invasive species	Could be a huge problem and the state should eradicate invasive weeds asap
Land use	Special area planning should review and address conflicts with other nearby land designations and set asides
Mining	Recreational mining, such as that done with gold pans is not a big impact
Mining	Commercial mining, or any mining on a large scale would lead to habitat damage
Mining	Purches Creek is popular for recreational miners
Mining	No new mining claims should be allowed
Mining	No additional mining restriction beyond what is already in place immediately outside the CHA
Moose	There may be a tie between when atv access was restricted (early 1990's) and a decrease in the number of moose harvested, but could also be attributed to increased road kill and/or survey intensity. Numbers available are for all of GMU 14b, not just the CHA.
Planning	Prior planning efforts have taken place in the Willow community, specifically the willow comprehensive plan, how will these be incorporated into the SA plan? (provided copy of comprehensive plan)
Structures	No cell towers (or any towers) should be allowed to be constructed in the CHA. But this may not be a big issue
Structures	No permanent tree stands should be allowed
Structures	Wind towers might be okay, but not if they require road construction.
Structures	Permanent tent platforms would have the same issues as privately built publicly open cabins
Structures	No structures that are not beneficial to all the users of the CHA



<b>Issue</b>	<b>Comment</b>
Structures	No towers
Structures	Hydroelectric projects should be held to same standard of review as other development projects
Structures	Dams should not be allowed at the expense of fish habitat
Timber	No commercial timber harvest
Timber	Firewood cutting by the public would be okay
Timber harvest	No clear cuts - if any thinning needs to happen it should be guided by a biologist for habitat value
Timber harvest	No commercial harvests
Trails	Trails in CHA are linked to others nearby, mapping and marking trails is an ongoing effort, but helpful to trail users
Trails	Atv trail use is heaviest during hunting season
Trails	Mat-su Trails Council has had success getting grants to install more trail markers on other trails
Trails	Continued use of atv trails leads to trail spreading around mud holes and ruts, wide spread damage to habitat is a concern from this
Trails	Within CHA, between treeline and boundary, wet conditions and boulders prevent less skilled atv users from using it. Trail conditions below CHA (i.e. On timber roads) are good other than wet areas in meadow.
Trails	Trails in the general vicinity often cross wet terrain, but have layers of gravel 2 -3 feet below surface. If atvs can be kept on trails that are flooded but have solid bottoms than spreading can be minimized
Trails	Increased education of atv users on allowed trails and how to use responsibly would be useful
Trails	From the air, it is really apparent that the atv trails in the vicinity branch a lot and that new trails are being made. Many of these may be unintentional as someone may have made one pass through a wet area but created a noticeable "trail" that someone else may try to follow later.
Trails	Don't want trails improved/ want them to be kept in primitive condition
Trails	Improvements to trails to correct safety and erosion problems should be allowed
Trails	Okay with the main trails being the "designated" trails but still would want to be able to use vehicles to retrieve downed moose off the trail
Trails	Updated trail maps would be useful
Trails	Trail markers specifically identifying the designated trails would also be good

<b>Issue</b>	<b>Comment</b>
Trails	Restricting traffic to designated trails only may concentrate use to a detrimental degree
Trails	Non-profit organizations should be allowed to work on trails
Trails	State should be required to consider mitigating damages from trails before closing the trails
Trails	Rst 1620 - the far end of the trail (north) is better suited to travel with larger than atv vehicles as well as longer distance requiring transport of more supplies
Trails	Trail improvements keep people on the trails
Trails	Trail realignment to more suitable terrain should be allowed
Trails	Trail closures due to habitat damage should be advertised to give other groups the opportunity to fix the trail
Trails	Corduroy trails using local timber would be a dual habitat improvement / trail improvement project
Vegetation clearing	Clearing should not harm bird habitat
Water	The local community may have a future need for impoundments for drinking water. Purches & Little Willow Creeks have been identified before as a possible location for dams. Hydroelectric projects are also a possible need
Water quality	Water quality for fish habitat should be protected and maintained



3) Finally, what is it about the Critical Habitat Areas, 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 –Tammy Massie (907)-267-2342

<http://www.adfg.alaska.gov/index.cfm?adfg=willowmountain.main>

**Please send comments by:**

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APPENDIX C: REGULATIONS FOR WILLOW  
MOUNTAIN CRITICAL HABITAT AREA  
MANAGEMENT PLAN

## WILLOW MOUNTAIN CHA REGULATIONS

The Willow Mountain CHA regulations are provided here as a service to area users. This copy is not intended to supersede or replace the adopted regulations. Please see the Alaska Administrative Code, Title 5 online at [Alaska Admin Code \(akleg.gov\)](http://akleg.gov) for complete and current regulations.

**5 AAC 95.640. Willow Mountain Critical Habitat Area Management Plan.** (a) The goals and policies stated in the Willow Mountain Critical Habitat Area Management Plan dated July 2023 are adopted by reference. The plan presents management goals and policies for the Willow Mountain 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.

(b) 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. A special area permit for an activity in the Willow Critical Habitat Area will be approved, conditioned, or denied based on the criteria set out in the goals and policies stated in the Willow Mountain Critical Habitat Area Management Plan and on the standards contained elsewhere in this chapter.

**Authority:** AS 16.05.020                      AS 16.20.500                      AS 16.20.530  
AS 16.05.050                      AS 16.20.520                      AS 16.20.620

**Editor's note:** Copies of the Willow Mountain Critical Habitat Area Management Plan are available at the Palmer office of the Department of Fish and Game, Habitat Section, 1801 S. Margaret Drive, Suite 6, Palmer, AK 99645-6736.

**5 AAC 95.642. Willow Mountain Critical Habitat Area.** (a) The following conditions apply to activities in the Willow Mountain 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, except that

(A) a general permit may be issued under 5 AAC 95.770 for

(i) the off-road use of a wheeled, tracked, or other ground-effect motorized vehicle on designated trails in the critical habitat area; or

(ii) off-road vehicle use throughout the critical habitat area when there is sufficient snow cover and ground frost to prevent the penetration of or disturbance to the soil surface or plant roots, as indicated in the general permit; and

(B) the commissioner may issue an individual special area permit, on a case-by-case basis, for the off-trail use of a wheeled, tracked, or other ground-effect motorized vehicle within the critical habitat area in association with an authorized habitat enhancement or trail improvement activity;

**(2) aircraft access;** a person must obtain a special area permit before landing an aircraft in the critical habitat area, except that ski-mounted, fixed-wing aircraft may land and takeoff in the critical habitat area without a permit when sufficient snow cover is present;

**(3) structures;** the following restrictions apply to the placement and construction of structures in the critical habitat area:

(A) permanent commercial or private structures, including cabins, are prohibited;

(B) a person may not construct or place a temporary structure, including a bear bait station, tree stand, tent platform or other hardened structure, 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, or at a location within a two-mile radius of the original location, unless authorized by a special area permit issued before the camping activity begins;

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

(C) a person must store all food and garbage in a manner that does not attract bears or other wildlife;

(D) a person must remove all camping equipment and associated materials at the time the camping activity ends;

(E) a person may not cut a live, standing tree for a campfire or other camping purpose;

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

(G) a campsite must be marked with the responsible party's full name and date of arrival, if people are not present in the campsite;

**(5) mining;** a person must obtain a special area permit before conducting any mining activity, except that gold panning and other non-mechanized, minimally invasive mining activities are generally allowed;

**(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;

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

(i) fuel contained in fuel tanks in vehicles or aircraft;

(ii) 10 gallons or less of fuel properly contained in an occupied camp;

(iii) 10 gallons or less of fuel stored in appropriate containers in an authorized off-road vehicle or trailer;

(C) a person may not store a hazardous substance as defined in AS 46.09.900.

(b) In this section,

(1) "designated trail" means a trail identified on a map included in a special area permit or identified by department trail markers in the Willow Mountain Critical Habitat Area;

(2) "commercial camping services" means any activity that is associated with the provision of assistance for compensation, or with the intent to receive compensation, to a person who camps in the critical habitat area;

(3) "off-road vehicle" means a wheeled, tracked, or other ground effect motorized vehicles, including

(A) an all-terrain vehicle, including a

(i) four wheelers;

(ii) dirt bikes;

(iii) dune buggy; or

(iv) side-by-side;

(B) a full sized vehicle, including a truck or jeep;

(C) a utility vehicle with wheels, tracks, or a combination of both; or

(D) wheeled aircraft;

(4) "solid waste" means garbage, refuse, or abandoned or otherwise discarded solid or semi-solid materials, regardless of source or level of decomposition.

<b>Authority:</b>	AS 16.05.020	AS 16.20.500	AS 16.20.530
	AS 16.05.050	AS 16.20.520	AS 16.20.620



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# WILLOW MOUNTAIN CRITICAL HABITAT AREA MANAGEMENT PLAN

APPENDIX D: MAPS

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## **Maps of the Willow Mountain Critical Habitat Area**

### **Maps**

Map 1. Willow Mountain Critical Habitat Area Land Status

Map 2. Willow Mountain Critical Habitat Area Wildlife Habitat

Map 3. Willow Mountain Critical Habitat Area Fish Habitat

Map 4. Willow Mountain Critical Habitat Area Mineral Estate

Map 5. Willow Mountain Critical Habitat Area Vegetation Communities

**Land Status & Mineral Estate:** 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-recordation 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)

**Wildlife Habitat:** Data sets were compiled from the following sources and edited by ADF&G biologists (Tim Peltier, 2012, personal communication).

1. Alaska Habitat Management Guide 1986. South central Region: Reference maps. Habitat Division, Alaska Department of Fish and Game, Juneau
2. Most Environmentally Sensitive Area Atlas 2000. Habitat and Restoration Division, Alaska Department of Fish and Game, Anchorage  
<http://www.adfg.alaska.gov/index.cfm?adfg=maps.mesamaps>
3. <http://dnr.alaska.gov/mlw/planning/mgtplans/hatcher/>

**Fish Habitat:** Johnson, J. and P. Blanche. 2012. Catalog of waters important for the spawning, rearing, or migration of anadromous fishes – Southcentral Region, Effective June 1, 2012. Alaska Department of Fish and Game, Special Publication No. 12-09, Anchorage.

**Vegetation Classes:** ADF&G staff developed this classification from pansharpned (0.5 m) RGB (1 m) GeoEye imagery (captured July 2007) using supervised classification based on ground sampled plots (July 2012). The vegetation plots were classified under the Viereck (1992) Alaska Vegetation Classification system. Additional categories for “closed mixed forest” and “wet graminoid/forb/bryoid herbaceous” were added during the classification process based on point sampling and ground photography to better refine the final classification.

