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Feeding Profiles of Tame Moose.

by

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Three tame yearling moose (Alces alces gigas) -- two males, one female -- were observed during 99 hours of feeding on natural range during July and August, 1970. For each bite, 1) plant species, 2) browsed condition, and 3) size of bite were recorded on IBM optical page reader "scanner sheets". Activity periods, urinations and defecations, and bites in each feeding bout or for each individual plant were also recorded. Feeding profiles of a male and a female were constructed from these data.

Mean bites per hour of feeding ranged from 200 to 940, depending upon hour of the day. Intensity of feeding corresponded roughly with proportion of time spent feeding during a given time-period. Two activity peaks per day were observed.

Plant species and groups selected, in order of preference, by all moose (lumped) were: Betula papyrifera (56% by number of bites), forbs (25%), Salix spp. (5%), B. nana (4%), sedges (4%), aquatics (3%), grasses (3%), and Vaccinium vitis-ideae, Alnus crispa, and Populus tremuloides (traces each). Species preference differed significantly between the males and the female, the males favoring forbs and the female favoring sedges and aquatics.

Mean bite size differed by plant species and, for some species, by individual moose.

Number of bites per one-species feeding bout differed significantly by individual moose and by plant species. Bouts were shortest for willow and forbs and longer for the other species and groups.

Comparisons of such exact food-intake data with browse-utilization estimates and rumen-contents analyses illustrate the shortcomings of the latter methods. Comparisons with species composition of plants within the feeding area illustrate selective feeding and food preference. Expansion of such data by mass and chemical-energy composition of the species taken is useful in estimating energetics of these large herbivores.

- 1) Contribution No. 5 from the Kenai Moose Research Center, Alaska
Department of Fish and Game, USFWS-Kenai National Moose Range.
(Box R, Soldotna, Alaska USA 99669).
- 2) Paper presented at 7th N. Am. Moose Conference, Saskatoon,
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Moose Feeding Data

[illegible][illegible]

RESTING

URINATION/DEFECATION

DRINKING

Height		PLANT HEIGHT	
<1m			
1-2m			
>2m			

PLANT
HEIGHT

SIZE of
BITE

SIZE of
BITE

HEIGHT of
BITE

BROWSED CONDITION

LEADER DIAMETER

[illegible]

42.25 hours of feeding by two male and one female moose. July and August, 1970.
Kenai Moose Research Center.

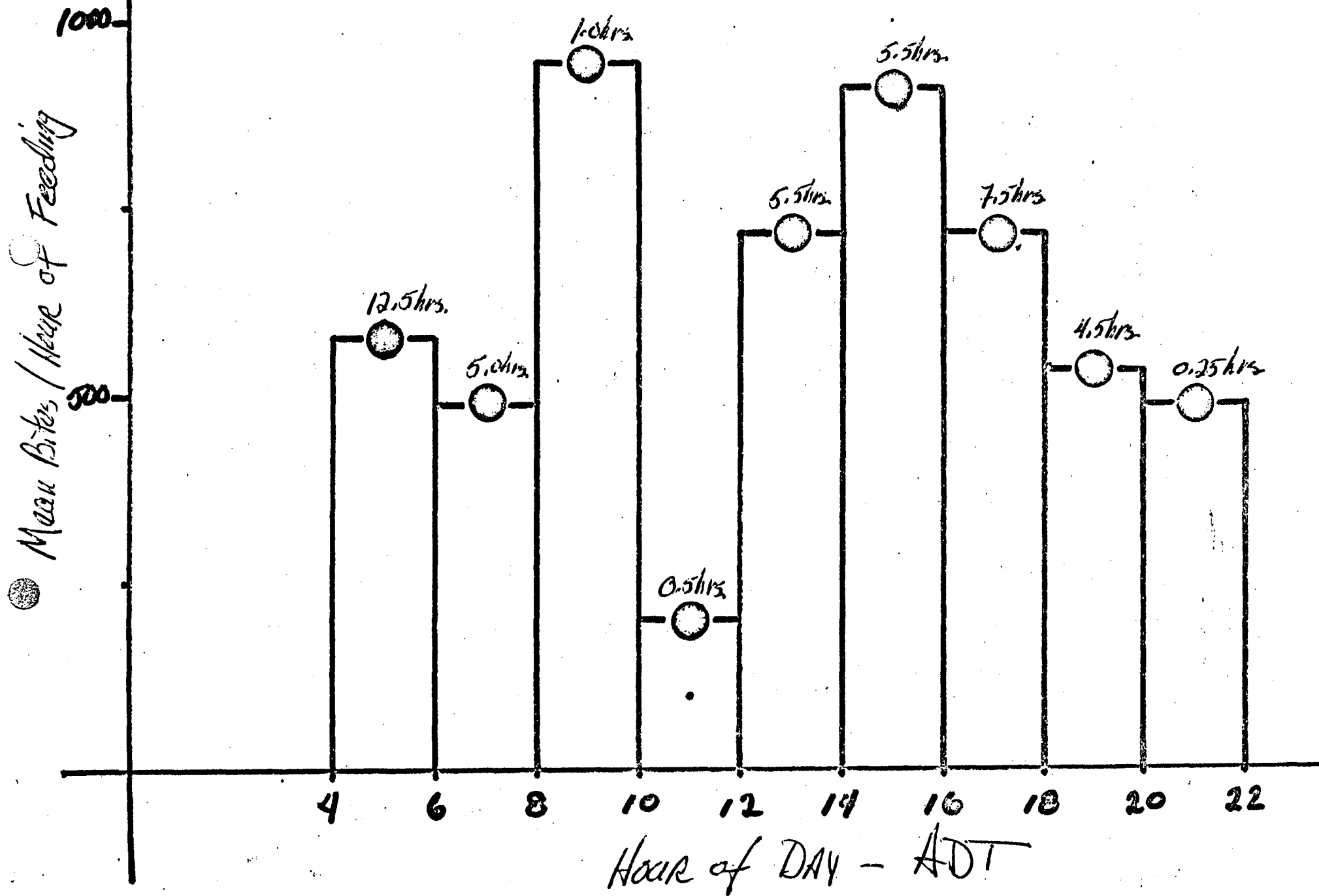


Table 1: Mean bites taken per hour of feeding by two male and one female tame moose, 42.25 hours of feeding during July and August 1970. Kenai Moose Research Center.

	Time Period (ADT-hrs)									Totals 4-22
	4-6	6-8	8-10	10-12	12-14	14-16	16-18	18-20	20-22	
Bites taken	7124	2403	938	100	3913	4969	5325	2386	123	27,281
Hours fed	12.5	5.0	1.0	0.5	5.5	5.5	7.5	4.5	0.25	42.25
Bites/hour of feeding	571	491	938	200	712	904	711	531	492	646

Table 2: Proportions of two-hour time periods spent feeding by two male and one female tame moose, 99 hours of observation, July and August 1970. Kenai Moose Research Center.

	Time Period (ADT-hrs)								
	4-6	6-8	8-10	10-12	12-14	14-16	16-18	18-20	20-22
Hours feeding	12.5	5.0	1.0	0.5	5.5	5.5	7.5	4.5	0.25
Hours observed	14	12	12	6	14	15	14	8	4
Proportion of time spent feeding	.89	.42	.08	.08	.39	.37	.54	.56	.06

Figure 2: Proportion of time spent feeding during each of 9 daily two-hour periods. 99 hours of observation of three moose. July and August, 1970. Kenai Moose Research Center.

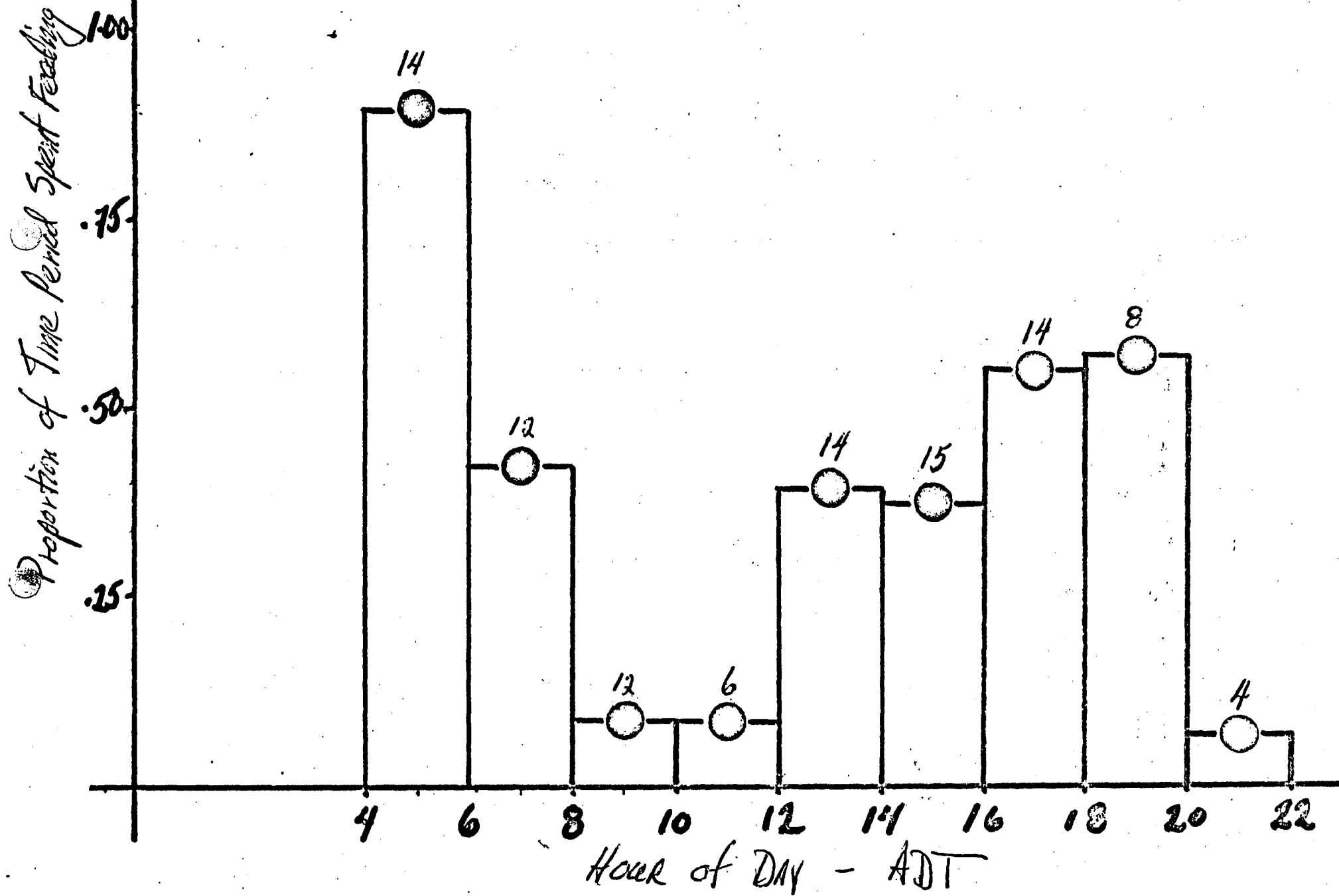


Table 3: Bites per two-hour time period by two male and one female tame moose, 99 hours of observation, July and August 1970. Kenai Moose Research Center.

	Time Period (ADT-hrs)									Totals 4-22
	4-6	6-8	8-10	10-12	12-14	14-16	16-18	18-20	20-22	
Number bites	7124	2403	938	100	3913	4969	5325	2386	123	27,281
Hours observed	14	12	12	6	14	15	14	8	4	99
\bar{X} bites/hour	508	200	78	17	280	332	380	299	31	276

Figure 3: Total consumption of natural forage by three tame yearling moose in relation to time of day. 99 hours of observation in July & August, 1970. Kenai Moose Research Center. Male individuals are represented by broken lines, a female by the solid line. Bars represent means for two-hour periods.

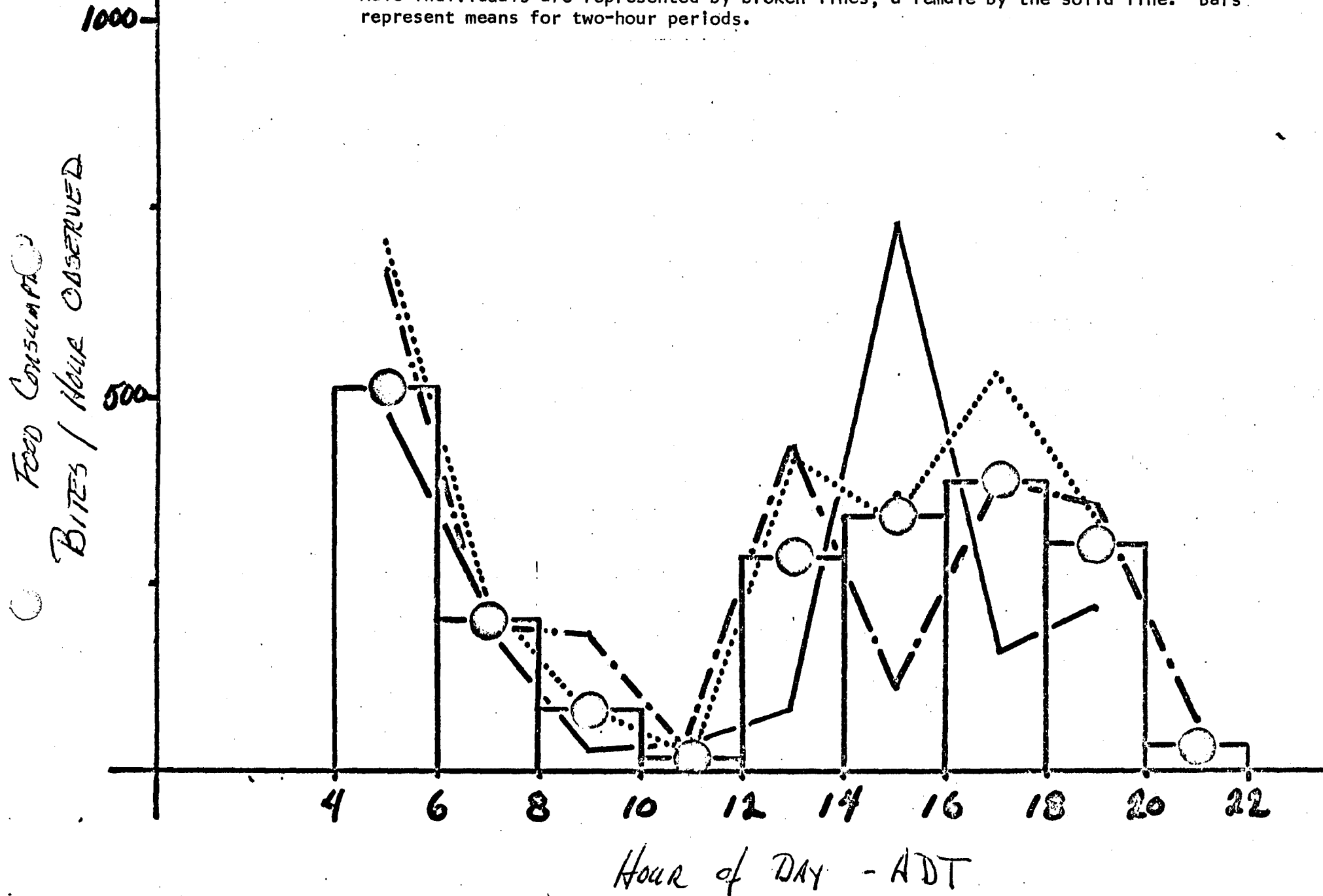


Table 4: Feeding preferences of two male and one female tame moose; 28,423 bites in July and August.
Kenai Moose Research Center.

		Plant Species or Group										Total Bites
		<u>B. papy- rifera</u>	Forbs	<u>Salix</u>	Grasses	Sedges	Aquatics	<u>B. nana</u>	<u>Alnus crispa</u>	<u>Vacc. vitis- ideae</u>	<u>Populus tremul- oides</u>	
♂ Richard	- no. bites	5942	1607	628	70	1	150	709	21	--	16	9,141
	- proportion	.65	.18	.07	.01	t	.02	.08	t	--	t	
♂ Walter	- no. bites	5277	3847	437	575	253	310	151	1	--	--	10,85
	- proportion	.49	.35	.04	.05	.02	.03	.01	t	--	--	
Both ♂♂	- no. bites	11,219	5454	1065	645	254	460	860	22	--	16	19,95
	- proportion	.56	.27	.05	.03	.01*	.02*	.04	t	--	t	
♀ Raquel	- no. bites	4626	1584	448	169	838	485	247	--	31	--	8,42
	- proportion	.55	.19	.05	.02	.10*	.06*	.04	--	t	--	
All moose	- no. bites	15,845	7038	1513	814	1092	945	1107	22	31	16	28,42
	- proportion	.56	.25	.05	.03	.04	.03	.04	t	t	t	

* Male vs female difference significantly greater than ♂-♂ individual difference ($p < .001$).

Figure 4: Feeding preference of three yearling moose on natural forage. 28,423 bites in and August, 1970. Kenai Moose Research Center.

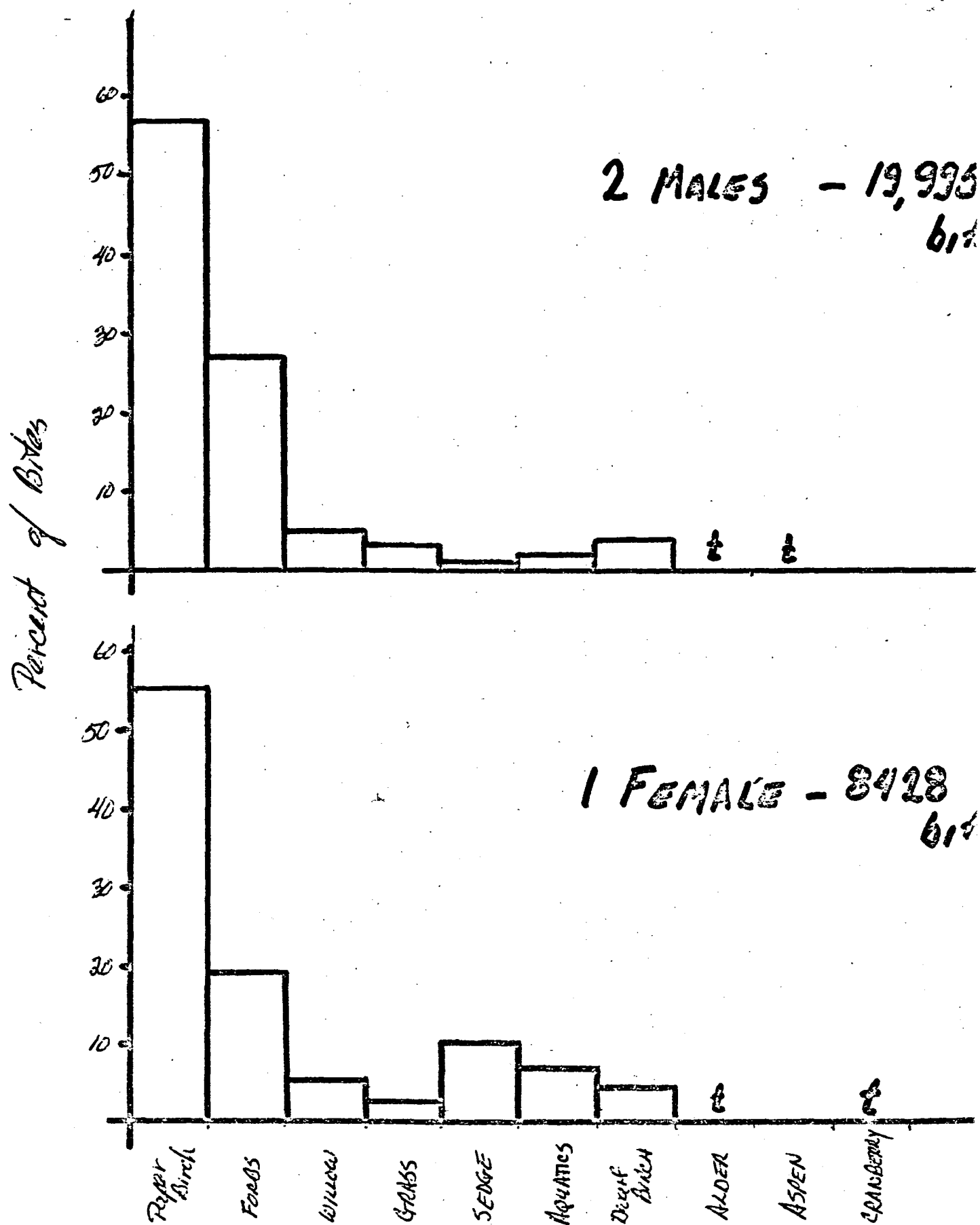


Table 5: Mean bite size by plant species for two male and one female moose; 25,515 bites; July and August 1970. Kenai Moose Research Center.

		Bite Size (no. leaves)				TOTAL
		< 5	6-10	11-20	> 20	
<u>B. papyrifera</u>	- no.	6758	6084	2224	789	15,855
	%	42	38	14	5	
Forbs	- no.	6969	58	10	3	7,040
	%	100	t	t	t	
<u>Salix</u> spp.	- no.	552	758	176	27	1,513
	- %	36	50	12	2	
<u>B. nana</u>	- no.	71	307	361	368	1,107
	%	6	28	33	33	

Figure 5: Distribution of size of 25,515 bites taken by three yearling moose on natural forage. July and August 1970. Kenai Moose Research Center.

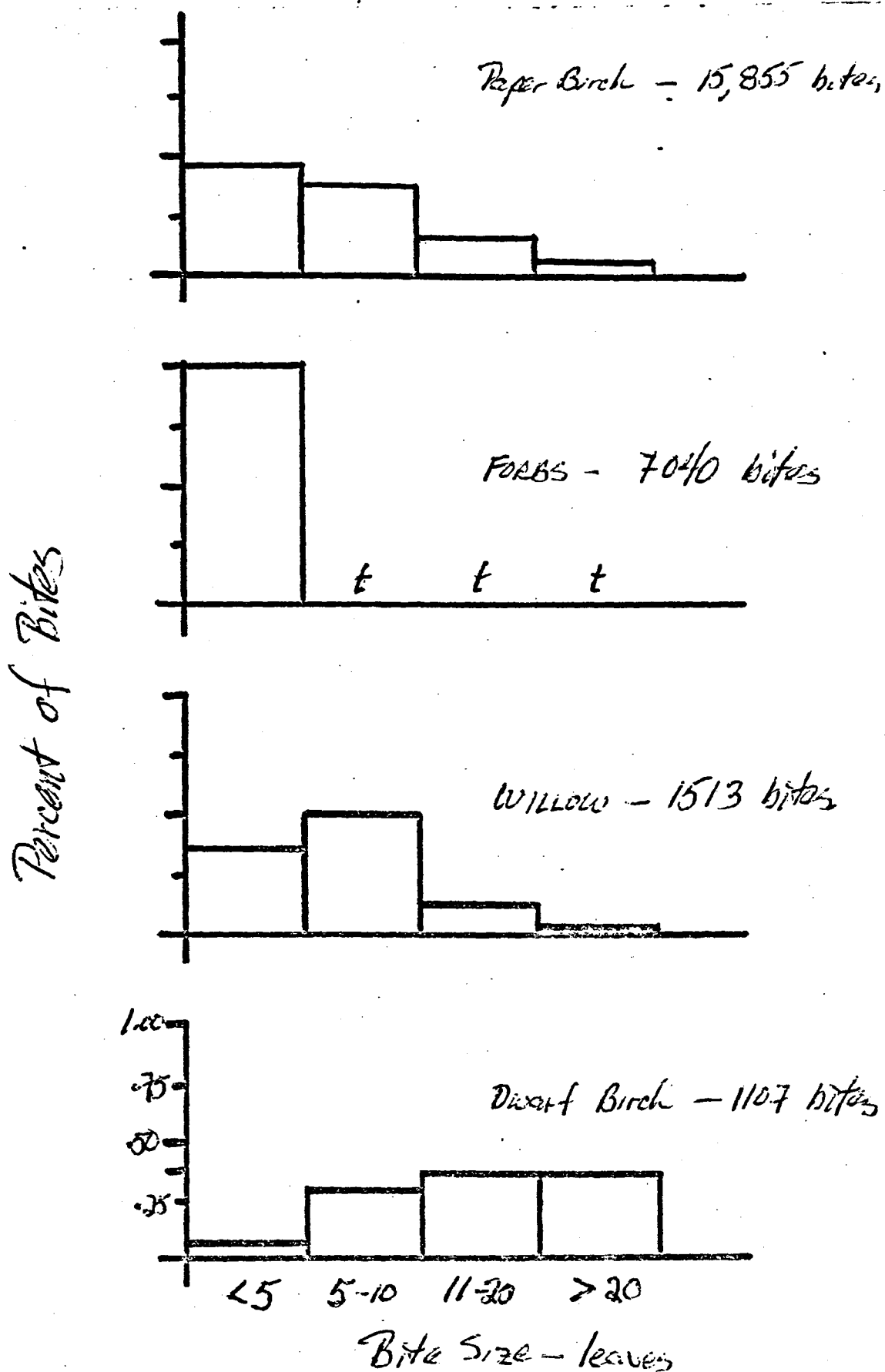


Figure 6: Distribution of sizes of single species feeding bouts on natural shrubs. 1521 bouts by three yearling moose in July and August, 1970. Kenai Moose Research Center.

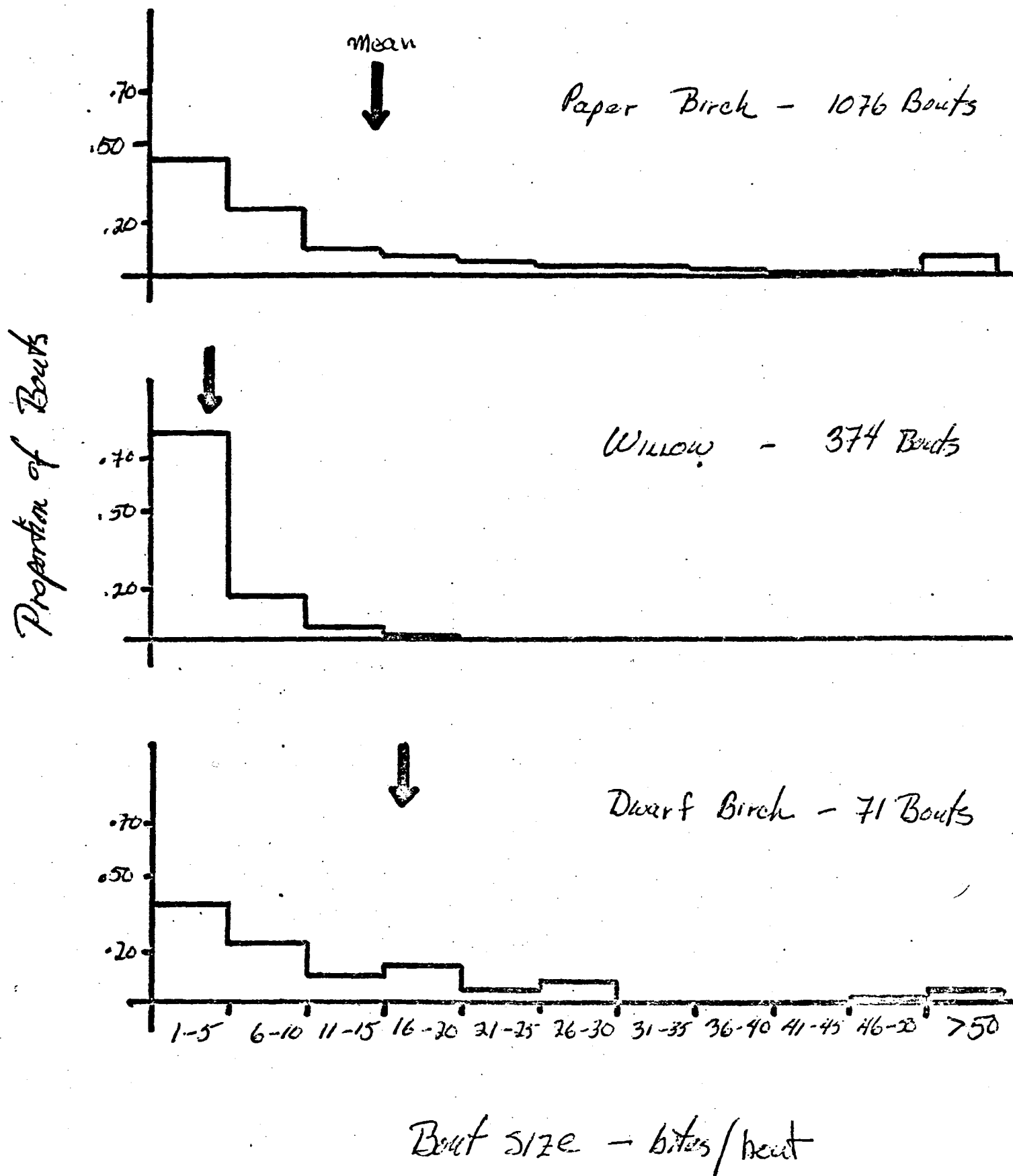


Figure 7: Distribution of sizes of single plant-group feeding bouts on natural non-shrub forage
1136 bouts by three yearling moose in July and August, 1970. Kenai Moose Research C

