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## Hunting Success on Northern Idaho White-Tailed Deer, 1969-1971

Game animals are usually more abundant than most sportsmen realize or care to admit. This condition is particularly true of white-tailed deer (*Odocoileus virginianus ochrourus* Bailey). On most ranges these elusive whitetails are seen infrequently because of their secretive habits and preference for dense vegetation. Hunting success is surprisingly low despite relatively high deer density. Deer hunters and landowners are usually quick to blame Fish and Game officials for deer scarcity and to accuse them of overharvest and insufficient predator control. This circumstance is the case in parts of northern Idaho.

As part of a white-tailed deer population dynamics study in northern Idaho between 1969 and 1971, I had the opportunity to (1) estimate hunting success, (2) estimate the amount of effort white-tailed deer hunters expended in pursuing their game, and (3) ask hunters if they were satisfied with the prevailing deer density. Although considerable information is available on whitetail hunting success in various areas of the United States (Van Etten, Switzenberg, and Eberhardt, 1965; and Roseberry, Autry, Klimstra, and Mehrhoff, 1969), little has been published on whitetail hunting in the Pacific Northwest.

Controlled deer hunting of an enclosed herd and regular deer hunting of an adjacent free-ranging herd are described. The Idaho Cooperative Wildlife Research Unit, the University of Idaho, and the Idaho Fish and Game Department funded the study and provided equipment and materials. I am grateful to University of Idaho wildlife students for assisting in deer census and operation of big game check stations. I am also grateful to license vendors and local sportsmen who cooperated and volunteered information.

The study areas were the University of Idaho's Hatter Creek Deer Enclosure and the Idaho Fish and Game Department's Big Game Management Unit 8, which surrounds the enclosure. The enclosure has been closed to all deer hunting since it was constructed over 20 years ago. Unit 8 has been open annually to one-deer, either-sex hunting seasons of 4- to 6-week duration. The enclosure contains 800 acres of rolling to steep terrain on which dense stands of conifers and thick understory dominate. The vegetation and terrain of the enclosure are representative of much of Unit 8, with the exception that the enclosure has been protected from livestock grazing—hence it is slightly more lush. Unit 8 contains over 1500 square miles and lies north of the Clearwater River and east of the Idaho-Washington state line. More than 60 percent of the Unit is ideal whitetail habitat; the remaining 40 percent is mostly agricultural land void of deer habitat.

## Methods

Controlled hunting was permitted in the enclosure during the regular November deer-hunting seasons of 1969 and 1970 to reduce the herd by 35 percent. A drive census was used to estimate the number of deer present before each hunting season began. Local sportsmen were invited to participate in either-sex hunts on 11 different days in 1969 and on 4 different days in 1970. Two to 16 hunters were allowed to hunt in the enclosure at one time. They were given cover-type maps of the enclosure, instructed to hunt as they normally would outside the enclosure, and asked to fill out a questionnaire before they left giving number of deer seen, number of shots fired, length of hunt to nearest quarter hour, number of deer crippled, and data on deer killed.

Students operated big game check stations on major access routes throughout Unit 8 during the regular 1970 and 1971 deer hunting seasons. Fish and Game Department check station signs were used; Idaho hunters are required by law to stop. The stations were open primarily on opening and closing weekends from 9 AM until dark. All hunters were checked for game, and when time and traffic conditions permitted, students interviewed each hunter and placed his comments on a separate field form similar to those used in the enclosure. Hunters were asked to report their hunting time to the nearest half hour. The data were later transferred to computer data cards and analyzed by an IBM 360/40 computer. Local news media kept hunters well informed that check stations would be in operation, and they were asked to cooperate.

In September, 1971, license vendors in the vicinity of Unit 8 distributed postage-paid deer jaw mailer bags with attached questionnaires and explanatory brochures to hunters who purchased deer tags. Hunters were issued the mailers regardless of the game management unit in which they intended to hunt. The mailers were given ample news coverage. Hunters were requested (not required by law) to return them either by mail or to check-station officials, even if they were unsuccessful in killing a deer.

In 1971 I conducted a monthly spotlight census of 28 routes between February and October to determine deer density throughout Unit 8. Public resentment of spotlighting hampered the census, and it was mostly unsuccessful. A general index of deer per linear mile of route was obtained.

## Results and Discussion

*Hunting Success on Enclosed Deer.* In 1969 an October drive census of the enclosure by 100 persons showed that at least 34 deer were present (15 bucks, 14 does, and 5 unclassified). Another census in September of 1970 by 250 persons was unsuccessful in providing a reliable estimate; based on past knowledge I estimated the population at 40 or more deer.

In 1969, 112 sportsmen hunted the enclosure on 11 different days for 615 hours, an average of 5.5 hours per hunting trip. At the end of the season hunters had seen 66 deer (12 bucks, 33 does, 1 fawn, and 20 unclassified), fired 46 shots, and killed 3 bucks and 2 does. The average hunting effort expended to see one deer was 9.3 hours; to see one buck, 51.3 hours; to kill one deer, 123.0 hours; and to kill one buck, 205.0 hours (Table 1). Hunters reported no cripples. The hunting success was 4.5 percent.

Twenty-five sportsmen hunted the enclosure in 1970 on 4 different days for 110

TABLE 1. Effort expended in hunting an enclosed and a free-ranging white-tailed deer herd in northern Idaho during regular hunting seasons from 1969 to 1971.

	Hatter Creek Deer Enclosure		Big Game Management Unit 8	
	1969	1970	1970	1971
Hunters interviewed	112	25	267	857
Average hours per hunt	5.5	4.4	5.8	5.5
Deer killed	5		16	55
Average hours per deer kill <sup>a</sup>	123.0		97.1	86.3
Bucks killed	3		12	34
Average hours per buck kill <sup>b</sup>	205.0		129.4	139.7
Total deer seen	66	6	104	616
Average hours per deer sighting <sup>c</sup>	9.3	18.4	14.9	7.7
Total bucks seen	12		36	162
Average hours per buck sighting <sup>d</sup>	51.3		43.1	29.3
Percent of hunters that saw deer	37.5	20	21.3	31.7
Percent of hunters that saw bucks	9.8		11.6	15.5

<sup>a</sup> Total hours hunted/total deer killed.

<sup>b</sup> Total hours hunted/total bucks killed.

<sup>c</sup> Total hours hunted/total deer seen.

<sup>d</sup> Total hours hunted/total bucks seen.

hours; the average hunt was 4.4 hours. Hunters saw 6 deer (1 doe and 5 unclassified), fired 2 shots, killed no deer, and reported no cripples (Table 1). On the average they expended 18 hours to see one deer.

Most hunters asked where to hunt in the enclosure, but I only advised them on locations of habitat types, burns, clearings, brush fields, roads, and trails. I also told them that the drive method of hunting would probably yield best results. Few hunters took this advice, but preferred to hunt alone or in groups of 2 or 3. They also preferred to stay close to trails, roads, and clearings because of the thick undergrowth. Hunters were also told that there were more than 27 deer per square mile during both years. All hunters felt that the deer density was more than adequate and that killing a deer under such conditions would be relatively easy. Most hunters had already been unsuccessful in hunting Unit 8 and were discouraged about seeing few or no deer. They eagerly volunteered to hunt the enclosure and felt confident in killing a "penned deer."

*Hunting Success on Free-Ranging Deer.* The best available estimate of deer density in Unit 8 was the enclosure estimate of 27 deer per square mile on comparable ranges. I believe the habitat inside the enclosure was similar to that throughout much of Unit 8, and they both supported similar deer densities, although there are no data to support my opinion.

The results of the 1971 spotlight census of Unit 8 taken monthly from February through October were 4.6, 4.0, 2.5, 5.1, 1.0, 0.8, 1.0, 1.0, and 0.6 deer, respectively, per linear mile. The number of miles censused ranged from 53 to 305. These data show only that whitetails were relatively abundant.

At 1970 check stations 2288 hunters were interviewed; 2609 were interviewed in 1971. Both November hunting seasons were 4 weeks long. Elk and deer hunting seasons were open together in 1970; elk were hunted only the first 2 weeks of the 1971 season. Hunters thus had the option to hunt deer only, elk only, or both. The

major hunting effort was for elk; in some cases hunters passed up deer if they were confident that elk were nearby. In 1970, 1830 hunters (80%) said that they were hunting deer (i.e., deer-only hunters, and deer and elk hunters). In 1971, 1827 hunters (90%) were hunting deer the first 3 weekends of the deer and elk season; 582 deer hunters were checked during the last 2 weekends of the deer-only season.

The overall deer-hunting success of hunters who passed through check stations was 6 percent in 1970 and 5 percent in 1971. These estimates of hunting success are low because (1) they represent only individual hunting trips and not success for the entire season, and (2) hunters passed through check stations several times during the hunting season. A questionnaire was completed for each hunter checked, regardless if he had hunted previously. Hunters reported killing 108 deer in 1970—98 white-tails (53 bucks and 45 does) and 10 mule deer (4 bucks and 6 does). The 1971 hunters reported killing 123 deer, of which 116 were whitetails (67 bucks and 49 does) and 7 were mule deer (5 bucks and 2 does).

Of the 8900 deer jaw mailer bags issued in 1971, 438 were recovered either by mail or at check stations before February 1, 1972. Of the 264 hunters who said that they hunted deer in Unit 8, 113 (43%) reported killing a deer in Unit 8. This estimate of 43 percent hunting success is probably high because successful hunters are generally more inclined to return questionnaires than unsuccessful ones. The reported kill included 107 whitetails (70 bucks and 37 does) and 6 mule deer (3 bucks and 3 does). The Idaho Fish and Game Department does not estimate the deer-hunting success in Unit 8; hence there are no data for comparison.

When hunters cooperated and time permitted, they were asked how long they hunted and how many deer they saw (Table 1). The average hunt for both years was nearly 6 hours long. On the average, hunters expended nearly 100 hours to kill each deer and between 130 and 140 hours to kill each buck. The 1970 hunters expended 15 hours to see a deer and 43 hours to see a buck; 21 percent saw deer, but only 12 percent saw bucks. The 1971 hunters saw a deer every 8 hours and a buck every 30 hours; 32 percent saw deer, but only 16 percent saw bucks. Not one hunter out of nearly 4000 reported crippling a deer.

More than 95 percent of all hunters who passed through check stations were Idaho residents. Washington hunters were the most numerous nonresidents, followed by California hunters. Hunting party size was established for 3640 hunters. Forty-five percent hunted in 2-man parties, and 28, 11, 11, 3, 1, and 1 percent, respectively, hunted in 3-, 1-, 4-, 5-, 6-, and more than 6-man hunting parties. During both hunting seasons 2969 hunters indicated whether they hunted bucks only, any deer, or any deer except fawns. Five percent said that they hunted bucks, 20 percent said they would not have killed a fawn, and 75 percent said that they would have killed any deer.

One hundred eighty-five hunters gave the hour of day in which they killed their deer. Forty-one percent were successful before 8 AM; 35 percent between 8 and 11 AM; 20 percent between 11 AM and 3 PM; and only 4 percent were successful after 3 PM. The estimated success of evening hunters is unreliable because check stations were closed at dark and few late hunters were checked. Of 183 successful hunters, 52 percent killed their deer while they were "still hunting" (i.e., on a stand); 17 percent were successful while stalking; 13 percent while road hunting; 12 percent while hunting in an organized drive with 2 or more hunters; and 6 percent were successful while tracking deer. Out of 186 successful hunters, 63 percent killed their

deer under snow conditions; 22 percent under moist conditions; and 15 percent under dry conditions.

Nearly 4000 hunters were asked for their opinion on the abundance of deer in Unit 8 (Table 2). They were asked whether they believed that the deer population

TABLE 2. Hunters' opinions of northern Idaho white-tailed deer density during regular 1970 and 1971 hunting seasons.<sup>a</sup>

Hunter categories <sup>b</sup>	Hunters interviewed	Opinion (percentage)		
		adequate	inadequate	too high
All hunters	3866	46.8 ± 1.6 <sup>c</sup>	53.0	0.2
Hunters under 30	1462	54.4 ± 2.5	45.1	0.5
30 to 59	1589	44.9 ± 2.4	54.8	0.3
60 and over	260	38.5 ± 5.9	61.1	0.4
Hunters that saw 0 deer	2906	43.0 ± 1.8	56.7	0.3
1 deer	461	54.7 ± 4.5	45.3	0.0
2 deer	220	61.3 ± 6.4	37.7	1.0
3 deer	78	53.8 ± 11.1	44.9	1.3
4 deer	73	71.2 ± 10.4	27.4	1.4
5 or more	84	77.4 ± 8.9	21.4	1.2
Idaho residents	3712	47.5 ± 1.6	52.2	0.3
Nonresidents	122	41.0 ± 8.7	59.0	0.0
Successful deer hunters	182	72.5 ± 6.5	27.5	0.0
Unsuccessful hunters	1666	46.0 ± 2.4	53.7	0.3
Hunted under dry conditions	693	52.1 ± 3.7	47.5	0.4
Moist conditions	579	47.0 ± 4.1	53.0	0.0
Snow conditions	1964	46.5 ± 2.2	53.0	0.5
Hunted opening weekend 1970	1106	50.1 ± 2.9	49.5	0.4
Closing weekend 1970	315	60.3 ± 5.4	39.4	0.3
Opening weekend 1971	1640	40.7 ± 2.4	59.0	0.3
Closing weekend 1971	293	56.0 ± 5.7	44.0	0.0
Hunted whitetails for:				
1 to 5 years	962	54.3 ± 3.1	45.3	0.4
6 to 10 years	632	53.8 ± 3.9	45.7	0.5
11 to 20 years	878	46.8 ± 3.3	53.0	0.2
21 to 30 years	432	39.1 ± 4.6	60.4	0.5
31 to 40 years	204	36.3 ± 6.6	63.2	0.5
over 40 years	148	37.8 ± 7.8	62.2	0.0

<sup>a</sup> Data are from check station questionnaires.

<sup>b</sup> Except for successful deer hunters, all categories include both deer and elk hunters.

<sup>c</sup> Differences are significant at the 95 percent level when the confidence intervals do not overlap.

was adequate, inadequate, or too high. Confidence intervals were applied to each of the percentages. Differences are significant at the 95 percent level when intervals do not overlap. Forty-seven percent of all hunters believed that the population was adequate while 53 percent believed it was inadequate. Hunters 30 years old or younger believed it was adequate, but older hunters did not. Hunters who saw few or no deer believed that the population was inadequate, but hunters who saw several deer believed it was adequate. Hunters who had hunted whitetails for only a few years believed that deer numbers were adequate, but others who had hunted for many years believed that deer numbers were inadequate. Although not significant, more Idaho hunters believed that the population was inadequate than did nonresident hunters.

Successful hunters believed that deer were adequate while unsuccessful hunters did not. Opening weekend hunters believed that the deer population was inadequate, but closing weekend hunters believed that it was adequate. Weather conditions did not appear to influence opinions.

The data obtained during this study suggest that poor hunting success on northern Idaho white-tailed deer results not from deer scarcity, but rather from unskilled hunters.

#### Literature Cited

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#### 1974 ANNUAL MEETING SET FOR VANCOUVER, B.C.

Plans for the 1974 annual meeting of the Association are rapidly being firmed up by President Jim Wort and program chairman L. M. Lavkulich with the able help of committee members, Section officers and Trustees.

The meeting will be held at the University of British Columbia with housing both on and off campus for those attending the sessions. The dates are May 9, 10 and 11, 1974.

The proposed program for the general meeting includes a symposium on the nature of the environment and scientific contributions in utilizing and conserving it. This would be done by regions such as Coastal Oregon and Washington, Canadian West Pacific, Rocky Mountain, Northern and perhaps others.

Plans for Section meetings are going forward in the capable hands of Section officers who will soon be issuing a call for papers.

On the light side there is planned a banquet with a no-host social hour preceding it and a wine and cheese Happy Hour in the late afternoon of May 9 Registration Day.

Field trips are being planned by some Sections and yes, there will be a Ladies' Program.

Milton M. Mosher  
Secretary

Starting with the February 1974 issue of this Journal, abstracts will be required with each paper published. Authors who submit typescripts should include a concise and informative abstract.

Bruce V. Ettling  
Editor