PROCEEDINGS OF THE GREAT LAKES DEER GROUP
AND RUFFED GROUSE WORKSHOP

September 18-20, 1973

Rhinelander, Wisconsin

WELCOME: John G. Brasch, Director, North Central District, WDNR.

JOINT SESSION ON AGENCY HABITAT PROGRAMS: Cliff Wiita, Moderator.

MICHIGAN by John Byelich: This year marks the 3rd year of our program. Three years ago the legislature raised the price of our deer license from $5.00 to $7.50, earmarking $1.50 for maintenance and development of habitat. In the first year we received $600,000 and during the last two years $800,000. We anticipate the same amount this year.

We have identified priority townships where most of the work is and will be concentrated. Most activity is concentrated "near" deer yards with an overall goal for the forest of maintaining 15% openings, 35% aspen, 60-65% intolerant type, and 25% in a seedling-sapling stage of growth. Most townships are currently in the pole stage.

Last year we hoped to treat 30,000 to 35,000 acres. Actually treated 29,000 (26,000 cut and sheared, 3,000 burned, 500 herbicided) for $411,000. Last year we treated a lot of low quality stands. This year we anticipate a problem with our foresters because we will have to ask for better stuff to meet our goals. Our goal for next year is to treat 40,000 to 50,000 acres. We don't want to waste wood, and scheduling sales on these acres will be difficult.

Our ten-year program calls for a million deer. Land ownership patterns are a major obstacle to achieving this goal. We are also experiencing some public backlash to the massive land treatment. We sometimes get reaction to a 40-acre clearcut. Our R&D people have cleared 75% of a ¼ township as part of their demonstration. When you do this, man, you get letters! When they understand what you're doing, you get better acceptance.

Q: How is your work (openings) spaced?

A: We plan small openings of 1-5 acres near wintering areas. Where we have a chance, we prefer south and east exposures.

Q: Do you include rights-of-way as part of your openings requirement?

A: No. We want them in addition to. R/W traverse too many non-productive habitat types.

Q: How large are your treatment areas?

A: From a few to as many as 1600 acres for some machine operations.

Q: What involvement do your foresters have?

A: We have some differences of opinion. Wildlifer proposes and seeks approval of Forester, District staff, Regional staff and then Lansing. Differences of opinion are negotiated.

Q: How much fire is used?

A: Only 3,000 acres burned. Most is done by a D-7 equivalent. We'd like to burn more to reduce esthetic problems. Fire personnel support our ideas quite well.

Q: What concessions are being made for ruffed grouse?

A: Chief says spend money for deer. At field level, its difficult to separate benefits.

Q: What is impact on allowable cut?

A: From my standpoint, negligible. Allowable cut (volume) varies with rotation length and utilization standards. Our industry is moving rapidly toward whole tree chipping and shorter rotations. Chipper moves in, mows her down and spits it out, blood, guts, feathers and all. They've doubled their yield.

Arnold (Mich). Be sure to distinguish between our research project and our management programs. "Big cuts" are research. "Routine" effort is scattered over bulk of northern counties. Most fiber is being taken commercially.

Q: What has been the response of deer?

A: Don't know yet. Research is documenting social, plant and animal responses through hunter checks, plant collections, deer population measures, etc.

Q: Do you still feel that a goal of a million deer is attainable?

A: We use it as a goal. Lets go for it. We have major obstacles: human population growth, highways, developments, etc. We have technical capability, but too many humans.

Q: Wouldn't it be wiser to broaden scope to multiple value objectives?

A: Yes. But, deer hunter is footing bill. We have to tell him its being spent for deer habitat. Recently $81,000 was earmarked for RG. However, separation of benefits is difficult.

Q: What herbicides are you using?

A: TORDON, selectively applied in openings.

Q: How much must deer herd be increased to reach million?

A: Double.

MINNESOTA: by Henry Wulf: Our program and goals are similar to Michigan. In 1969, $250,000 were earmarked for habitat work. We now are receiving only $100,000 per year from legislature. First years' funds were spent largely for equipment and planning. Work is focused in priority ¼ townships.

Habitat work has been accomplished by a variety of methods (acreages are for whole state, costs are from my region): Game timber sales (29 projects) 2,000 ac. @$0, Bulldozer (37) 1,600 A. @$22.46, Rome KG (48) 3,100 Ac. @$23.25, Letro tree crusher (7) 1,000 Ac. @$27.45, Hand cutting (17) 632 Ac., Chemical (2) 34 Ac. @$6.40, Burning (9) 1,300 Ac. @$4.25. Other activities included firebreaks and access construction. These average costs are contract or direct charges to the fund. The Fiscal 1973 expenditures and programs were similar to 1972.

Q: What is the function of your road construction?

A: Primarily timber access to entice sales.

Q: What is maximum size of your treatment areas?

A: About 200 acres in strips and blocks.

Q: What reproductive response have you noted when using tree crusher?

A: Regeneration following shearing is better.

Q: What is your treatment goal?

A: We hope to treat 10% of 30,000 square miles. (!)

ONTARIO: by John Ludwig: We're mainly concerned with winter range. Our program has been in operation since 1962, big since 1967. Most work has been hand-cutting 1/10 to 1/4 acre "holes" for browse production, costs run $50 to $60 per acre. We cut 6,000 acres in 1971-72 and believe we affected 200,000 acres. Annual funding is $300,000 ($100,000 from ARDA for seasonally unemployed, and $200,000 from Ministry). There are no ear-marked funds.

We have no summer range program as such. We seed log landings and the practice looks promising.

In the past, we had a moratorium on hemlock cutting. Now we emphasize conifer release and creating new hemlock cover. We're beginning our second cutting on the browse production plots and it looks as good or better than the first cutting and costs less money. We burned 3,000-4,000 acres as postsale treatment. Recently we've been breaking trails in snow for deer in the northern extremities of our deer range.

Q: Do you use snowmobiles to break trails?

A: No. Snow is too deep and soft. We use skidders.

Q: W. Ontario timber companies are having a big impact on habitat. Are you involved with them in coordinating habitat practices?

A: No. Industrial activity has improved habitat. Generally speaking, we have our best deer densities there.

Q: Aren't they leaving aspen in preference for other species?

A: Yes, because of the market situation.

Q: Aren't you concerned about aspen?

A: Previously we couldn't sell it. Now, chippers are starting to move it and within 5-10 years, situation will be better. We aren't too concerned because demand for ruffed grouse is low.

Q: What is the age-class of most of your aspen?

A: Tremendously varied.

Byelich (Mich.): Foresters say they do more wildlife management by accident. True. Project 400,000 acres cut in the Lake States. It'll be a long time before deliberate wildlife management approaches that. Our big contribution now is to promote sales and small cuts.

Q: Are all your 1/10-1/4 acre cuts clearcut?

A: Yes. Second cutting requires only a clippers for 1" DBH stuff.

U. S. FOREST SERVICE: by Don Hagar: Our program is accomplished primarily through coordination with timber management and state agencies. Very little wildlife money is available. Our objective is to provide a diversity of types and ages in all compartments (500-1,000 acres) that will favor the whole complement of resident wild animals. Diversity is the key to maintaining a healthy wildlife community. We've inherited a very homogenious habitat in the Lake States and, therefore, have a great opportunity to work.

Q. to Mathison (Chippewa N. F.): What percent increase in game could be anticipated on USFS land with good game management?

A: Wild guess would be 25-30% if we had free hand.

Gullion: Anything less than 300-400% for RG isn't worth considering! (laugh).

Q: Are foresters receptive to biologists suggestions?

A: Generally, yes. They recognize broader needs from land.

Gullion: All-age management in New England is systematically managing game out of existence. We must support the forest managers practice of clearcutting.

Siderits (Superior N.F.): The biologists role is increasing on our forest. Our goals are expressed as optimums with thought than anything less might be acceptable. We're doing a fair amount of burning. We don't have a big openings program because it is too expensive. We do have about 5,000 acres of old camps and towns that will be maintained. We feel we get same result (openings) through cutting.

Ed Frank (Wisconsin): Will all USFS land be managed for maximum diversity or each compartment? If so, effect on wildlife and overall impact scares me.

Stockton (Ottawa N.F.): Only 25-35% of our forests are productive habitat. I don't see any risk. Our best is so poor that any change is good.

Keener (Wisconsin): USFS policy on "complete diversity" sounds good, but from a practical forest management standpoint, is this the way to go? If major thrust is deer and RG, we'll miss the boat.

Stockton: I recognize that if you continue to divide a checkerboard, you end up with a monotony of gray. USFS wants to maintain integrity of existing habitat, and this won't be gray.

Martoglio (Nicolet N.F.): We're not sure what to put in our plans. We're in a stage of "biological desparation". Past decisions came too late. Aspen acres were lost. Intensive management tends to become exhorbitant fixed costs (maintenance). Coordination with TM (extensive management) has to be our course.

WISCONSIN by Arlyn Loomans: Our program is geared to maintenance of habitats and populations. We began in 1969 working on time-specific priorities (aspen and openings). Yard work and hardwood thinnings received low priority because type acreage was not decreasing, hence, the opportunity to do this type of work was not time-specific.

Work is directed at "critical stands" necessary on each ¼-township to maintain diversity. As our capability and funding increased, we integrated more winter yard work. Currently we have a 3-pronged program: Aspen, openings, and yards. Current annual funding is $500,000.

Our ten-year goal is to treat (post-sale) 127,000 acres of aspen for $2,400,000 maintain 16,000 openings for $350,000, and develop 213 yard plans for $1,524,000, plus work on the National Forests.

Q: What TM practices are being done to favor deer.

A: In the North Central District (10 counties), all aspen on public land will be sold commercially. We'll treat all stands wherever residual threatens future aspen stands. We're using five methods of post-sale treatment. Most has been done mechanically (KG), but increasing amounts of work are being accomplished by hand and by combining post-sale requirements with the timber sale contract. Allowances are made on stumpage cost based on a presale estimate of residual BA.

The openings program is growing fast with almost 2,000 treated this year in my district. We currently have about 2% openings and are moving now toward creation. We plan to create 300 openings next year in my district.

Yard plans call for increasing browse from tops. Plans prescribe (1) small sales, (2) distributed cuts, and (3) timing of cuts to coincide with deer need.

Q: How do you plan sustained yield of browse production?

A: Plans depend on yard capability. You have to work with what is there. We plan heavily on tops. We aren't depending heavily on regrowth in cut "openings". We don't expect miracles from WR management. Only ¼ of our yards are on public land. The recent winters have demonstrated that they'll still kill deer even in managed yards. Our program will have greatest impact in moderate winters.

Q: What is practice with pines in your treatment areas?

A: We leave pines and big oak, partly because of size and cost of knocking them over.

Q: What is minimum BA that you treat?

A: About 30 square feet or 15% canopy coverage depending on the composition of residual.

Q: How do you relate amount of WR work to needs of deer?

A: We don't worry about fine details. We want an action plan based on the capability and opportunities available in each yard.

Q: Describe your typical yard.

A: Upland balsam more often than mixed conifer swamp.

Q: Have you computed a benefit:cost ratio?

A: Yes. Our "primary benefits" considering only aspen, deer, and RG are $1.14:$1.00. "Total benefits" for same three products are $1.26:$1.00.

Keener: Our economist made a strong point that forest management needs wildlife to justify their program economically.

Gullion: We can produce RG where we decide to. Many acres are unsuitable. Don't bother when more than ½ mile from road, its northern hardwood, good jack, or red pine site, or in BWCA. If it's good aspen land, lets manage RG. Good aspen management will not be a monotype. We aren't that efficient. But, anything less than a breeding pair of RG per 10 acres is a marginal population.

Wiita: Wisconsin's maintenance program shouldn't scare anybody. We're not making major changes on the landscape, and our foresters are with us on this program.

GREAT LAKES DEER GROUP - Tuesday afternoon

Bill Creed, Moderator

1972 HUNTING SEASON REPORTS, 1973 PROSPECTS

MINNESOTA by Pat Karns: Through the closure of the 1971 deer season, the Minnesota Department of Natural Resources gained authority to set their deer season any time between November 1 and December 15. This authority will have to be renewed in 1974. Their basic objective now is to put quality back into deer hunting, primarily by spreading out hunting pressure.

The 1972 deer season was set up so that in most of the state hunters could choose to hunt either any 3 consecutive days during the first 15 days of the season, or any 5 consecutive days during the last 15 days. Dates were punched on the hunter's license. The agricultural area had its normal 1-day season.

This system seemed to be a success and hunters liked it. A total of 259,000 hunters participated in the season, and there were never more than 57,000 hunters (less than 2 per square mile) in the woods on any given day. Hunters choosing to hunt during the first half of the season hunted on the average 2.4 days, and those hunting the last half of the season hunted on the average 4.1 days. The new season structure provided 125,000 more man-days of recreation.

Minnesota started a registration program in 1972, and 73,448 deer were registered at cooperative stations. Seventy percent of the deer were harvested during the first half of the season and 30 percent in the second half. Overall hunting success was 28%, and daily success ranged between 3% and 16%.

Deer teeth were collected and aged by the cementum technique. This indicated a shortage of young deer.

Minnesota's 1973 deer season will be modified even more. Their pellet survey showed fewer than 10 deer per square mile in some of the prime deer range, and therefore they will have an 18-day bucks-only season in the east central part of the state. Hunters choosing to hunt in this area will not be allowed to hunt elsewhere. A dead deer check will be conducted in this area after the season. The agricultural region will have its normal 1-day season. In the remainder of the state, hunters can choose to hunt either 2 consecutive days between November 1 and 5, or 3 consecutive days between November 6 and 15, or 5 consecutive days between November 16 and 30.

ONTARIO by John Ludwig: Ontario's 1972 deer season ranged from 3 days in the southern and southeastern portions of the province to 2½ months in the northern and northwestern portions. A total of 86,000 hunters took 17,258 deer of either sex for a 20% success rate. This represented a 5% increase in hunting pressure and an 11% decrease in the kill. Success was highest in the northwestern part of the province. There was no more than a 2% difference in success between hunters using dogs and other hunters.

The south-southwestern part of the province had no gun season but a 30-day archery season. In that hunt, 800 hunters took 30 deer.

Ontario expects another increase in hunting pressure in their 1973 season. The gun season will be similar to that of 1972, but the archery season will be expanded. There is public pressure for a buck season, outlawing the use of dogs, and closing hunting to non-residents.

MICHIGAN by Dave Arnold: Michigan's 1972 deer season produced the lowest kill since 1944 and the happiest hunters since 1921. It was a traditional November 15 to 30 statewide gun season, but regulations were geared to increase the deer herd. The U. P. had a buck season, there were very conservative quotas in the northern part of the L. P., and modest quotas in the agricultural area. According to the mail survey, hunters killed 55,750 deer for an 11% success rate. Archers bagged 3,660 deer.

Michigan expects to kill 65,000 to 70,000 deer in 1973, including about 11,000 antlerless deer and 55,000 to 65,000 bucks. They will have another conservative antlerless harvest in the northern L. P. because the herd is showing signs of recovery. They recommended a very conservative antlerless harvest of 3,500 for the U. P., but the bill was vetoed.

WISCONSIN by Frank Haberland: Wisconsin's 1972 deer season was set up as follows: a basic 9-day buck season with approved numbers of quotas over most of the state; a 4 or 5-day either-sex season in the extreme southern portion of the state; and a 2 or 4-day either-sex season followed by a 7 or 5-day buck season in the remainder of the state. With this season, 517,724 hunters (a record high) shot 74,827 deer including 50,000 bucks. The either-sex zones comprised 19% of the total kill and 39% of the antlerless kill. The northern third of the state, which 35 years ago contributed 90% of the kill, comprised only 19% of the state kill. Less than 1,000 quota deer were taken in this area. Sixty percent of the kill came from the central and southern quota areas.

A total of 98,720 archers participated in the 1972 hunt killing 7,087 deer. This was the second highest archery kill in history, and it is expected that 1973 will produce a new record high. Wisconsin is still the number 1 archery state in the nation.

The DNR recommended a take of 24,025 quota deer for 1973 which would have produced a total kill of 85,000 to 90,000. But, the Conservation Congress and the Natural Resources Board approved only 16,650 quotas, and this will reduce the total harvest to around 80,000 animals. If the 1973-74 winter is mild, Wisconsin's 1974 harvest should approach 100,000 deer.

HABITAT EVALUATIONS BY TRAIL COUNTS - Keith McCaffery, Wis. DNR

The use of deer trail surveys as a census and habitat-evaluation technique was explained. Trail survey lay-out in Wisconsin was expedited by a pre-existing pellet survey design. Fifty random ¼-mile transects were examined per area sampled. Transects were run in the woods, usually beginning from a roadside. Trails were tallied and the dominant forest overstory recorded at 4-chain intervals along the transect.

Results from 20 surveys when correlated with buck kills produced a highly significant ($P<0.01$) coefficient of 0.91. A similar analysis of 13 units where pellet survey results were available resulted in $r = 0.94$. Sex-age-kill population estimates were available from 14 of the areas surveyed. The correlation coefficient with these estimates was 0.96. These analyses indicated a highly significant relationship between trail abundance and deer densities.

Trail abundance was also shown to be closely related to the amount of intolerant forest types (aspen, oak, openings, etc.) in the areas surveyed ($r = 0.88$, $P<0.01$). Large differences in deer densities (trail abundance) were shown for individual forest types. Aspen mixed with jackpine and/or scrub oak had the highest number of trails. Types mixed or dominated by maple had the lowest values indicating densities lower than 10 deer per square mile.

Type values were applied to National Forest inventory statistics. A "carrying capacity" of 21.0 deer per square mile was calculated for the type composition existing in 1955. This value declined to 17.6 by 1965. A projection of forest type trends (management and succession) indicated a 1980 expectation of 13.8 deer per square mile. By "positive practices" (aspen and opening maintenance), the 1980 expectation was increased to 15.5. A benefit/cost analysis comparing habitat management costs with only fiber and game benefits of the habitat program were $1.27/$1.00. Other ecological and esthetic benefits were not included.

WINTER SEVERITY MEASUREMENTS; IMPACT ON DEER POPULATIONS AND HARVESTS

MICHIGAN by Lou Verme (Panel Chairman): Michigan has measured winter severity for 10 years. Their measurements incorporate a wind chill factor, determined by using calorimeters, and a snow hazard factor which includes both depth and crust. Measurements are taken at 10 stations in the U. P. and 4 in the L. P. They feel that these measurements have had important public relations values.

The severity index for the first and fifth winter months correlated better with subsequent production and survival than did the index for all winter months. Index values for the U. P. were as follows:

Year	1st + 5th Month Index	Entire Winter Index
1968	21.0	103.2
1969	30.3	111.2
1970	29.3	120.4
1971	34.9	135.5
1972	36.1	140.7
1973	28.7	37.7

There was a strong relationship between these index values and subsequent fawn survival as predicted by measuring fetuses from late winter mortalities. Condition of the does was rated using a fat index. The severity index also correlated well with kill rates of fawns per does 2½ years old and older. This kill ratio dropped from 1.22 in 1968 to 0.3 in 1971.

Michigan has found that permit hunters shoot a higher rate of yearling bucks than regular buck hunters. Lou predicted a kill of 6,000 bucks in the U. P. in 1973 (down from 1972), and that yearling percentages would drop from 40% in 1972 to 33% in 1973 because of low recruitment following the 1972 winter.

MINNESOTA by Pat Karns: Minnesota measures winter severity using methods similar to Michigan's. The 10,000 square mile Itasca Management Unit was used as an example to illustrate the good correlations they get between their severity index and the deer kill per 100 square miles, and overwinter mortality found in conjunction with pellet counts.

ONTARIO by John Ludwig: Ontario is presently working up its winter severity data which is measured using Michigan's system. Recent weather patterns have followed the same trends as in the rest of the Lake States. Ontario's Kenora Region has had less severe winters during this period, and the kill has held up better.

Ontario feels that their yard habitat work has had some effect on overwinter survival of deer. In 1960, they experienced a 40% winter mortality. In 1971, this was down to 13%. Few dead deer were reported for the 1972-73 winter.

WISCONSIN by Bruce Kohn: Wisconsin calculates its winter severity index by adding up the number of days with 18 or more inches of snow on the ground and the number of days below zero between December 1 and April 30. Data are obtained from U. S. Department of Commerce stations. If the index value is 50 or less, the winter is considered "mild", if it falls between 50 and 80, it is considered "moderate", and values over 80 are considered "severe".

Wisconsin's northern deer herd declined by ½ between 1965 and 1972 due to the frequency of severe winters (5 out of 8). Numbers of dead deer found in conjunction with pellet surveys corresponded well with the severity index. Basically, Wisconsin loses around 10% of its winter population in "mild" winters, 10% to 15% in "moderate" winters, and 20% to 25% in "severe" winters. Production also correlated well with the severity index.

Buck kill trends in 8 areas were related to the average winter severity experienced since 1965. In spite of differences in habitat quality, intensity of harvest, etc., buck kill trends correlated strongly with winter severity patterns. Evidently, this winters during this period were so severe that they completely overwhelmed the impact of these other variables.

RUFFED GROUSE WORKSHOP - Tuesday afternoon

Jack Moulton, Moderator

STATUS OF GROUSE POPULATIONS AND HARVESTS

MINNESOTA by Gordon W. Gullion, Univ. of Minnesota: Statewide kill (based on hunter report card issued with license):

Year	Kill
1970	880,000
1971	1,300,000
1972	900,000

Result Of Hunter Postcard Survey (200 hunters)

Year	Flushes Per Hour	Flushes Per Trip	Kill Per Trip	Kill Per Hour	Percent of Trips With Grouse Flushes	Percent of Trips With Flushes But No Kills
1969	1.1	8.7	1.04	0.31	96	16.5
1970	1.3	10.5	1.29	0.39	97	12.4
1971	1.7	11.7	1.45	0.46	95	10.9
1972	1.0	8.7	1.04	0.30	90	15.4

MICHIGAN by Douglas Whitcomb, Dept. of Nat. Resources: Forecast of 1973 season based on impressions of district biologists:

a) Western UP - decline in 1972, expect drastic decline in 1973.
b) Eastern UP - increased kill in 1972; expect better year in 1973.
c) Region II (northern lower peninsula) - good season in 1972; similar season in 1973.
d) Region III (lower half of lower peninsula) - little change from 1972 to 1973. Populations appear stable in this region.

Statewide and Regional Harvest (derived from postcard questionnaire with followup mailings)

	Region			
Year	I	II	III	Statewide
1969				295,000
1970				433,000
1971	276,000	176,000	87,000	538,000
1972				536,000

Flushing rates derived from cooperator questionnaires (number of grouse seen or heard per hour of hunting)

	Region		
Year	I	II	III
1969	0.89	1.46	1.54
1970	1.62	----	1.76
1971	1.87	----	2.30
1972	1.58	----	2.60

ONTARIO by David Lawton, Min. of Nat. Resources:

Trends in NW Ontario (north and west from Algonquin Park) As Reported by Provincial Personnel

Year	NW Ontario
1967	Increasing Kill
1968	Increasing Kill
1969	Increasing Kill
1970	Increasing Kill
1971	Declining Kill
1972	Drastic Decline in Kill

Population peak occurred during 1968 and 1969.

A supplemental population index was also derived from summer road counts.

Miles Driven Per Ruffed Grouse Seen (Provincial personnel - 500,000 miles yr.)

	Region		
Year	NW	EC	SW
1971	90	107	No Data
1972	143	94	No Data
1973	286	80	No Data

Hunter return cards are also used in Ontario. In 1967, hunters reported 60 grouse bagged per 100 man-hours in northwest Ontario; 20 grouse per 100 hours in southeast Ontario.

ALBERTA by Don Rusch, Univ. of Wisconsin: There is no province-wide system used to estimate ruffed grouse harvest. However, on the basis of study area trends, provincial harvest should be way down in 1973.

Grouse and Hare Density Determined By Using King Census on 12 Areas (150 sq. mi.)

Year	Hares/sq. mi.	Grouse/sq./mi.
1969	560	103
1970	1,680	142
1971	1,970	136
1972	820	52
1973	420	32

MANITOBA by Don Rusch: The system used before 1967 required mandatory reporting of grouse bagged. This was replaced by volunteer postcard survey with 5 - 10% sample of small game hunters.

Harvest Trends Based On Postcard Poll

Year	Kill
1969	146,000
1970	150,000
1971	110,000
1972	42,000

Results From Highway Bag Check Station

Year	Grouse Bagged	Number Hunters	Grouse Per Hunter	Percent Young Birds
1970	1,700	2,774	0.62	66
1971	895	1,100	0.81	66
1972	117	1,097	0.11	66

Results Of King Census Survey On Study Area (Grouse Per Sq. Mile)

Year	Month		
	May	September	December
1970	80	190	----
1971	73	92	29
1972	9	9	5
1973	3	No Data	No Data

WISCONSIN by Jack Moulton: Statewide harvests were estimated from 1931 through 1972 by questionnaire poll. Peaks in kill occurred in 1933, 1942, 1953, and 1971. Approximately a million grouse were harvested each year from 1970 through 1972.

Survey systems in Wisconsin indicate a drastic decline in 1973 harvest.

1. Roadside Drumming Count: We have found a highly significant correlation between drums/transect and subsequent grouse harvest, statewide, and in northern Wisconsin. Drums/transect in 1973 showed a 33% decline, statewide and a 43% decline in the North.

2. Brood Counts: Population trends are estimated by the number of grouse broods observed by DNR fieldmen during a ten-week period in summer. Survey was initiated in 1970. Broods/observer showed: a) 39% decline, statewide; b) 61% decline in north central district; and c) 62% decline in northwest district.

3. Study Area Counts: Surveys on the Sandhill Wildlife Area in Wood County showed a 73% decline in number of drumming males (3,400 Ac. study tract). The Stone Lake Area in Oneida County 4,000 a.) showed a 48% decline in number of drumming males. In both study areas, drumming cock populations have declined to 1969 densities.

4. Field Reports: Reports from game managers generally confirm other survey results. Reports indicated that extreme southwest and northeast Wisconsin populations remained relatively stable during this year of general decline in grouse density.

RUFFED GROUSE SOCIETY OF NORTH AMERICA

Dan Ryan, President, Wisconsin Cahpter, RGSNA.

The RGSNA originated from a small group of dedicated grouse hunters in New York state. Chapters have recently spread throughout the eastern grouse states and Lakes States. There are now approximately 3,500 members. These members are primarily grouse and woodcock hunters who are concerned with management and research of these species. Current emphasis is directed to better management of privately-owned forests.

The Wisconsin Chapter has approximately 350 members. The Chapter has two primary objectives. The first is to communicate research and sound management principles to the public. The Chapter plans to continue working with and through the Conservation Congress. A major victory was scored when the RGSNA was instrumental in gaining public acceptance for an extended ruffed grouse hunting season in Wisconsin. The second objective is to encourage private landowners to manage aspen on their lands. Management recommendations include maintenance and interspersion of aspen age classes. The RGSNA is also attempting to establish demonstration areas in various regions of Wisconsin.

GROUSE DECLINE, 1972-73; EXTENT AND REASONS - G. W. Gullion (Panel Chairman)

John Kubisiak (Wis.) emphasized that a greater decline in drumming cocks occurred at Sandhill than in other portions of Wisconsin. The percent decline of drumming cocks was similar in excellent as well as poor habitats. John attributed the decline at Sandhill to poor winter conditions, especially the frequent rainfalls. During coverage of the entire study area in early February, observers flushed approximately 50 grouse in comparison to previous searches in other years which yielded approximately 300 flushes.

Don Rusch (UW-Wis.) attributed the grouse decline to predation. He cited David Lack's hypothesis which had been previously refuted by Hoffman and Keith. After work in Alberta, Keith now supports Lack's hypothesis. It links snowshoe hares, browse supply, predators, and ruffed grouse. Snowshoe hares increase beyond what their food supply can support. The hares eliminate much of their food supply which triggers the hare decline. Simultaneously, during the hare build-up, (109-2,000/sq. mi.) the predator populations have also increased. As the hares start declining, the predators accelerate the decrease by continuing to prey heavily on hares. Predators then begin to shift more of their diet to ruffed grouse. Major predators associated with grouse mortality are goshawks and horned owls. These are very mobile predators that shift their ranges when prey becomes scarce. This may account for the grouse population drop occurring first in western Canada and moving generally east.

Jim Bendell (U. Toronto) stated arguments in opposition to Keith's hypothesis. He felt the triangle of hares, raptors, and grouse was not valid but merely correlative. He emphasized that predation is probably not the cause of a grouse decline, but that predation is symptomatic of some other factor of the ecosystem.

Rusch emphasized that the theory of predation and grouse declines is probably not a direct cause and effect relationship. Most mortality, however, appears to result from predation. Much of it occurs during July and August. He reported 42 grouse remains at red-tail hawk nests and remains of 25 at marsh hawk nests on the Alberta study area. He also noted that lynx and coyotes breed, but young animals are not introduced into the predator population during years of low prey numbers.

Gullion attributed the grouse decline to poor winter weather (temperature, snow conditions) for grouse and a scarcity of winter food. He emphasized that snow conditions which would not allow birds to snow-roost have an impact on productivity as well as winter mortality. Last winter, he recorded 70% mortality compared to a previously consistent 55% over-winter mortality. An unusual ingress of northern raptors may accentuate the grouse decline.

Hens surviving winter in poor condition produce lighter weight chicks. These chicks are small as adults. They are less likely to establish log territories and may be ousted by birds hatched in more favorable years.

Relative Population Trends On Two Study Areas Illustrates Impact of Hunting Mortality.

Year	Refuge	Hunted
1967	36	42
1968	50	46
1969	51	54
1970	72	84
1971	95	94
1972	100	100
1973	77	54

As grouse numbers increase, a higher percent of the population is composed of non-drummers. However, fewer non-drummers are found in hunted populations because these more mobile birds are more likely to be harvested. The grouse decline at Cloquet was greater in the poorer habitats. Grouse density in the best quality habitat declined the least. Trends in numbers of drumming males looked like:

Gullion also stressed the importance of availability of aspen food. He expressed availability as "Relative Productivity Index" (RPI). The poorest RPI occurred in 1971-72 in conjunction with excellent snow conditions.

RG Survival Relative To RPI

Year	RPI	% Survival (over winter) Juveniles	Adults
1966-67	253	35	45
	103	40	47
	75	29	47
	272	54	60
	129	38	51
	56	31	49
	75	7	30

Gullion noted that the fox density near his study area seemed stable. He also reported that Dan Huff (U. Minn.) determined aspen twig and bud material to be equally nutritious for ruffed grouse.

JOINT SESSION - Tuesday Evening

Keith McCaffery, Moderator

CHIPPEWA NATIONAL FOREST OPENINGS PROGRAM by John Mathison: John presented a slide-show with sound-track illustrating the wildlife openings program which has been implemented on the forest. The presentation was well received. Definitions and specifications used in his openings program conformed closely to those used by Wisconsin DNR.

SNOWMOBILES AND DEER by Orrin Rongstad (Univ. Wis.): Orrin reported on his study of deer movements in relation to snowmobiles. Deer were radio-tagged and monitored during periods with and without snowmobile activity. Specified numbers of snowmobiles traversed established trails while deer movements were recorded. Preliminary results suggest snowmobile noise has little impact on deer once they were out-of-sight of the machines.

JOINT FIELD TOUR - Wednesday

Phill Vanderschaegen, Guide

The tour group first heard a talk by Ralph Hewett, Forester on the Northern Highland-American Legion State Forest. Ralph discussed modifications of timber sales to benefit game and aesthetics, i.e. smaller clear cuts and reserve strips along roads and streams, and corridors through large clear cuts. Benefits of reserve strips include: breaking up the line of sight, providing more edge effect and travel lanes free of slash, preservation of some of the shrub layer, preserving grouse budding trees, etc. He noted that the forester proposes the area to be cut, then notifies the game manager who reviews the sale, and makes his suggestions.

Ralph pointed out some restrictions which are placed on the logger which help game. These include: winter cutting in yard areas, completely cutting one zone before starting another, no cutting of cedar and hemlock, no-cut strips around openings and roads, etc.

The main point of his talk was the degree of cooperation between foresters and game managers. As a result of this cooperation, wildlife is receiving greater benefits from timber management on the State Forest.

The majority of the group (60 persons) then toured the area to look at game habitat work. The first part of the tour was through the Cassian-Woodboro block of the Oneida County Forest. Numerous hunter walking trails were seen and the group stopped at a large aspen treatment (KG-sheared) area. During this stop, aspen maintenance on the County Forest was discussed. It was pointed out that Oneida County has had much cutting activity over the past few years, both on public and private (paper company) lands -- this large scale cutting did little to prevent the drop in deer numbers caused by the series of bad winters.

From the County Forest, the group moved into the Northern Highland-American Legion State Forest. The first stop here was at a 10 acre forest opening on private land. This opening illustrated typical vegetation on medium textured soil: much exotic grasses (Phleom. Poa, etc.). A good amount of deer sign was present in the opening.

Despite an aspen perimeter, the edge of the opening was fairly stable--only a minimum amount of maintenance would be required. The main purpose of this stop was to contrast vegetative composition with that in openings on the State Forest.

The next stop was at two openings on the State Forest that had been recently treated with TORDON 10K. Keith McCaffery discussed vegetative composition and the effect of TORDON on broadleaved herbs. Costs, application methods, effectiveness, etc. of treatment with TORDON were discussed. At a later stop, application of TORDON 10K pellets was demonstrated.

After lunch, aspen treatment areas were examined. Arlyn Loomans, Game Staff Specialist, WDNR North Central District, discussed post sale treatments including KG and hand work -- costs, results, etc. The group looked at an area that had been treated with a KG blade in 1965. This area was heavily browsed by deer during the two years after treatment; in spite of this heavy browsing pressure, the stand now shows good stem density and growth.

At the conclusion of the tour, Keith McCaffery and Bruce Kohn demonstrated their trail count technique to some of the group.

JOINT SESSION - Wednesday afternoon and evening

Notes from Terry Valen

ASPEN AND GROUSE RELATIONSHIPS by Gordon Gullion:

Slash is detrimental for 3-4 years but there may be no alternative. Good aspen sucker growth is 8' first summer and 15' the second.

Drumming males (6/40 acres is good) will use K.G. site after 4 years or so. Males use areas of good stem densities for drumming sites. They need the relative security these areas afford. Aspen stands at 10 years are high quality - 3000 stems/acre, 1 pair/6 acres.

25 year old aspen is good nesting habitat - less than 2000 stems/acre (too open for breeding habitat). However, this age class (25-40 years) is also the main food source.

Feeding time is much shorter (15-20 min.) in aspen than in hazel or birch. 90-100 grams of food eaten in this time (the equivalent of a 150 lb. man consuming 27 lbs. of food!)

Use of aspen buds started in late October and continued until catkins elongate and begin dropping in late winter or early spring.

Uprooting trees provides poor aspen regeneration and poor habitat. Stem density is the critical factor. Aspen must be cut - not girdled. Girdling kills root system.

Young aspen shoots retain green leaves three weeks longer in fall - very heavy grouse use in these pockets.

When only a few old aspen remain in an area, cut old aspen and all other woody stems for 1 chain around to allow sunlight to reach forest floor (cut back more than one chain on south side). Regeneration

will reach out 50-60 feet from parent tree.

Suckers are very susceptible to disturbance for 3-10 years. Physical damage may destroy stand. At 10 years, however, they are capable of producing their own suckers from well established root systems.

Seedling regeneration is uncommon in lake states except when there is enough moisture. Aspen seed germinates in June and July, when moisture is often lacking. Uncut aspen will put up suckers if sunlight hits the ground, but suckering is more prolific if the parent trees are cut.

RUFFED GROUSE WORKSHOP - Thursday morning

Jim Hale, Moderator

RUFFED GROUSE MANAGEMENT PROBLEMS AND RESEARCH NEEDS

Larry Martoglio (USFS-Nicolet) stressed the problems of accomplishing grouse habitat management on the national forests. Although land use planning is underway for national forests, the prospect for significant habitat management to benefit ruffed grouse is unlikely. Some of the major problems include budgets, goals, soil types, and conflicts with management of other species.

Jack Moulton (Wis.) emphasized habitat management to be the greatest problem in Wisconsin. Thus, habitat has been assigned the greatest research priority. Major studies have been underway at Sandhill and at Stone Lake to determine more precisely what kind of habitat is necessary and which techniques are most economical and efficient. To help sell more intensive habitat management, Moulton stressed that game managers need better documentation of grouse densities within various interspersions of aspen ages. More hard facts would help administrators weigh land-use alternatives. If the existing data from the Lake States were accumulated, a model could probably be developed. This idea met with favorable response.

Moulton also stressed that a good description and management technique for brood habitat is still lacking. Also lacking is regular coordination among Lake States researchers, and an emphasis on total systems studies. Considerable discussion revolved around coordination of data collection and re-interpretation of previously accumulated data.

Rusch (UW-Madison) emphasized less concern for fluctuation of grouse numbers and more concern for raising the mean level around which fluctuation occurs. Fluctuations in northern latitudes appear inevitable under any system of management.

Rusch also raised the question of overhunting ruffed grouse. He emphasized that the studies made 20 or more years ago experienced much less hunting pressure than presently occurs in the Lake States. Legal kills, illegal kills, and crippling loss must add up to a lot of birds. From a research standpoint, let harvest increase until there is an effect. From a management view, over-kill could destroy the public's attitude toward management. Rusch was also concerned that predicting the harvest might influence hunter effort. Other researchers felt hunting effort was not influenced by DNR predictions, but by the experience of the hunters, themselves.

Hale emphasized that we need to know more about resource users. Who are they? What do they want, etc.? What non-game species are we benefiting through research and habitat management? The future of hunting, as we know it, may depend upon how well we communicate our accomplishments to the public.

REPORT OF THE GROUSE AND WOODCOCK BIOLOGY SYMPOSIUM, NEWCOMB, NEW YORK by G. W. Gullion: Gullion stressed the problems and the needs of ruffed grouse management in the eastern states. Habitat in these states has deteriorated, but the possibility for management still exists. Management would be much more intensive and usually not tied to commercial forest managements. Gullion felt that management for ruffed grouse in the Lake States was substantially ahead and setting a good pace for the eastern grouse states.

RESEARCH PROJECT SYNOPSIS

ALBERTA AND MANITOBA by Don Rusch: Since time was short, Rusch spoke only briefly. He felt these studies had been sufficiently covered in his previous presentations. Of particular interest were his comments that red-tailed hawks killed large numbers of ruffed grouse during the hare decline in Manitoba.

MINNESOTA by G. W. Gullion: Gullion described the Cloquet studies. Cloquet is managed for wood with no concession to ruffed grouse. On this area, the grouse population has been monitored through drumming males and trapping and marking of both adults and juveniles. The following studies have been carried out:

1. Food Habits: Aspen bud abundance, 1965-1973, and nutrient value of grouse foods.
2. Color phases.
3. Survival of grouse and use of logs in relation to forest cover.
4. Climatological studies.
5. Hunter effort and success (statewide).

The Mille Lacs study has been postponed because of lack of funds. There had been three years of population monitoring before management was initiated.

The Crow Wing study (20 years planned) will apply to management of private 40's as well as large, commercially managed tracts. Cutting will start in 1973, and will include a variety of shapes and acreages. 160 acres will be cut in strips, 120 acres in 10-acre blocks, 40 acres in 2½-acre blocks, and 40 acres in 1-acre blocks. Pretreatment distribution of grouse was established, and trapping and banding of grouse and weather measurements are proceeding at the same intensity as at Cloquet.

Gullion is also a project consultant in several, long-term habitat management studies in eastern states. There are studies in Maine, Massachusetts and two in Vermont. The possibility exists for an additional study in New York and another in Virginia. These studies are generally modeled after the Minnesota projects.

ONTARIO by David Lawton, Ministry of Nat. Resources: There are presently no provincial research projects on ruffed grouse. The

province, however, is writing policy statements for wildlife which could have profound effects upon habitat management. At the University of Guelph, Dr. A. L. E. Middleton is studying grouse nutrition.

NW MINNESOTA by Bill Berg, DNR: While managing habitat for sharptail grouse, Berg has also monitored the response of ruffed grouse to habitat management. Populations were monitored in burned and unburned habitat from 1963 through 1973. Despite the gross destruction of ruffed grouse habitat by burning, grouse density has fluctuated similarly in both areas.

MICHIGAN by Douglas Whitcomb, DNR: The effect of hunting ruffed grouse will be studied on the Grattiot-Saginaw study area by Andy Ammann. Because of funding, Michigan foresees no other grouse research in the near future.

WISCONSIN by Jack Moulton and John Kubisiak, DNR: Because of lack of time, the three Wisconsin studies were not discussed. However, research project outlines were distributed in which these projects were described. All of these studies involve habitat management.

Workshop participants agreed to consider meeting again in 1975. There was also agreement that a joint meeting with the Great Lakes Deer Group should again be arranged.

Adjournment

GREAT LAKES DEER GROUP - Thursday morning

Frank Haberland, Moderator

MINNESOTA PREDATOR ECOLOGY by Bob Chesness, DNR: The objective of this study is to determine how predators affect deer, with emphasis on coyote behavior and food habits. The study area is located in Northcentral Aitkin County, Minnesota.

Food Habits:

Winter Foods Of Coyotes (% Occurrence In 300 Stomachs)	
Deer (mostly carrion)	55%
Porcupine	25%
Hares	21%
Mice	15%

Summer foods, based on scat collections, showed fruits and mice to be most important.

In 225 miles of following tracks: 1 deer killed, plus 1 other likely, 8 grouse killed, and 1 porcupine. Coyotes were quite unsuccessful in catching hares in deep snow.

Average winter weights: Females 25 lbs.; Males 30 lbs. Sex ratio of 846 coyotes was 100:100.

Coyote home ranges (based on radio-equipped coyotes), Adult males: 15 sq. mi.; Adult females, 5 sq. mi., and Juvenile Males and Females, 4 sq. mi. Greatest 1-day movement was 6.3 miles; average linear movement per day was 2.5 miles.

Coyote groups: 60% travel alone, 35% in pairs, 5% as 3 or more together.

Trapping, car kills, and shooting have accounted for 85% of the mortality on marked coyotes.

Population density on the study area is 1-2 coyotes/sq. mile at high point in fall.

Bob is also marking some bobcats. Sernylan and spayine are used as tranquilizers.

MINNESOTA WOLF FILM: Bob Chesness and Pat Karns. Film showed managers and biologists working with timber wolves in northern Minnesota. The purpose of the film was to bring about better understanding by the public and legislature on the need for a wolf management plan.

20 YEARS OF DEER REGISTRATION IN WISCONSIN by Frank Haberland, DNR: In 1972 Wisconsin marked its 20-year anniversary of deer registration. In 1972, 420 stations were used, mostly gas stations, stores, and taverns. Cooperating stations are paid 10 cents per deer or $10.00 for the season, whichever is greater. Other details of the registration system were outlined.

Registration provides:

(a) Precise and indisputable kill figures for both counties and deer management units.
(b) Kill data for estimating deer populations through the sex-age-kill method.
(c) Large samples of deer for biological examinations, particularly deer ages.
(d) Valuable public contacts, with information flowing in both directions.

Overall, registration is considered the most important of all sources of deer information, and has become very routine for both the DNR and the hunting public.

"They like it, we like it, and we intend to stick with it".

COMPLETE REMOVAL OF AN ENCLOSED DEER HERD THROUGH CONTROLLED HUNTING by John F. Kubisiak, Wis. DNR: A controlled either-sex deer hunt was designed to remove all or most of the estimated 600 plus deer within the fenced 14½-square mile Sandhill Wildlife Area in central Wisconsin. Daily hunting pressure was closely regulated at 11-13 hunters per square mile of deer range (12.4 square miles). Although the hunt continued for the planned 44 days, hunters succeeded in bagging all the deer present by the 28th day of the hunt.

We accounted for 593 deer present at the beginning of the hunt. Hunters bagged 552 deer. An additional 38 unrecovered dead deer were located by post-hunt surveys, and 3 deer were known to escape. Ground and aerial searches from January through April confirmed that no deer survived.

Daily hunting success in relation to deer density showed a highly significant correlation ($P<0.01$). This was also true for deer seen per hour vs. deer density. Deviations were related to differences in hunting conditions, with precipitation having the greatest depressant effect.

Ages were determined by both tooth-wear and dental cementum techniques. Tooth-wear ages showed a high error rate for individual deer, but enough compensation occurred so that curves drawn from both techniques were similar.

Hunters were selective for adult deer early in the hunt. Bucks, particularly, were taken early, and fawns tended to be taken last.

Post-hunt surveys showed a minimum unrecovered loss rate of 6.4 percent, near the mean 6.6 percent rate measured during six previous any-deer hunts.

Further analyses of biological collections and hunter behavior are still in progress. Follow-up measurements are being made to determine vegetation response. Reintroduction of deer and subsequent hunts are planned to see whether an extended period of lower deer numbers will result in improved weights, antler development, and productivity.

BUSINESS MEETING

Considerable discussion was again directed to question on combining the Great Lakes Deer Group and Ruffed Grouse Workshop on a regular basis. Viewpoints were split, but most of the regular attendees favored separate meetings. Final decision was to leave the option to hold either separate or joint meetings to each host state or province.

Ontario will host the 1974 Deer Group Meeting. Each state should provide Ontario with a mailing list for meeting announcements. Send your lists to: John Ludwig, Wildlife Section, Ministry of Natural Resources, Whitney Block, Queens Park, Toronto, Ontario.

Adjournment