10th NORTH AMERICAN MOOSE WORKSHOP

Duluth, Minnesota

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Blood chemistries as an index of nutritional and disease status of cervids - U.S. Seal, Veterans Administration Hospital, St. Paul Minnesota.

- different immobilizing drugs have variable effects on blood chemistries
- when sampling, comparisons cannot be made from 1 season to another - when analyzing have to consider seasons
- different seasons and different activities have effects on various assays
- when interpreting one piece of data, it is essential to consider other variables acting i.e. with fox pups you have age, season and location variability. Thus, if you are comparing phosphorus and age, you have to consider the other 2.
- a sampling of thyroids from certain populations can give indication of what is going on - a large thyroid (80 gms.) is indication of lack of iodine in diet.
- 4380 requests for moose blood in 1971, 360 samples were given in - tremendous co-operation from hunters - no other feasible way to get this large a blood sample. (samples put in heparin contained in a vial)
- blood examined for total protein, albumen, gamma globulin, blood-urea nitrogen, testosterone (age, season and habitat - levels in October are high compared to December) - drop-off in adults in December, but in yearlings it remains higher in December than October
- women have monthly rhythms but until now no one thought such occurred in man - has found a monthly rhythm in man of serum testosterone
- testosterone level in deer is lowest in January and reaches a peak in October and November - close correlation with another cycle
- Seal feels that by not taking moose blood samples we are doing great disservice and placing a limiting factor on information that can come out.

Monitoring moose mineral metabolism via hair element analysis - Franzmann, Flynn and Arneson, Alaska

- difficult paper to understand due to presentation format
- examining seasonal variation with various elements except iron
- differences observed in some elements between winter killed animals and live ones
- the different elements peak at same time each year
- hoof overgrowth syndrome - a very extended or elongated hoof - showed photo of a hoof over 1 foot long
- suggests this hoof syndrome may be associated with a Cu deficiency

Problems in appraising reproduction in cervidae - Verme, Michigan

- summary of literature
- mortality of fawns tied to weight of these animals
- high utera productivity but low fawn crop in Manitoba (Ransom) and in Michigan.
- good physical condition increases productivity
- if a doe has nursed twins or a single fawn, she is in a high physiological state and goes into breeding season in poor condition
- those with fawns had low productivity
- those in prime physical condition would be the only ones to drop healthy young and raise them
- the lY factor controlling twinning rate is severe nutritional stresses
- prenatal loss of deer is low and doesn't seem to vary from 1 winter to next. The big loss is the natal loss at birth and is related to nutrition - in poorly conditioned does, the nutrients are such that the fawn is undernourished.
- in late spring, does suffer and foetus suffers
- if doe does not nurse in summer, there is a very high ovulation rate in fall (very interesting point)
- summer habitat may become critical for deer shortly in Michigan - lot of food available but low nutritional quality
- if fawn makes it through first couple of days, it is home free
- fawns (and adults) going into winter heavy, have greater chance of survival
- in summer deer are grazers, in winter browsers

Productivity of Moose in Newfoundland - Mercer

- difficult to understand
- presented aerial survey work and kill data

Reasons for the decline in Saskatchewan's moose population - MacLennan

- moose population has varied in last number of years
- since 1956, early 3 week season, 4 week break then late 4 week season
- peak in 1968 and 1969 - low point in 1973
- peak of hunters - 18,000 in 1971
- partial restrictions in 1972 and 1973
- transect method of aerial survey used in productive moose range south of Shield
- 1966-73, observer and pilot not changed
- collect jaws and reproductive tracts
- hunting questionnaires to 20% of hunting population
- one reason for decrease - excessive hunting pressure
- no bull/cow ratio less than 1 until 1971
- winter mortality - winter of 1971-72 was very bad and could have contributed to reduction
- snow depth, density and length of winter are important
- moose harvest in 60's was in balance with population and reproduction
- low success in fall 1972 could be attributed to severe winter of 1971-72 and death of moose
- common to see large number of yearlings breeding in Saskatchewan

Methods of aging and moose population analysis - Addison and Timmerman, Ontario

- talked of hypothetical model and then attempted to apply Thunder Bay data to it
- a very difficult and confusing talk - to comprehend, one must closely scrutinize paper

Aesthetic exploitation of moose: overlooked or unfeasible? - Thompson, Manitoba

- summarized literature in this field
- presented various provincial thoughts on the subject

Moose as a recreational resource: more than hunting - Lime

- wildlife management should be directed toward maximizing human benefits - consumptive and non-consumptive users
- non-consumptive aspects have been ignored to present
- he is not anti-hunting but feels we need both
    (1) many recreationists that find chance to encounter wildlife represents a unique opportunity
    (2) what can we as managers do to enhance the encounters between humans and wildlife
- recreational opportunity
    - tracking animals or seeing sign
    - evidence of browsing
    - sounds of animals
    - enjoyment of animals from books etc.
    - enjoyment people get from being in area where they know animals are but also knowing they have little chance of seeing them
- T.V. recently is picking up the non-consumptive use of wildlife
- eg. of demand - in Minnesota in 1973, 520 moose permits, 80,000 applied
- How can opportunities be made for people to view moose
    (1) increasing populations
    (2) don't minimize role of fire, predators etc.
        - an ecosystem approach is both feasible and desirable if this can be presented in laymen terms then it will be understood and accepted
- trails, roads etc. should be available to suit the desires of users
- supply taperecorder for people using trails with recording of what they will see or to look for
- tell people to turn radio to certain frequency and they will hear about animal
- observation platforms around licks etc.
- feels there is large mass of society just waiting for opportunity to observe wildlife in wild
- by giving moose more exposure, you are giving it more resource status
- in Washington, gov't has just implemented program for personalized

car license sales and revenue goes to wildlife
- animals don't have to be seen to be appreciated - there is a danger in making things too easy - part of appreciation is effort people put into it
- optimize rather than maximize

Moose habitat and fire in the presettlement ecosystem of northeastern Minnesota - Heinselman, Minnesota

- fire and logging are 2 widely separated discussion points
- fire is a major natural thing that recycles the ecosystem
- Aspen can sucker up to 100 feet
- inflow of phosphorus to lakes after fires and thus algae growths - this was minimal i.e. phosphorus imput
- caribou seemed to co-exist with fire - was no logging - what caused them to leave - P. tenuis?

Forage conditions and population trends in the cervids during 17 years of regeneration in a logged white spruce forest - Stelfox

- 17 years after logging, woody plant numbers were 3 times greater than in unlogged areas.
- scarifying helps woody plant growth compared to unscarified areas
- increase in browse supply was much greater than utilization

Production and utilization of paper birch at the Kenai moose research center - Oldenmeyer

- fire has had an important influence on moose in Kenai peninsula
- paper birch makes up 80% of browse used
- utilization measured by
    - % of plants browsed
    - % of twigs browsed
    - % of production by weight that is browsed

Aquatic feeding: its impact and importance - Belovsky, Cannon and Jordan

- up to about 1950, several crashes of moose population on Isle Royale
- at about this time, wolves arrived and there has been no crash since

then

- suspect moose feed on aquatic vegetation to get a high concentration of sodium
- summer intake of aquatic vegetation 1 day by a normal adult moose = 885 gms dry weight
    - intake of 4200 gms/day of leaves
- in aquatic feeding, moose prefer submerged vegetation to emergent vegetation
- cow intake more than bulls: 885 gms vs 750 gms/day
- suspect moose avoid water at cool temperatures to avoid negative energy balance
- as heat increases, moose tend to feed more on aquatics

Individual and seasonal variation in the diameter of browsed twigs by moose - Crete and Audy

- diameter of browse (D of B) can be used as a winter severity index
- as browse supply decreases, diameter of browse increases but, this can also go the other way - prefer 3 or 4 mm diameter but, this will increase or decrease with severity of winter and condition of browse

A trend survey of moose range using the Shafer twig count technique - Telfer

- animals primarily just browsed on the most recent years growth
- counted number of twigs browsed and then weighed recent years growth on unbrowsed twigs and then calculated production per stem

Geographical variation of moose predation - C. P. Filonov (Russia)

- 38% of moose perish from predators in north (38% of all losses of herd) (bears, wolves and wolverine)
- this is up to in excess of 50% in 1974
- losses fluctuate in different geographic zones
- large number of animals in certain areas drown - in some localities this is biggest mortality factor
- in some areas, large number killed by bears
- moose losses due to bears diminish as you proceed south (fewer bears)
- reduction of wolves caused an increase in number of moose killed by bears
- wolf is considered main limiting factor on moose populations