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THE THIRD INTERNATIONAL SCIENTIFIC CONGRESS IN FUR ANIMAL PRODUCTION, PARIS 1984. - AN INVITATION.

Summaries of reports given at the Second International Scientific Congress in Fur Animal Production:

GENETISCHE FORMELN FüR DIE FARBPHASEN BEIM NERZ. Nicolae Pastirnac.

SEDATION AND ANAESTHESIA OF MINK. INFLUENCE OF THE HAEMATOLOGICAL VALUES. Ø.R. Jepsen, J.S.D. Poulsen, G. Jørgensen.

DEPOSITION OF NUTRIENTS IN GROWING MINK RELATED TO FEEDING WITH SULPHURIC ACID PRESERVED FISH. N. Enggaard Hansen, N. Glem-Hansen.

HERD HEALTH MANAGEMENT IN MINK FARMS. J.S. Dirch Poulsen.

SOME ASPECTS CONCERNING THE CONTROL OF METABOLISM IN RANCH MINK IN THE G.D.R. - A CONTRIBUTION TO THE REDUCTION OF LOSSES DUE TO METABOLIC DISTURBANCES. Ulf D. Wenzel, H. Keil.

LECITHIN-ENRICHED VEGETABLE OILS IN MINK NUTRITION. J. Hertrampf.

Report from: 2nd Int. Scientific Congress.

NOTES

SCIENTIFUR

Vol. 4, No. 2, May 198o.

The gestation period is over. In the days 8-1o of April The Second International Scientific Congress in Fur Animal Production was born, and both the parents and all other participants in the ceremony were happy to conclude that the second baby in the family of international scientific congresses in fur animal production was as nice as the first one.

The success is in house, and we all agree that the time and the money was spent on one of the best investments. Hearing very valuable reports in nearly all aspects of fur animal production, getting close, personally, and friendly contacts to colleagues from the whole world and - what is very important for all scientists - got the feeling of interest in our particular matters from colleagues and the fur breeders, whom we are working for.

The gestation period for the mink in the Northern hemisphere is also over when these lines are printed. Everybody knows that the breeding results are giving the economical success of the year. The congress has given a clear impression of that more than more of the success in fur animal production is based on real knowledge than on good look.

One of the good thing from the congress was also the kind words about SCIENTIFUR. Everybody who mentioned SCIENTIFUR underlined the importance of such a journal, in which the main part of the

scientific news about fur animal production is collected, and where we have a safe communication channel between scientists themselves and between the scientists and the fur breeders organizations.

As you will see under COMMUNICATION we bring a report from the congress written for the Scandinavian minkfarmers, who during their organizations made the congress possible during a great economical support. Therefore, the pictures shown are more Scandinavian than just international, but as mentioned, at the congress SCIENTIFUR has not economical background for sophisticated colourprint, therefore we are glad to bring the congressreport in this way.

One thing more you will find in connection to the congress report - an invitation to:

THE THIRD INTERNATIONAL SCIENTIFIC CONGRESS IN
FUR ANIMAL PRODUCTION - PARIS 1984

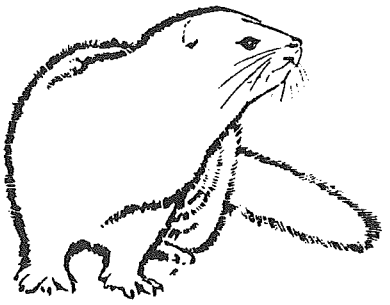
- expressed by our friend, professor Jean Rougeot, France.

We thanks for that kind invitation and wish our French friends good look in organizing this congress.

But - dear readers - congress is one very important thing - to be held every fourth year. SCIENTIFUR is another important thing - published 4 times a year. These two advances in the scientific communication in the area of fur animal production have common problems. THE SUCCESS IS UP TO PARTICIPANTS, CONTRIBUTORS, AND SUBSCRIBERS. Mind that.

Kind regards and the
best holiday wishes

Gunnar Jørgensen
The editor



Original Paper.

THE INFLUENCE OF DIFFERENT REARING SYSTEMS ON NUTRIA FUR.

S. Niedźwiadek, J. Kawińska, Institute of Zootechnics, Dept. of Small Animal Breeding, 32-083 Balice nr. Kraków , Poland.

Nutria fur plays an important role on the Polish raw-hide market, both in domestic and foreign trade.

In large-scale nutria breeding the rearing system i.e. the type of enclosure used, is basic in the economy of fur production.

The purpose of the following work was the laboratory evaluation of the fur hair covering of young nutria reared with and without swimming pool and in cages.

Materials and Methods.

The study involved fur from nutria reared in the Animal Science Research Station of the Institute of Zootechnics, in Zator. The animals from birth to slaughter were reared with three different systems:

- pens with a concrete running space and swimming pool/Group I,
- pens with a concrete running space without a swimming pool,/ Group II,
- roofed, wire netted cages with wooden houses/Group III.

All animals received identical feed - a granulated mixture, whose nutritional value met normal requirements for that species. The nutria were slaughtered when they were eight months old, during the winter. The study included 2o furs, 1o from males and 1o from females, from each group. Basic evaluation of the raw-hides was made before the hides were treated. After treatment the physical characteristics of the hair covering were described according to

the method of Kaszowski, 1960. Test samples were taken from 6 topographical areas of the hide. Fig. 1. Organoleptic evaluation of the hides was done by specialists in the Krakow Furriery Works.

Results.

The physical characteristics of the raw-hides and these same parameters after treatment are presented in Table 1. The data

Table 1. Area and weight of rough and dressed skins.

Groups		Rough skins			Dressed skins		
		Area dm^2	Weight g	Weight of 1 dm^2 g	Area dm^2	Weight g	Weight of 1 dm^2 g
I	$\bar{x}$	16.77	16.9	1o.o	12.46	15.1	12.1
	V%	8.o	11.7	7.o	1o.8	12.7	6.o
II	$\bar{x}$	16.o7	16.5	1o.3	12.44	14.4	11.6
	V%	9.8	14.7	4.8	11.o	14.4	1o.3
III	$\bar{x}$	15.6	1.62	1o.5	11.6	13.9	11.9
	V%	7.6	1o.o	9.7	8.2	1o.5	5.3

indicate that both the surface area and hide weight were less after treatment, by 7.4 to 7.7% and by 8.5 to 8.9%, respectively. However the weight of 1 dm^2 raw-hide increased by 8.3 to 8.9%. Higher weight increases for 1 dm^2 were found for the raw-hides of groups II and III. The average hair length was longer for the group reared without swimming pools. Tab. 2. In individual topographical areas longer hairs lengths were found along the spine. Similar values were observed for hair covering length. Group III had the longest mean hair length covering.

Table 3 presents the down hair and hair covering thickness. Down hair thickness of topographical areal was similar. The lowest value for down hair thickness was found on the hides of Group III.

Table 2. Lenght of hair/mm.

Sample	Group I				Group II				Group III			
	Down		Cover		Down		Cover		Down		Cover	
	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%
1	1o.4	14.4	25.6	14.8	1o.5	25.7	26.2	14.1	1o.4	9.6	26.o	12.3
2	12.6	11.9	25.6	13.9	12.4	12.1	28.o	1o.7	12.1	12.4	27.o	1o.7
3	1o.5	9.5	2o.6	13.1	1o,8	16.7	22.8	19.7	1o.6	14.1	22.o	17.3
4	18.8	13.3	37.6	14.4	18.5	1o.8	38.2	16.2	16.9	13.6	43.2	14.3
5	16.o	15.6	37.2	18.o	15.6	17.3	38.4	12.5	16.4	14.2	39.7	16.4
6	2o.5	9.7	47.3	2o.1	2o.5	13.6	47.8	12.3	2o.o	7.5	51.3	1o.5
7	16.7	6.o	53.1	15.8	16.4	25.6	51.8	17.9	16.3	21.5	54.9	11.3
average	13.o	5.5	35.4	1o.2	14.9	6.7	36.1	8.3	14.6	6.8	37.6	6.1

Table 3. Thickness of hairs in microns.

Sample	Group I				Group II				Group III			
	Down		Cover		Down		Cover		Down		Cover	
	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%
1	9.8	12.6	73.9	17.4	1o.2	13.3	77.5	14.o	9.5	9.3	71.4	12.3
2	1o.2	11.6	82.4	15.9	1o.5	12.4	88.3	13.7	9.8	6.1	79.2	12.4
3	9.4	1o.8	72.8	16.7	1o.7	13.4	81.2	18.o	9.3	8.3	69.6	9.2
4	1o.3	15.4	8o.8	14.7	1o.7	14.7	86.o	14.8	1o.o	11.5	76.4	16.4
5	1o.3	12.2	9o.3	15.o	11.1	14.4	92.1	12.5	9.9	9.4	83.9	13.1
6	1o.3	11.2	93.8	16.9	11.o	12.1	91.8	12.2	1o.o	12.3	85.7	13.1
7	1o.1	1o.7	93.3	17.6	11.2	3.8	96.o	7.3	9.6	11.6	83.o	13.3
average	1o.1	9.o	84.4	9.8	1o.7	7.1	87.7	7.2	9.7	4.o	78.4	12.7

Hair covering was thickest along the spinal area of the raw-hide. Group III had the lowest value for hair covering thickness. Down hair thickness and hair covering/cm^2 surface area are presented in Table 4.

The highest mean value for down hair amount was seen in Group III. Statistical analysis indicated highly significant differences between all groups. The belly part of all furs were thicker than along the spine. The same was true for the mean values of hair covering amount - Group III having the highest values.

Table 4. Density of down hair on the surface of 1 cm^2/thousand.

Sample	Group I		Group II		Group III	
	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%
1	18.8	21	22.2	24	23.3	2o
2	14.5	24	17.7	23	2o.3	17
3	14.3	24	15.7	25	2o.o	19
4	9.9	19	11.5	28	11.8	32
5	6.9	31	8.o	35	1o.1	27
6	7.3	28	8.5	27	11.6	33
7	7.1	32	7.1	25	9.o	31
average	11.3	18.5	13.2	15.9	15.2	12.5

The results of organoleptic examination of raw-hides and treated furs are given in Table 5. There is a definite improvement of fur classification after treatment. The mean class qualities were as

Table 5. Density of hair on the surface of 1 cm^2.

Sample	Group I		Group II		Group III	
	$\bar{x}$	V%	$\bar{x}$	V%	$\bar{x}$	V%
1	198	29.6	2o3	24.3	2o7	16.9
2	19o	18.7	185	28.o	193	19.9
3	187	29.1	188	3o.o	197	21.8
4	135	28.5	149	35.2	15o	29.6
5	211	32.6	21o	36.5	178	38.7
6	165	28.1	173	33.4	2o6	26.2
7	149	24.6	143	28.7	164	28.2
average	176	13.2	179	18.8	167	13.7

follows:

	Raw-hide	Treated fur
Group I	3.5	2.7
Group II	4.2	2.9
Group III	3.1	2.7

The class means obtained for raw-hides and treated furs indicate a concurrence with acceptet laboratory parameters for the physical characteristics of hair covering, deciding their fur value. It is worth nothing that there were no cases of matting.

Discussion.

Nutria slaughter at 8 months is economically sound/ Ocetkiewicz et al. 1972/. Animal body weight at this age is approximately 4 kg which ensures fur of second size. In our work the nutria had the required body weight, which gave a surface area of 16 dm^2. The important characteristic is the weight of 1 dm^2, which after treatment should increase. In our research the fur weight increases by 8.3 to 8.9%, indicating proper preservation and treatment. During treatment the down of the belly - the most valuable - should not be cut. Therefore it is important that the length of this hair is even. It is this which characterizes furrier studies. Hair covering is important in treating the spinal area or for clothing in the natural state/ Hunger, F. 1974/. In these studies the longest hair covering was along the spine in Group III.

Down hair thickness of 9-11 u agrees with other authors/Krivoszejeva, 1969, Kepme, 1957/. The thinnest down hair and hair covering was observed in animals raised in cages.

The density of down hair/cm^2 surface area was high and possessed proper distribution of individual topographical areal of the fur. The animals raised in cages had the thickest fur. A mean hair density greater than 15,ooo is high and indicates very valuable fur/ Woźniakiewicz, 1953/. A high density, related with other characteristics, reflect the organoleptic value. These groups had an average class quality of 2.7 for treated furs.

In conclusion it appeared that under Polish conditions rearing nutria in cages had positive results. Studies on furrier values indicated that nutria reared in cages had fur of high quality as determined by expert organoleptic evaluation by experts.

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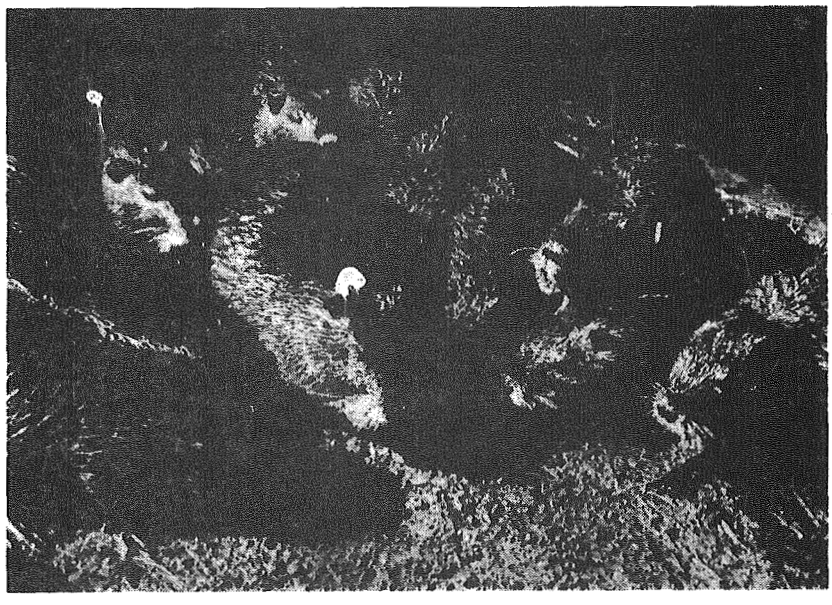


Original paper.

★ HUMANE EUTHANASIA (KILLING) OF PELTER MINK

Dr. G. G. Finley, Veterinary Pathology Laboratory,
Livestock Services, Dept. of Agriculture,
Box 550, Truro, Nova Scotia, Canada, B2N 5E3

I feel ranchers use a lot of time, care and knowledge to raise a good mink. They are concerned that animals are killed quickly and humanely at pelting time. Other people are also concerned. For example, about a year ago the Nova Scotia Society for Prevention of Cruelty to Animals asked me about methods used. I explained our approach which I will discuss in detail later.

First of all, we should define a humane death. It must be free of fear, have initial depression of the brain, be rapid and not disturbing to the people using it. The instrument must be easy to use, reliable, simple and fairly inexpensive.

A number of methods have been used over the years and can be divided into injections, gases or electrocution. I will briefly discuss the main ones.

(A) INJECTIONS (usually given into the heart)

1. BARBITURATES - these are very good causing depression and a humane death with an overdose. They are, however, controlled drugs available only from veterinarians who normally would not dispense them.

2. T - 61 - this is a good local anaesthetic combined with a strong narcotic. It must be given into the blood stream. It is available only from veterinarians but is not a controlled drug.

3. NICOTINE SULFATE - has been sold and may be combined with methyl alcohol (wood alcohol). It is not acceptable as it does not depress the brain. Death is from asphyxiation due to breathing paralysis.

(B) GASES:

1. CARBON MONOXIDE (CO) - it is generally not acceptable as it can be dangerous to the user. If the gas comes from an engine it must be filtered and cooled through water. Engines do not produce maximum CO unless tuned. The CO combines with blood hemoglobin to produce brain anoxia.

2. CYANIDE - is not suggested as it is very dangerous and is currently unavailable. It will produce a humane death.

(C) ELECTROCUTION:

1. 110 VOLTS - is generally not recommended especially for killing boxes. The electrical charge is impeded by fur, urine and feces. It causes paralysis followed by suffocation but not immediate unconsciousness.

2. EUTHANATOS TYPE 2 - developed by the Norwegian Fur Farmers Organization. It has found wide spread

use in Nova Scotia during the past several years. It has been completely evaluated by the S.P.C.A. and Dr. Harry Rowsell of the Canadian Council on Animal Care. Dr. Rowsell presented a detailed report at the annual meeting of Canada Mink Breeders in September. This piece of equipment, with a slight modification, has been found completely acceptable.

For those not familiar with it a detailed description may be of value. It is portable, mounted on plywood about 20 by 75 cm., weight is 3.3 kg., and power is two six volt batteries. When used current passes through the mink brain causing about 20 seconds of unconsciousness. Immediately after stunning the neck is broken manually. This piece of equipment is a humane stunner but does not kill animals.

Most of the above technicial information is from the Canadian Veterinary Medical Association - Humane Practices Committee Report published in Canadian Veterinary Journal, 19: 164-168 (June, 1978). I also wish to acknowledge the support of Dr. Rowsell who carried out the evaluation of the Euthanatos Type 2.

★ OBSERVATIONS ON SOME SEGMENTS OF THE ALIMENTARY TRACT IN MINK (MUSTELA VISON SCHREB.)

(Obserwacje nad niektorymi odcinkami przewodu pokarmowego norki (mustela vison schreb.).

Krystyna Wyrzykowska, Irena Kosko, Z Katedry Anatomii Zwierzat, Wydzialu Hodowli Zwierzat WSR w Olsztynie, Poland.

The capacity and length of the alimentary tract were measured in 56 minks, and the stomach and first segment of the small intestine were microscopically examined.

It was found that the length and weight of the body as well as the sex have no significant influence on the indexes of capacity and length of the alimentary tract, however there exists a close dependence between its structure and digestion. The alimentary

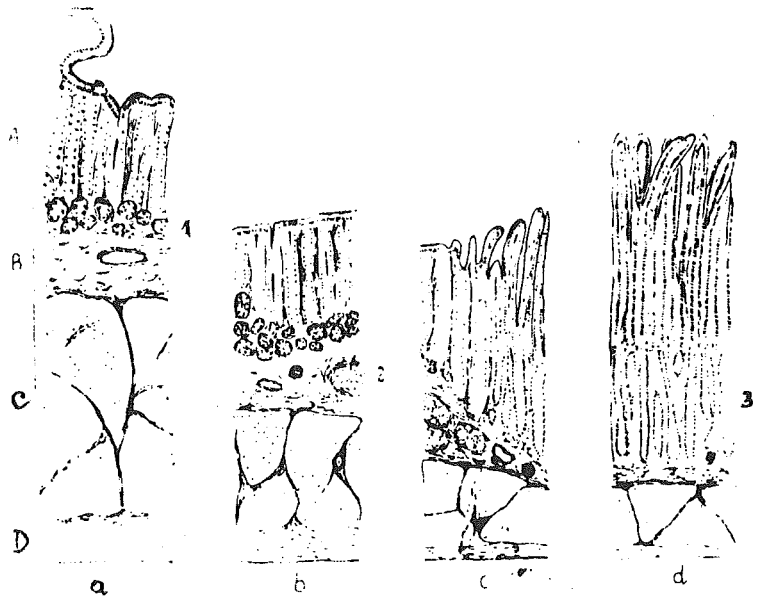


Fig. 1. Microscopically composition of stomach and duodenum.
a) buttom of stomach region
b) exit region of the stomach
c) exit region from stomach to duodenum
d) duodenum
A) nucous membrane
B) submucous membrane
C) internal musculary layer
D) external musculary layer
1) glands stomach bottom
2) glands in submucous membrane
3) Lieberkühnske glands.

tract in mink is simple as regards structure, and relatively short, it has large extraparietal digestive glands and a strong musculature. There is no differentiation into small and large intestine, and the caecum is absent. In microscopic examination particularly striking is the occurrence of glands in the submucosa resembling Brunner's glands. The intestinal villi are very tall and thin.

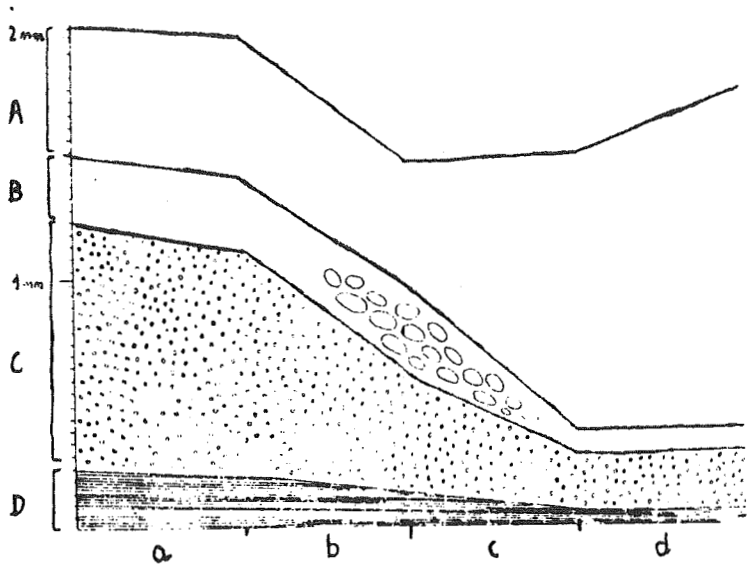
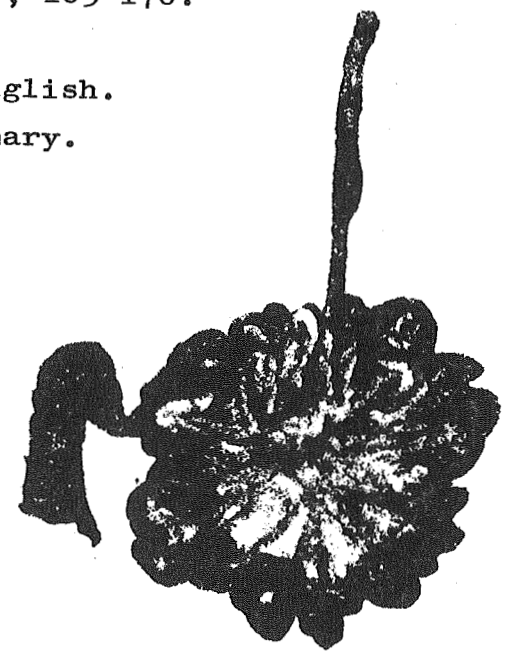


Diagram 1. Proportion of thickness of several layers in stomach and duodenum as well as the range of which glands occur in under-mucous membranes.
a, b, c, d = vide: a, b, c, d as fig. 1.
A, B, C, D = vide: A, B, C, D as fig. 1.

Roczniki Nauk Rolniczych, TOM 84-B-1, 1964, 165-176.
5 figs., 5 tables, 9 references
In Polish with summaries in Russian and English.

Authors summary.



★ THE BLOOD INDEX AND ORGAN COEFFICIENT OF THE MINK BREEDING IN THE PLATEAU REGION.

高原地区饲养水貂的血液指标及器官系数*

刘季科　龚生兴
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In December 197o, the blood index and organ coefficient of the mink were determined in the mink breeding brigade of Tangqu Farm at Gangea Xian, Qinghai Province. The results may be summarized as follows.

1. The blood specific gravity of the mink in the plateau region is below 1.o75.
2. Data concerning the resistance of red blood cells, erythrocyte sedimentation rate (ESR), contents of hemoglobin (Hb), red blood count (RBC), white blood count (WRC), blood platelet count ang patterns of white blood cells are presented in Table 1-5 respectively. There is no striking difference regarding all kinds of blood indices between the male and the female (p>o.o5).
3. The contents of hemoglobin and the red blood count of the plateau mink are higher than those of minks in other regions reported by other workers. Besides, there might be notable fluctuations in various blood indices. This in an adaptation of the mink to plateau ecological conditions.
4. The formula determining the organ coefficients is organ weight/ body weight x loo%. The organ coefficients of the heart, lung, liver, spleen, and kidney (left) of the mink are presented in Table 6 respectively. There is no marked difference concerning all kinds of organ coefficients in both sexes (p>o.o5).

Acta Zoologica Sinica, Dec. 1979.
6 tables, 7 references.
In Chinese with English summary.

Authors abstract.

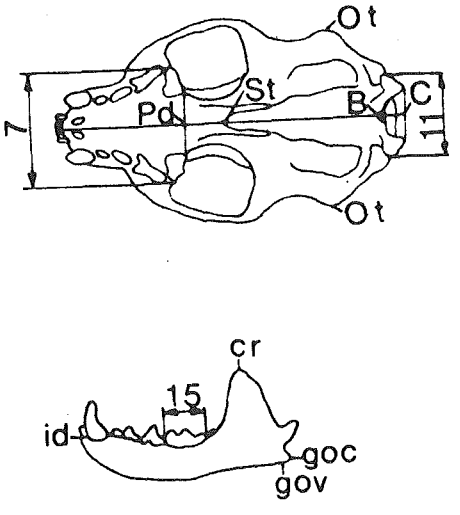
★ METRICAL AND NON-METRICAL SKULL VARIATIONS IN NORWEGIAN WILD MINK (MUSTELA VISON SCHREBER).

Øystein Wiig, Rolf W. Lie, Zoological Museum, University of Bergen
Bergen, Norway.

Variations in fifteen metrical measurements and six non-metrical traits in 131 mink skulls were investigated. The skulls were subdivided geographically into three samples: Eastern Norway, Western Norway and Trøndelag. Separation into juveniles and adults was in accordance with the criterion that all sutures are closed in adults. This seemed to work well. No age or sex variations were found in the non-metrical traits. Relatively little geographic variation found in either the metrical measurements or the non-metrical traits indicated little genetic variation. Gene-flow is regarded as one of the reasons for this.

Zoologica Scripta, Vol. 8, 297-3oo, 1979.
4 figs., 5 tables,
9 references.

Authors abstract.



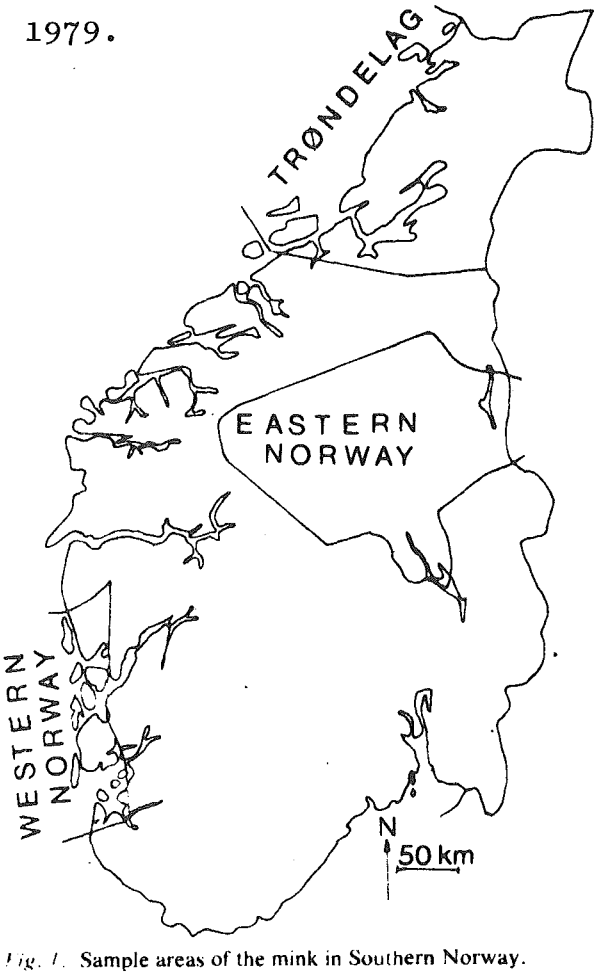


Fig. 1. Sample areas of the mink in Southern Norway.

★ THE CORRELATED PLEIADS AND STABILIZATION OF ONTOGENESIS IN MINKS.

Yu Ye Yegorov, Institute of Biology, the Kazan Branch, USSR Academy of Sciences.

The correlation analysis of craniological characters of Wild and ranch American minks (Mustela vison) and two species of polecats has shown that the analogous characters occupy a definite place in the system of correlations of cranial structures in closely related species. The frequency curve of the correlation coefficients in ranch minks, unlike wild ones, is symmetric, has one peak, and is shifted to the lower values. This suggests that the correlated pleiads are absent in ranch minks, while they are well expressed in wild forms. The differences noted are related to the peculiarities of artificial and natural selection. In artificial selection there takes place the general destabilization of ontogenesis, morphogenetic relations are shifted to the later stages.

1 table, 3 figs., 32 references.
In Russian with summary in English.

Authors summary.

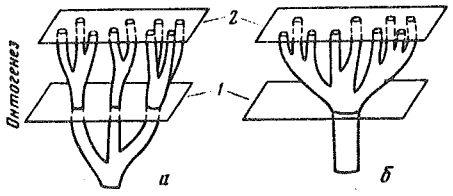


Рис. 3. Схема возникновения и разрушения корреляционных плеяд в онтогенезе млекопитающих. *а* — стабилизированная структура, *б* — дестабилизированная структура, *1*, *2* — «срезы» на разных стадиях онтогенеза

★ PLANNING THE LINE BREEDING IN LARGE MINK FARMS.
(Planowanie Hodowli na Linie w Wielkostadnych Fermach Norek.)

Irena Narucka, Marek Wisniewski, Academy of Agriculture,
Inst. of Animal Breeding and Production Technology,
ul. Wolynska 33, 6o-637 Poznan 31, Poland.

Basing on the experiments performed, the authors elaborated the breeding indications for computer calculations of the plans of mating minks in large farms. According to these indications the matings are between unrelated animals and the line breeding can be carried out. In these mating plans the authors took into consideration the relationship coefficients as well as evalutation of features of coat quality.

Roczniki Akademii Rolniczej w Poznaniu - CXI (1979) 129-133.
6 references.
In Polish with summaries in English and Russian.

Authors summary.

★ PROGRAMMING OF MATING MINKS IN LARGE FARMS.
(Programowanie Kojarzen Norek w Warunkach Ferm Wielkostadnych.)

Marek Wisniewski, Irena Narucka, Academy of Agriculture,
ul. Wolynska 33, 6o-637 Poznan 31, Poland.

The paper presents the planned mink matings, avoiding relationship within pairs, and the line breeding in a large farm using a computer. This program is a practical realization of the method described in the paper by these authors entitled: "Planning the line breeding in large mink farms".

The program is written in ALGOL-12o4 (D) and is prepared for the computer ODRA 2o4.

Roczniki Akademii Rolniczej w Poznaniu - CXVI (1979, 171-185.
3 references and complete description of program.

Authors summary.

★ COPULATION LENGTH RELATED TO FERTILITY IN MINK FEMALES.

(Vztah Delky Kopulace k Plodnosti Norčích Samic.)

Frantisek Kukla, Institut for Fur Breeding, Dept. of Horse, Sheep and Fur Breeding, Zemědělská 1, Brno, CSSR.

Over a period of three years the fertility of mink females as affected by copulation length was observed on one of our mink rearing farms. Standard females mated but once were included in the observations. In the group of males used, the length of copulation was recorded.

The results revealed a trend to copulation length prolongation with the number of matings increasing; more intensive prolongations being observed in males remating the same females, compared to those mated to different females (the male's first and subsequent matings). Variability in the length of copulation was appreciable, both for the first and subsequent copulations, ranging from several minutes to two hours and even up.

An examination of the effects of copulation length on fertility of a total of 1,547 females mated once, these divided into groups by 1o-minute intervals of union duration, and on that of the females in which the union duration exceeded 6o minutes, revealed the following:
In approximately 7o per cent of the females duration of the union did not reach 6o minutes, while in the remaining portion, roughly 3o per cent, the union exceeded the 6o-minute time.

The lowest fertility, at a level of lower significance, was found for females characterized by a very short duration of union (to 1o minutes, or up to 2o-3o minutes). The union duration increasing, the fecundity of females tended to improving, too. The trend to reducing the number of barren females was positive.

Concerning the litter produced, smaller differences could be

detected in the numbers of young from animals classed with individual categories by the copulation length. Moderately smalled litters were obtained from females characterized by a very short copulation length.

The high percentage of barren females in the category of very short union duration might be due to the weaker stimulation in releasing ova at mating, or to some other reasons, such as failure in recognizing factual union from the male's "falce" cover, and the like.

On the basis of the results it is advisable to remate females distingquished by a short duration of union (to 1o minutes) and those showing a low expressivity of copulation, either on the same or during the subsequent day.

Acta Universitatis Agriculturae, XXV, 1389, 2, 1977, 155-162.
3 tables, 2o references.
In Czechoslovakian with summaries in Russian, English, and German.

Authors summary.

★ THE EFFECT OF THE AGE OF THE SIRE ON THE SIZE OF LITTER OF STANDARD MINK FEMALES.

(Vliv Stáří Plemeníka na Velikost Vrhu u Samic Standartních Norku.)

J. Fiedler, R. Šiler, M. Skřivan, L. Štolc, Výzkumný ústav živočišné výroby, Praha 1o-Uhříněves, Czechoslovakia.

Data connected with the reproduction of 19o8 standard minks were drewn from the breeding records of the mink breeding farm in the Unified Agricultural Cooperative, Ostrovec. The animals were divided into four groups - oneyear old females mated with one year old males, one year old females mated with two year old and older males, two year old females mated with one year old males

and two year old and older females mated with older males. Smallest litters occured in one year old females mated with both one year old and older males. The litters were larger in groups of two year old females mated with two years old males. Though the sexual activity of the older males is important in the course of mating its effect on the size of the litter is not very significant. After mating two year old females with older males there appeared a significant decrease in the percentage of non-pregnant females compared with one year old males.

Sborník Vysoké školy zemědělské v Praze-Suchdole, fakulta agronomické, řada B, 28, 1979, 215-223.
9 tables, 5 references.

Authors summary.

BIOMETRICAL AND HISTOLOGICAL CHANGES IN THE TESTICLES AND EPIDIDYMIS OF MINKS.

(Biometrické a Histologické Změny Variat a Nadvariat Norku.).

M. Skřivan, F. Louda, R. Loučka, katedra chovu skotu a mlékařství, Vysoká škola zemědělská Praha-Suchdol, Czechoslovakia.

Twenty-one male minks of the standard type checked for fertility from the Lány School Enterprize farm for fur animals were included in the investigation. The minks were gradually slaughtered over the year. Their testicles were measured and histologically evaluated. The determined dimensions/weight, size, length, height width and the perimeter of the testicle and epididymis, the height of the germinal epithelium, size of coiled seminiferous canals and the corpus epididymis canal/increased considerably from December to March. This period is typical for increasing spermiogenesis. Already in February all the developmental stages of the cells of the spermiogenous cycle may be found in the seminiferous canals. However the epididymis canal is still empty. In March/time of mating/ all the

observed dimensions reach their maximum. The germinal epithelium is fully active. The canal of the epididymis outlet contain a large amount of sperma. When mating finishes in March spermatogenesis decreases and alle the followed dimensions grow smaller. The period of inactivity takes place and lasts until December.

Sborník Vysoké školy zemědělské v Praze - Suchdole, fakulta agronomická, řada B, 28, 1979, 225-232.
3 tables, 7 references.
In Czechoslovakian with summaries in Russian and English.

Authors summary.

★ OVARIAN ACTIVITY DURING THE ANOESTRUS AND THE REPRODUCTIVE SEASON OF THE RED FOX (VULPES VULPES L.).

M. Mondain-Monval, B. Dutourne, M. Bonnin-Laffargue, R. Canivenc, R. Scholler, Fondation de Recherche en Hormolonogie, 25 Bd. Brune, 75o14 Paris, France.

The ovarian activity of a species with seasonal monoestrous reproduction has been studied for two consecutive years. Several activity periods have been detected throughout the year: These are characterized by an increase in the peripheral plasma E_2 concentration ($\bar{X}$ = 254 pg/ml) and simultaneously by a thickening of the vaginal epithelium and an electrical activity of the myometrium, particularly during the rising phase of the E_2 peak. The increase in E_1 concentration was significant only during the reproductive season which occurs in March or April. Luteal activity was present during this

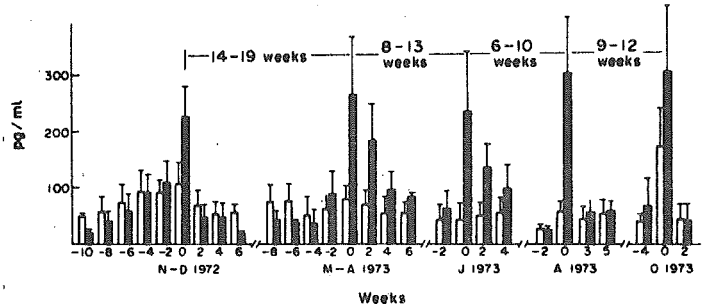


Fig. 5. Composite of mean E_1 and E_2 concentrations ($\bar{x} \pm$ S.D.) normalized to the day of the E_2 peak in peripheral plasma of the red fox vixen throughout the year. E_1: white bar, E_2: black bar. November–December 1972 (N–D), n = 7; March–April 1973 (M–A), n = 8; June 1973 (J), n = 8; August 1973 (A), n = 6; October 1973 (O), n = 4.

period alone; the P concentration can reach 65 ng/ml. During the other oestrogen secretion periods which occur during anoestrus the P concentration remains below 3 ng/ml.

Journ. of Steroid Biochemistry, 1977, Vol. 8, 761-769.
12 figs., 2o references.

Authors summary.

★ ANDROGENS IN PERIPHERAL BLOOD OF THE RED FOX (VULPES VULPES L.) DURING THE REPRODUCTIVE SEASON AND THE ANOESTRUS.

M. Mondain-Monval, M. Bonnin, R. Scholler, R. Canivenc,
Fondation de Recherche en Hormonologie, 26 Bd Brune 75o14
Paris, France.

Androstenedione (A) and testosterone (T) were measured by radio-immunoassay after chromatography on celite micro-columns throughout the year in peripheral plasma of five vixens. There was a typical pattern in the fluctuations of A and T concentrations around the on-

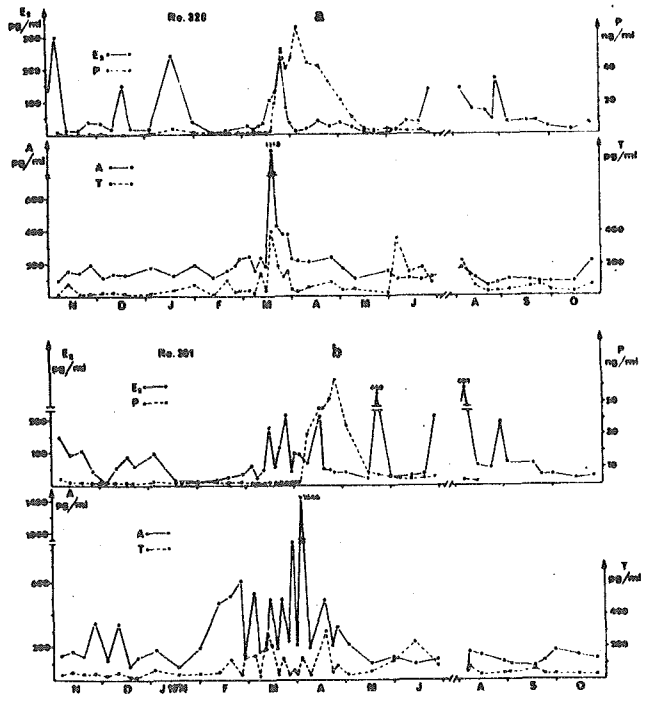


Fig. 4. Plasma concentration of T, A, P and E_2 in two red fox vixens (a) Re 328, (b) Re 361 from November 1973 to October 1974. Blood samples were collected twice a week in March and April.

set of oestrus. The A concentration rose from a basal level of 196.4 ± 12o.4 pg/ml to 1543 ± 458 pg/ml (mean ± SD) within the 3 days preceding the increase of the progesterone (P) level. The concentration of T varied to a lesser degree. During the reproductive season, there was a significant positive correlation between these 2 steroids and estradiol (E_2) levels. During the anoestrus, the A level was low (97.4 ± 43.7 pg/ml) and rose from October when corpora lutea had regressed and when follicles began to develop. A peak of T was detected in the early anoestrus and thereafter there appeared no characteristic change in the T level (62.o ± 71.1 pg/ml). There was no A or T peak that might be associated to the episodic E_2 release during the anoestrus.

Fig. 9. Section of fox ovary removed during the early anoestrus (July) showing small follicles in the cortex and regressing corpora lutea (× 105).

Journ. of Steroid Biochemistry, Vol. 11, 1315-1322.
9 figs., 22 references.

Authors summary.

PROCEEDINGS OF THE 111TH MEETING OF THE NETHERLANDS' ASSOCIATION OF ANATOMISTS, HELD AT THE DEPARTMENT OF ANATOMY AT THE UNIVERSITY OF DIEPENBEEK, BELGIUM, SEPTEMBER 3o AND OCTOBER 1, 1977.

THE ULTRASTRUCTURE OF THE VAGINAL EPITHELIUM OF THE MINK (*Mustela vison* SCHREB.) DURING THE REPRODUCTIVE CYCLE

L. C. BUSCH, W. KÜHNEL and C. STANG-VOSS

Abteilung Anatomie der Medizinischen Fakultät der RWTH Aachen, W.-Germany

The reproductive organs of the female mink were examined by TEM and SEM (Busch et al., 1977).

In the course of the annual reproductive cycle, the vagina of the mink is lined by two different epithelia.

During estrous (March and April) the mink vagina contains a multilayered stratified squamous epithelium, which is either scarcely keratinized or non-keratinized (Fig. 1A). Many desmosomes of the basal and intermediate layers together with a dense network of bundles of filaments protect this epithelium against mechanic influences during copulation and birth. The superficial cells are flattened and lack the usual organelle pattern. Digital cell-processes bridge the occasionally widened intercellular spaces. The secretion product in the vaginal lumen is predominantly released by intercellular transudation.

During anestrous (May to the following February) the vagina shows a 2 or 3-layered epithelium (Fig. 1B). The intercellular spaces are closed by pectinate processes of the cytoplasma. Desmosomes and bundles of filaments are scarcely visible. At late anestrous, secretory granules are visible within the apical portions of the superficial cells indicating extrusion of secretory material (Fig. 1C).

Finally, it should be mentioned that, in addition, clear cells with dendritic processes appear in this vaginal epithelium. These clear cells do not show filaments and desmosomes. They may be interpreted as being equivalent to Langerhans' cells.

REFERENCE

BUSCH, L. C., W. KÜHNEL und C. STANG-VOSS: Ultrastruktur des Vaginalepithels zwischen Östrus und Implantation beim Farmnerz (Mustela vison Schreb.). Acta Anat. *99* (1977) 253.

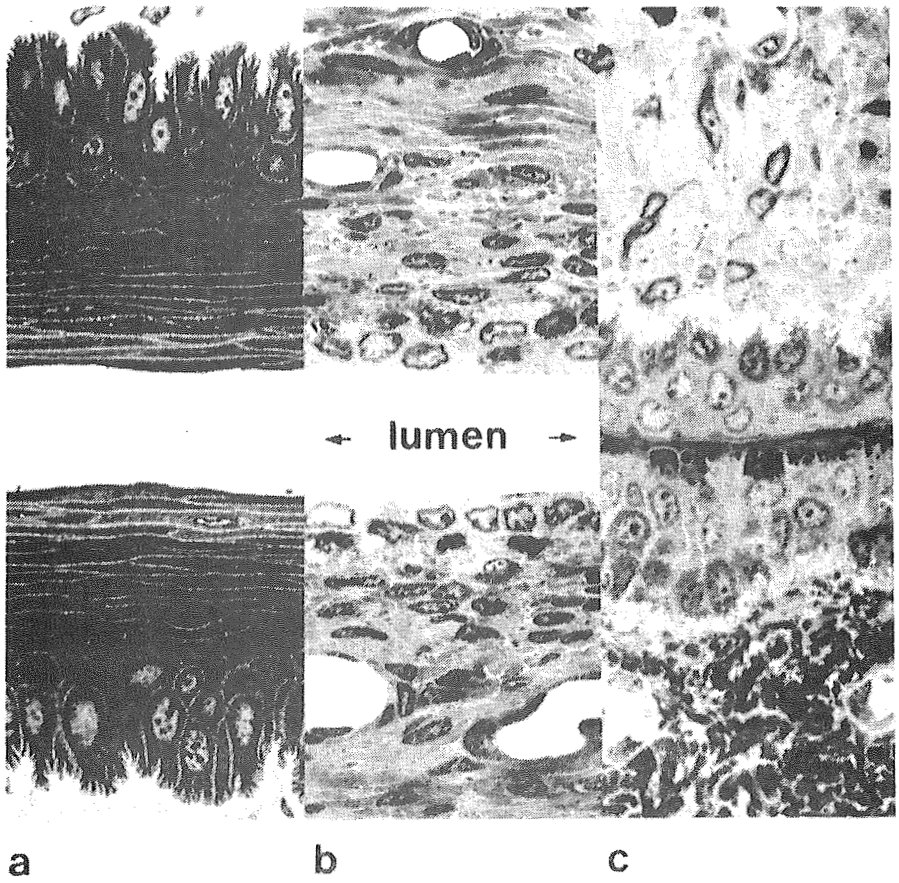
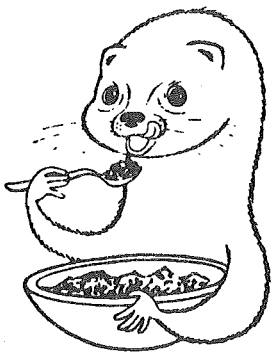


Fig. 1. Vaginal epithelium of the mink in (A) estrous (March and April), (B) anestrous (May to November) and (C) late anestrous (December to the following February). Araldit, embedding, Semithin-section, Richardson-staining, x 752.

Acta Morphol. Neerl.-Scand. 17 (1979), 21o-211.



ORIGINAL REPORT

TOTAL AEROBIC BACTERIAL COUNTS IN FEED SAMPLES FROM SEVEN MINK RANCHES

Drs. J.R. Long and G.G. Finley, Veterinary Pathology Laboratory, Livestock Services, Dept. of Agriculture, Box 550, Truro, Nova Scotia, Canada, B2N 5E3

Introduction

It has long been suspected that high bacterial counts in mink feed may be a factor in poor production and losses due to other causes.[6]

Literature review

In North America detailed work on the subject was carried out by Chou and Marth at the University of Wisconsin.[1] They concentrated mainly on the types of bacteria in feeds, finding high levels of Coliforms, Salmonella species and pathogenic Staphylococci - all recognized as potentially harmful bacteria. These researchers also looked at total bacterial levels in ingredients - liver, beef by-products, fish and cereal.

Generally Chou and Marth found high levels (average 5.5×10^6 bacteria per gram) in beef by-products and liver. Low levels ($.5 \times 10^6$) were found in frozen fish and cereal.

This research did not establish a level to aim for and was discontinued around 1970.

The work of Roland Howell, Mink Feed Cooperative, Midvale, Utah, confirmed the previously mentioned types of bacteria were usually present. He expressed the opinion that total counts were most important and suggested the following. A good mixed feed could have 1×10^6 but should not exceed 3×10^6 bacteria per gram. Consistent levels of 5×10^6 would kill mink over a period of time and 100×10^6 would kill mink within 5 days. Diarrhoea in females at weaning and in kits as well as bladder infections would be more common in rations with high bacterial counts. He felt with low counts you would see fewer sick and dead mink and higher production. This impression was not supported by scientific data.

He confirmed ingredients such as fish to have low counts with liver and chicken high. However, well handled washed chicken could have low counts.

At the Co-op. they try not to exceed 1×10^6 and do not exceed 3×10^6 bacteria per gram in the final feed. Ingredients are checked and any over 5×10^6 are rejected. By doing this, he felt they were raising healthier larger litters (+10%)[3].

Most studies have been done in the Scandanavian countries.

In Denmark, in 1970, a total of 434 samples were tested and 66% were under 6×10^6. Most samples containing extremely high levels of bacteria could be traced back to the use of feed ingredients of poor quality.[5]

In 1978 work was reported from Finland, where 242 frozen samples from ready-mixed feeds were analyzed for both type and total bacterial counts. Results showed 16.7% were less than 1×10^6, 48.3% between 1×10^6 and 6×10^6 and 35% were over 6×10^6. These workers also found some contamination of feeds with pathogenic bacteria.4

Materials and Methods

In our study, freshly ground feed samples were collected from seven ranches and frozen in whirl-pak bags on the first and fifteenth of each month from May to September, 1979.

In the laboratory, samples were thawed, 50 grams weighed from each and added to 450 ml. of sterile peptone water. This was mixed for two minutes in a Waring blender. The mixture was then diluted to 1/100 and 1/1000 and pour plates were made in triplicate from each dilution using plate count agar. Plates

were incubated at 32°C for 48 hours and bacterial colonies were counted using a Quebec colony counter. Each count reported is an average of the three plates used for each dilution from each sample.

Results

The bacterial counts for each sample from each ranch are shown in table 1. Table 2 has these counts grouped for each ranch into three categories - less than 1×10^6, from 1×10^6 - 3×10^6 and greater than 3×10^6 bacteria per gram of feed. Forty-two percent gave total counts of less than 1×10^6 bacteria per gram of feed. Thirty-two percent had between 1×10^6 and 3×10^6 with 26% having over 3×10^6 bacteria per gram of feed.

Discussion

Howell prefers that feed not contain more than 3×10^6 organisms per gram. In Norway and Denmark the quality criterion for a good mink feed is a maximum of 6×10^6 bacteria per gram of feed.

One study in Norway showed 66.1% of 434 samples to be below 6×10^6.[5] A later study reported in 1973 showed 75.8% of samples below 6×10^6 and in Denmark, Hansen reported 84% of 105 samples below this level.[2] Recent work from Finland reported 65.0% of samples below 6×10^6.[4] In our study, 85.5% of samples were below 6×10^6 bacteria per gram of feed. It is interesting to note that 42% of our samples were below 1×10^6 and 74% of samples had 3×10^6 or less bacteria per gram. Only 14.5% of samples exceeded 6×10^6 bacteria per gram.

It is not possible to compare these results directly to the other reports as laboratories and techniques differ.

However, it seems that total bacterial counts in mink feed in Nova Scotia are generally low.

A small experiment was carried out to show bacterial multiplication in feed over a 24 hour time period after being placed on the wire in a shed. As expected, bacteria multiplied rapidly (Table 3).

Acknowledgements

We thank Canada Mink Breeders for financial assistance with this study and express our appreciation to Mrs.Cheryl Knight, R.T., for excellent technical assistance.

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2. Hansen, M. As discussed by Juokslahti, J.

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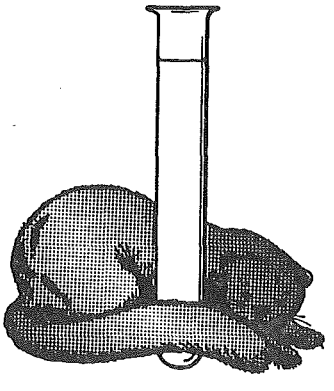


TABLE 1. Aerobic Bacteria (10^6)/Gram Feed

RANCH	A	B	C	D	E	F	G	AVERAGE
MAY 1	2.0	11.4	0.6	0.7	0.8	7.7	2.0	3.6
15	0.2	1.4	10.9	0.8	0.4	8.0	4.2	3.7
JUNE 1	3.7	9.1	1.0	1.5	1.1	3.7	2.3	3.2
15	1.9	5.8	0.7	0.7	0.2	1.1	0.3	1.5
JULY 1	0.8	1.9	1.1	NS	0.06	3.0	40.0*	7.8
15	0.03	0.6	6.9	0.6	0.7	2.3	12.5*	3.4
AUG. 1	0.2	1.8	0.9	0.3	5.7	0.6	0.3	1.4
15	0.4	0.1	16.4	11.6	0.08	0.4	5.0*	4.8
SEPT.1	1.2	1.1	3.9	2.7	1.2	0.2	1.6	1.7
15	2.0	3.8	1.4	0.8	1.7	0.4	0.9	1.6
AVERAGE	1.2	3.7	4.4	2.2	1.2	2.7	6.9	

*Not Collected on Date Given.
NS = No Sample Available

TABLE 2. Feed Samples Grouped by Bacterial Count

RANCH	A	B	C	D**	E	F	G	TOTAL	%
$>10^6$	5	2	3	6	6	4	3	29	42
$1-3 \times 10^6$	4	4	3	2	3	3	3	22	32
$<3 \times 10^6$	1	4	4	1	1	3	4	18	26
NO.SAMPLES	10	10	10	9	10	10	10	69	100

**Only 9 samples collected from this ranch

TABLE 3. Bacteria/gm. Counted at 0, 6 and 24 Hours

DATE	AMBIENT TEMP.	O HR.	6 HR.	24 HR.
Sept. 5	21°C	8.0	36.0	89.0
Sept.12	17°C	0.2	5.7	6.4

★ INVESTIGATIONS ON THE PROTEIN REQUIREMENT IN FEEDING OF MINKS (MUSTELA VISON SCHREB.). Part I.

(Badania Nad Zapotrzebowaniem Bialka w Zywieniu Norek (Mustela Vison Schreb.).

Irena Kosko, Wyższa Szkola Rolnicza w Olsztynie, Poland.

Investigations were carried out on 18 adult males minks (6 and 18 months old) of Standard variety. The experiment comprised the differentiation of toal protein doses in food. Three different doses were applied: 38.o7 g, 47.47 g, 55.64 g per day/animal.

The results of nitrogen balance demonstrated that the different amounts of total protein applied in doses did not cause distinct differentiation of nitrogen retention in minks. The average daily retention of N for particular doses amounted: 1.11 g, 1.o1 g, 1.o3 g, what in terms of protein (6.25) amounted to 6.94 g, 6.31 g, 6.49 g respectively per day/animal. At a close retention of nitrogen its utilization was better while lower doses of protein were applied. Thus: the utilization of N at 38.o7 g of protein amounted to 2o.44% and 47.47 to 15.o7% while at 55.64 g to 13.71%.

Digestibility coefficients of total protein were calculated in every group undepending on amounts of daily protein doses and amounted from 82.44 to 83.79%.

On the basis of these data one may conclude that the daily dose of total protein within limits from 34 g to 38 g i sufficient for adult minks.

But for more certain conclusions concerning the protein requirement by mink, the second experiment was carried out in which smaller protein doses were applied at longer feeding periods.
The results of the II-nd experiment will be given in the next publication.

Roczniki Nauk Rolniczych, TOM 9o-B-4, 1968, 523-538.
13 tables, 25 references. Authors summary.
In Polish with English subtitles.
Summaries in Polish, English, and Russian.

★ INVESTIGATION ON THE PROTEIN REQUIREMENT IN FEEDING OF MINKS (MUSTELA VISON SCHREB.) PART II.

(Badania Nad Zaportrzebowaniem Bialka w Zywieniu Norek (Mustela Vison Schreb.) Cześć II.

Irena Kosko, Wyższa Szkola Rolnicza w Olsztynie, Poland.

Present paper is the second part of the work, under the same title. The purpose of the work was to investigate nitrogen and digestibility coefficients at further reduction of protein in food and comparison of 5 and 15 days long periods of feces and urine collection.

Investigations were carried out on 15 minks Standard 6 months old. The animals were divided into 3 groups, with 5 individuals in every one. The perliminary period for all groups was 7 days, while the period of feces and urine collection 15 days, divided into 3 subperiods, 5 days long.

There were used three different doses of total protein. The group I got the minimal dose of the first experiment recognised as the best and the best utilized i.e. about 38 g, the group II got about 2o g and the group III 1o.32 g of protein per animal/day.

The results of N balance in the II-nd investigation demonstrated that when the protein content in food dose was reduced, the N-retention decreased also. The N retention at a dose of 2o.1o g decreased in relation to the dose of 38.22 g by 4o.7% and at the dose of 1o.32 g of total protein - the negative balance of N appeared. The results of N balance in the II-nd investigation seem to confirm the conclusion taken from the I-st investigation because the daily retention of N at a dose of 38.22 g was near to daily N retention at a similar dose (38.o7 g) in the I-st investigation. Here the mean N retention amounted to 1.25 g and in the II-nd investigation to 1.28 g.

Basing on the obtained results from two investigations on N retention

and of the best N utilization, one may take the general conclusion, that the dose of total protein within limits 34-38 g daily per animal at energetic value (digestible components) of the dose of about 46o kcal is sufficient for adult minks in the period of winter production of hair.

There was stated also that there is no distinct differences in N retention between 5 and 15 days balance period, which does assure that for minks, the 3 days preliminary period and 5 days period of feces and urine collection is sufficient.

The investigations results on digestibility of total protein demonstrated the high digestibility of this compound at every protein dose applied in the I-st and the II-nd investigation with exception of the extreme minimal protein dose (1o.32 g), where the negative N balance appeared.

The investigations results on raw fat demonstrated very high digestibility coefficients, amounting to 95.97%. So the minks digest the fat better than the protein.

The obtained results on digestibility of raw fiber, on acoount of great inter group fluctuations do not allow their interpretation.

Probably, the main cause of those fluctuations is the velocity of food transportation through the digestive tract in carnivores and almost symbolic part of this compound in food doses for minks (about o.5%).

Roczniki Nauk Rolniczych, TOM 9o-B-4, 1968, 539-553.
12 tables, 18 references.
In Polish with English subtitles. Summaries in Plish, English, and Russian.

Authors summary.

Dear boy! Remember that the N-retention in percent is higher as lower the N-percent is in the feed.

★ THE EFFECT OF METHANDIENONE ON FUR QUALITY AND REPRODUCTION OF MINK.

H. Westermarck, R. Laurén, E. Eklund, Dept. of Pharmacology and Toxicology, Col. of Vet. Med. and Medica Pharmaceutical Company Ltd., Helsinki, Finland.

The effect of methandienone administered to mink for 287 days in doses which ranged from o.o2 mg to 3 mg per animal/day, was investigated.

Female mink fed a daily dose of o.o2 mg of methandienone produced the best offspring, with 76.4% of the young being selected as suitable for breeding. Those which received o.o4 mg/day were the second best and were somewhat better than the group receiving an extra vitamin-mineral supplement only.

All the females in all groups showed a normal mating instinct but a methandienone dose of o.44 mg/day caused infertility in 5o% of the females. When the daily dose exceed 1.8 mg/per animal, no whelps were born. Methandienone seemed to reduce the proportion of females in the litters.

When methandienone was administered to young mink in daily doses of o.o8 mg or 3 mg per animal, 3o days before slaughter, the weight increase for the 3 mg group was 6% higher in males and 4.5% higher in females than in either the control group or in the group fed the lower methandienone dose. Furs of male mink fed 3 mg daily fetched a 14.7% higher price and furs of female mink from the same group a slightly higher price than those of the controls. The haemoglobin levels were similar in all groups.

Methandienone in small doses (o.o2-o.o4 mg per animal/day) for a prolonged period or 3 mg per animal/day for a short time had a favourable effect on size and fur quality. Daily doses of o.44 mg

or more for a prolonged period caused infertility in female mink.

Zbl. Vet. Med. A. 26, 754-764, 1979.
7 tables, 14 reference.
In English with summaries in English,
German, French, and Spanish.

Authors summary.

★ UTILIZATION OF FISH AND ANIMAL BYPRODUCTS IN MINK NUTRITION.
IV. FECAL EXCRETION AND DIGESTIBILITY OF NITROGEN AND AMINO ACIDS BY MINK FED COD (GADUS MORRHUA) FILLET OR MEAT-AND-BONE MEAL.

Anders Skrede, Dept.of Poultry and Fur Animal Science,
Agricultural University of Norway, Ås-NLH, Norway.

Two experiments were conducted to study the application of the fecal analysis method in the determination of amino acid digestibility in mink. The protein sources were raw cod (Gadus morrhua) fillet and commercial meat-and-bone meal. Experimental animals were dark male mink of about 9 months of age.

In Expt. 1, cod fillet and meat-and-bone meal were fed at graded levels together with a proteinfree diet, in order to obtain data of metabolic fecal excretion of N (MFN) and individual amino acids (MFAA). Expt. 2 was intended mainly to study the effect of neomycin sulphate supplementation (48 ppm in dietary dry matter) on true digestibility of N (TDN) and amino acids (TDAA).

The excretion of MFN and MFAA were determined directly, using the protein-free diet, and indirectly by regression equations of the excretion by animals receiving diets containing graded levels of protein. Values of MFN obtained by regression technique, 278 (cod fillet) and 236 (meat-and-bone meal) mg N/1oo g dietary dry matter, were somewhat lower than that determined directly (31o mg N/1oo g dietary

dry matter). The levels of MFAA determined by regression were mostly in good agreement with those determined directly. Considering the sources of error with the different methods, the regression intercepts based on the cod fillet diets were chosen as the most reliable estimates of MFN and MFAA.

The average apparent digestibilities of N in Expt. 1 ranged between 8o.6 and 96.3% for cod fillet, and between 43.o and 55.8% for meat-and-bone meal, the highest digestibility was obtained with the highest level of protein. The TDN coefficients of cod fillet were extremely high (97.3-99.3%), whereas those of meat-and-bone meal were rather low (64.2-68.1%). Average values of TDN and TDAA were generally not influenced by dietary levels of protein. The TDAA coefficients of cod fillet were very high and there were only minor differences between different amino acids. All nutritionally important amino acids in cod fillet revealed an average true digestiblity above 99%. The average values of TDAA exceeded slightly the corresponding TDN, thus implying relatively low digestibility of the non-amino acid part of the N. Amino acids in meat-and-bone meal were generally poorly digested, but there was considerable variation between different amino acids. Arginine revealed the highest average true digestibility (85.5%), while the lowest figures were found for cystine (27.1%), aspartic acid (43.5%) and tryptophan (44.o%). The TDN value was thus inadequate as a measure of true digestibility of individual amino acids.

The results of Expt. 2 confirmed the high true amino acid digestibilities of cod fillet. Meat-and-bone meal used in the two experiments belonged to the same batch. Nevertheless, Expt. 2 revealed lower TDN and TDAA values than were obtained in Expt. 1, possibly because of the storage (about 1 year) of the meal between the experiments.

Dietary supplementation with neomycin sulphate failed to affect amino acid composition of feces and the estimates of TDN and TDAA. It may be suggested that the fecal analysis method is suitable for

determination of amino acid digestibility in mink, in part because of the short and simple digestive tract and limited microbial action in the large intestine.

Acta Agric. Scandinavica, 29, 1979, 241-257.
3 figs., 11 tables, 81 references.

Authors summary.

★ UTILIZATION OF FISH AND ANIMAL BYPRODUCTS IN MINK NUTRITION. V. CONTENT AND DIGESTIBILITY OF AMINO ACIDS IN COD (GADUS MORRHUA) BYPRODUCTS.

Anders Skrede, Dept. of Poultry and Fur Animal Science, Agricultural University of Norway, Ås-NLH, Norway.

Chemical composition and true digestibility of N (TDN) and amino acids (TDAA) in cod (Gadus morrhua) test proteins were studied in an experiment with 9-month-old male mink. The test proteins were raw fillet, autoclaved fillet, raw filleting scrap (coarsely ground), autoclaved filleting scrap, raw filleting scrap (homogenized), filleting scrap powder (heat drying and grinding), raw skin, and autoclaved skin.

The composition of the raw material influenced proximate composition and amino acid pattern considerably. Variable proportion of collagen appeared to be the major source of differences in amino acid composition. The contents of all essential amino acids except arginine were reduced by replacing muscle with the collagenous fractions skin and bone. The different methods of preparing the test proteins did not affect amino acid composition, with the excepteion of slightly reduced cystine content in filleting scrap powder.

Digestibilities of the raw coarsely ground test proteins revealed that inclusion of skeletal proteins impaired protein digestibility

substantially, while raw skin was well digested. The differences between the TDAA values of raw fillet and those of raw filleting scrap were characteristically greater for amino acids present in high levels in collagen, especially proline, hydroxyproline and glycine, than for the essential amino acids. This indicates poor digestibility of amino acids in the skeletal part of filleting scrap.

The fillet and skin fractions revealed an overall reduction in TDAA values after autoclaving. Cystine, aspartic acid, glycine, histidine and tryptophan were most severly affected while the decrease in arginine digestibility was rather slight. Autoclaving of filleting scrap did not result in general reduction of the TDAA values. The cystine and aspartic acid digestibilities were reduced but the digestibility of amino acids occurring in large quantity in collagen was actually improved by autoclaving filleting scrap. Similar results were obtained by the heat drying procedure used in the preparation of filleting scrap powder. Modification of the structure of fish bone caused by heat treatment may thus facilitate the enzymic digestion of bone proteins. A resembling effect on the digestibility of fish skeletal protein was obtained by fine homogenization.

Acta Agric. Scand. 29, 1979, 353-362.
8 tables, 32 references.

Authors summary.

★ DIGESTIBILITY OF AMINO ACIDS IN RAW FISH FLESH AND MEAT-AND-BONE MEAL FOR THE CHICKEN, FOX, MINK, AND RAINBOW TROUT.

A. Skrede, Å. Krogdahl, E. Austreng, Dept. of Poultry and Fur Animal Science, Agricultural University of Norway, Ås-NLH, Norway.

Experiments were conducted to study the digestibility of amino acids in highly respectively poorly digestible protein by different

monogastric animals. The animals were adult colostomized hens, 5-week-old chicks, adult mink and blue foxes, and rainbow trout. Protein sources were raw cod (Gadus morrhus) fillet and commercial meat-and-bone meal.

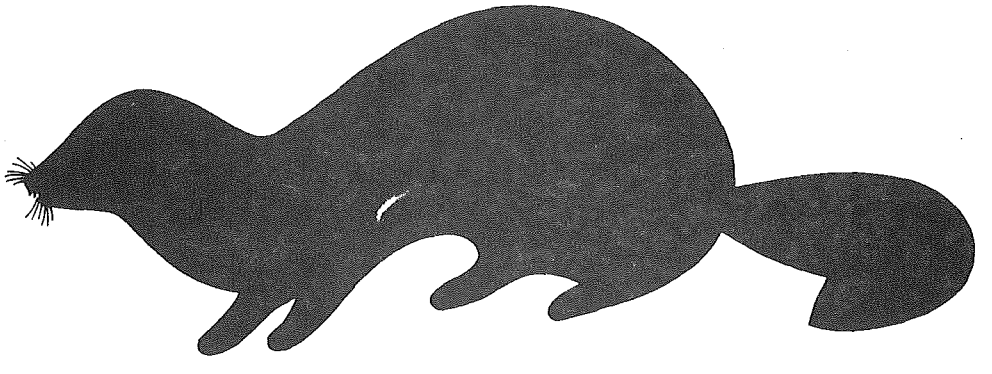
Feeding of protein-free diets indicated considerable differences between species in excretion of metabolic fecal N, although the amino acid composition of this fraction was similar in all animals with the exception of certain divergences with chicks (i.e. lower contents of threonine and histidine and higher contents of glycine and hydroxyproline).

All animals digested the cod fillet amino acids very effectively and with minor differences between individual amino acids. However, the average amino acid digestibility in chicken (colostomized hens and chicks) was slightly below that of mink, foxes, and rainbow trout.

Feeding of meat-and-bone meal resulted in considerable differences in amino acid digestibility between species as well as between different amino acids. The highest digestibility was obtained with colostomized hens, whereas the digestibility values of mink and rainbow trout were substantially lower than those of other animals. Among the amino acids, aspartic acid, and tryptophan were the least efficiently digested, while the digestibility of arginine was relatively high in all species.

Z. Tierphysiol., Tierernährg. u. Futtermittelkde. 43, 1980, 92-101.
6 tables, 14 references.
In English with summaries in English and German.

Authors summary.



★ Digestibility of Crude Protein, Crude Fat, and Carbo hydrates in growing Mink related to Feeding with Sulfuric Acid preserved Fish.

N. Enggaard Hansen, Department of Animal Nutrition, Royal Vet. and Agric. University, Bülowsvej 13, DK-1870 Copenhagen V, Denmark.

N. Glem-Hansen, National Institute of Animal Science, Department of Fur Bearing Animals, Roskildevej 48H, DK-3400 Hillerød, Denmark.

The influence of sulfuric acid on the digestibility has been investigated in growing mink on rations containing 0, 20 and 40% acid preserved fish, and 40% acid preserved fish added calciumhydroxide at two levels resulting in the same pH-values as found in rations containing 0 and 20%.

The digestibility was determined three times in the period from august to october with four animals per treatment.

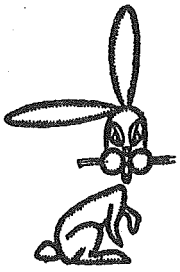
No effect on the digestibility of crude protein and crude fat related to the amount of sulfuric acid preserved fish was found. A slight positive influence on the digestibility of carbo hydrates was seen after sulfuric acid preservation.

Calciumhydroxide reduced the digestibility of crude fat to an extent of 6% at the highest level, and there was a tendency to a negative effect on the digestibility of carbo hydrates. The digestibility of crude protein was unaffected.

The digestibility was not influenced by the age of animals.

Dansk Pelsdyravl, 43, 59-61.
3 tables, 15 references.
In Danish.

Authors abstract.



★ THE EFFECT OF CALCIUM PANTHOTENATE SUPPLEMENTS TO RATIONS WITH LOW LEVEL OF PANTHOTENIC ACID ON FERTILITY OF ONE-YEAR-OLD FEMALE MINK.

(Vliv doplňku pantotenátu vápenatého do krmných dávek s nízkou hladinou kyseliny pantotenové na plodnost jednoletých samic norku.)

Milos Skřivan, L. Štolc, K. Voříšek, M.S. Vysoká škola zemědělská, 16o 21 Praha 6 - Suchdol, Czechoslovakia.

Panthotenic acid has positive effect not only on the growth rate and fur pigmentation, but also on the litter size in the multiparous animals. Ninety one-year-old, individually housed mink females of standard type were divided into 3 groups of 3o animals each. The control group (I) was fed from March 1 to June 30 basal ration with low level of panthotenic acid (1.9 mg/animal/day). Experimental groups were fed the basal ration supplemented with 3 mg Ca-panthotenate (group II) or 6 mg Ca-panthotenate (group III) per animal and day. The levels of other vitamins were in agreement with the standard. The content of panthotenic acid in rations was determined microbiologically by means of yeast Saccharomyces carlsbergensis. The addition of 3 and 6 mg of Ca-panthotenate to the deficient ration enhanced the number of live-born animals per litter by o.44 and o.8, respectively. The difference between groups remained essentially unchanged till the weaning. Generally very low fertility found in the control group was probably caused by the low level of panthotenic acid in the ration.

Biol. chem. Vet. (Praha), XV (XXI) 3, 1979, 2o7-212.
6 tables, 1 photo.
In Czechoslovakian with English subtitles and summaries in Russian, English, German, French and Spanish.
Authors summary.

★ THE EFFECT OF CALCIUM PANTHOTENATE SUPPLEMENTS TO RATIONS WITH HIGHER LEVELS OF PANTHOTENIC ACID ON THE FERTILITY OF FEMALE MINK.

(Vliv doplňku pantotenátu vápenatého do krmných dávek s vyšší hlandinou kyseliny pantotenové na plodnost norčích samic.)

Miloš Skřivan, L. Štolc, J. Plíštilová, J. Plíštil, M.S. Vysoká škola zemědělská, 16o 21 Praha 6 - Suchdol, Czechoslovakia.

Two experiments were carried out to study the effect of supplementing diets high in panthotenic acid with calcium panthotenate on the reproductive performance of mink females. In both experiments 15o animals of standard type were used and divided into 3 groups of 5o animals each. The addition of 3 mg Ca-panthotenate to the basal ration containing 2.37 mg panthotenic acid increased fertility to the greater extent than the addition of 6 mg Ca-panthotenate. In the second experiment, the addition of 2 or 4 mg Ca-panthotenate to the basal ration containing 4.76 mg panthotenic acid did not increase the litter size, but the conception rate and the total number of born animals were greater. The advantage of supplementing rations for mink with calcium panthotenate is apparent. It is suggested to supplement the rations for gravid female mink with 2-6 mg Ca-panthotenate per animal and day according to the composition of the basal diet.

Biol. Chem. Vet. (Praha), XV (XXI) 3. 1979, 213-219.
1o tables, 9 references.
In Czechoslovakian with English subtitles and summaries in Russian, English, German, French and Spanish.
Authors summary.

★ L-LYSINE, DL-METHIONINE, AND DL-TRYPTOPHAN IN THE DIET OF YOUNG AND ADULT VISONS.

(L-lysin, DL-methionin a DL-tryptofan v krmných dávkách mladých i dospělých norku.).

Miloš Skřivan, M.S. Vysoká škola zemědělská, 16o 21 Praha 6 - Suchdol, Czechoslovakia.

A success of supplementing L-lysine and DL-methionine or, L-lysine, DL-methionine and DL-tryptophan into the diets for visons with a reduced contents of N-substances and aminoacids has been proved in two experiments. Deficience of protein and of aminoacids was obtained by dropping beef musculature from diet (it contained 25% in the control), by increasing the share of less valuable feedingstuffs of animal provenance by 17%, and of barley coarse meal by 6%. In such a way, a diet was obtained which did not secure a due performance of visons, but which is a type of diet used often in practice because of a shortage of feedingstuffs of a better quality.

Experiments were conducted on the visons of the Dark Standard type. The first experiment was conducted on 12o animals of both sexes, for a period of 16 days. The second experiment was made on 9o animals since the middle of November till June of the following year. Both experiments lasted for a whole year altogether. A diet without aminoacid supplements (negative control group) significantly reduced the growth of young visons and their subsequent fertility. But, a supplement of o.2% lysine, or of o.4% lysine eliminated the effect of protein deficiency. A combination of o.4% lysine and o.2% methionine led to an improvement of the results up to the level of a musculature containing diet, and a supplement of o.1% tryptophan to lysine and methionine had a further favourable influence.

Biol. Chem.Výz. Zvířat, 3, 1977, 213-219.
7 references, 5 tables.
In Czechlslovakian with summaries in Russian, English, German, French and Spanish.

Authors summary.

★ SUSCEPTIBILITY OF MINK TO CERTAIN VIRAL ANIMAL DISEASES FOREIGN TO THE UNITED STATES.

S.P. Sahu, A.H. Dardiri, U.S. Dept. of Agric. Science and Education Administration, Plum Island Animal Disease Center, Greenport, Long Island, New York 11944, USA.

Mink (Mustela vison) were inoculated with viruses: African horse sickness (AHS), African swine fever (ASF), bovine herpes virus II (BHV2), foot-and-mouth disease (FMD), goat pox (GP), hog cholera (HC), peste des petits ruminants (PPR), rinderpest (RP), swine vesicular disease (SVD), vesicular exantherma of swine (VES) and vesicular stomatitis (VS). Their susceptibility was measured by development of clinical signs, virus isolation and detection of precipitin and/or virus neutralizing antibodies. SVD virus produced a lesion in one mink. Virus was isolated from mink inoculated with SVD, FMD and BHV2. Neutralizing and/or precipitin antibodies were detected in mink inoculated with ASF, FMD, FP, RP, SVD and VS viruses. Mink were not susceptible to AHS, HC, PPR and VES viruses.

Journ. of Wildlife Diseases, Vol. 15, no.3, 1979, 489-494.
3 tables, 15 references.

Authors abstract.

★ ACID-BASE STATUS OF MINK BLOOD DURING STORAGE.

N. Assal, Ø.R. Jepsen, J.S.D. Poulsen, Inst. of Surgery, The Royal Vet. and Agric. University, 13 Bülowsvej, DK 1870 Copenhagen V.

Tha changes in pH, pCO_2, pO_2, BE, and SBC during storage of anaerobic drawn arterial blood for 24 hours at different temperatures were measured and illustrated. Correction tables for determination of the initial acid-base data are constructed based upon the regression equations in table II. The changes in the acid-base values of mink blood are much higher than in equine, porcine, and canine blood

during storage at 21-24° C and o-4° C for 24 hours.

Nordisk Vet.Med. 32,198o, 1-8.
1 fig., 4 tables, 16 references.

Authors summary.

★ STAPHYLOCOCCUS AUREUS MASTITIS IN NURSING MINK AFFECTED WITH ALEUTIAN DISEASE.

Michael J. Ryan, Dennis J. O'Connor, Svend W. Nielsen,
Northeastern Research Center for Wildlife Diseases,
College of Agric. and Nat. Resources, Univ. of Connecticut,
Storrs, Connecticut o6268, USA.

An outbreak of staphylococcal mastitis in nursing female ranch mink (Mustela vison) is described. Lesions were acute necrotizing mastitis, fatty infiltration of the liver and renal tubules, and adrenal cortical hyperplasia. The presence of Aleutian disease in the herd suggests a role of immunosuppression in the outbreak.

Journ. of Wildlife Diseases, Vol. 15, no.4, Oct. 1979.
3 photos, 6 references.

Authors abstract.

★ ACCELERATED DEVELOPMENT OF INFECTIOUS MINK PLASMACYTOSIS (IMP) IN ANIMALS FED SINGLE-CELL PROTEIN PRODUCED BY PSEUDOMONAS METHYLOTROPHA (PRUTEEN).

Torbjørn Almlid, Knut Frøysedal, Knut Nordstoga, Dept. of Microbiol. and Immunology, Vet. College of Norway, Oslo, Norway.

The effect of feeding single-cell protein (SCP) produced by Pseudomonas methylotropha on the development of infectious mink plasmacytosis (IMP) was studied in growing mink.

Two groups of animals were fed a diet containing 4% or 1o% Pruteen SCP. Each of the experimental groups and the control group consisted of 12 Sapphire and 18 Standard mink. At the start of the experimental period the animals were placed in cages in mink sheds from which heavily IMP-infected mink had just removed, and which had not been cleaned or disinfected.

The experimental animals showed a significantly lower weight gain, lower haematocrit values, higher levels of antibodies to the IMP virus and a higher mortality rate than the controls. The mortality rate was higher among Sapphire than among Standard mink.

It is suggested that the accelerating effect of Pruteen SCP on the development of IMP may be due to endotoxins in Pruteen SCP leading to an overstimulation of the immune response system and thus enhancing immune complex deposition in target organs.

Acta Agric. Scand. 29, 1979, 363-368.
5 tables, 2 figs., 32 references.

Authors summary.

★ MECHANISMS OF ANEMIA IN ALEUTIAN DISEASE VIRAL INFECTION OF MINK.

Travis C. McGuire, Lance E. Perryman, John R. Gorham, Dept. of Vet. Microbiol. and Path., Washington State University and the Agric. Res. Service, USDA, Pullman, Wash. 99164, USA.

Mink with Aleutian disease developed severe anemia within a few months after infection. Evaluation of erythropoiesis and erythrocyte survival demonstrated that the anemia was caused by increased erythrocyte destruction, complicated in some cases by decreased or inadequate erythropoiesis. An inverse relationship existed between the amount of IgG on affected mink erythrocytes and the erythrocyte half-life. However, the number of IgG molecules/erythro-

cyte were not high enough to be detected by direct Coombs' test, with the exception of one case. Inadequate erythropoiesis was reflected by lower plasma iron turnover levels and reticulocyte numbers than expected considering the severity of the anemia involved.

Vet. Microbiology, 4, 1979, 17-27.
1 fig., 4 tables, 24 references.

Authors abstract.

★ ROLES OF EXOENZYMES AND EXOTOXIN IN THE PATHOGENICITY OF PSEUDOMONAS AERUGINOSA AND THE DEVELOPMENT OF A NEW VACCINE.

J. Yuzuru Homma, Dept. of Bacteriology, The Inst. of Medical Science, The University of Tokyo, Shirokanedai, Minato-ku, Tokyo 108, Japan.

1. Introduction.
2. Roles of protease, elastase and exotoxin in the pathogenicity of P. aeruginosa
   - Protease and elastase
   - Exotoxin
   - Virulence
3. Development of a multi-component vaccine consisting of the common antigen (OEP), protease toxoid and elastase toxoid
   - The multi-component vaccine
   - Effectiveness of immunization with single- and multi-component vaccines of protection against experimental homorrhagic pneumonia in mink due to P. aeruginosa
   - Effect of the multi-component vaccine on protection against enzootic of hemorrhagic pneumonia in mink
   - Comparison of the effect of multi-component vaccine with that of formalin-killed cell vaccine on protection against enzootic of hemorrhagic pneumonia in mink due to P. aeruginosa.

4. Perspectives on the application of the multi-component vaccine and exotoxin toxoid to human clinical pseudomonal infections.

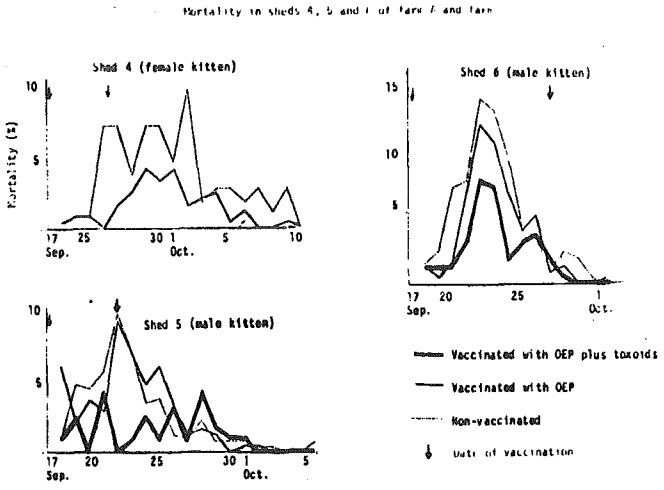


Fig. 2. Mortality in sheds 1, 2 and 8 of farm A

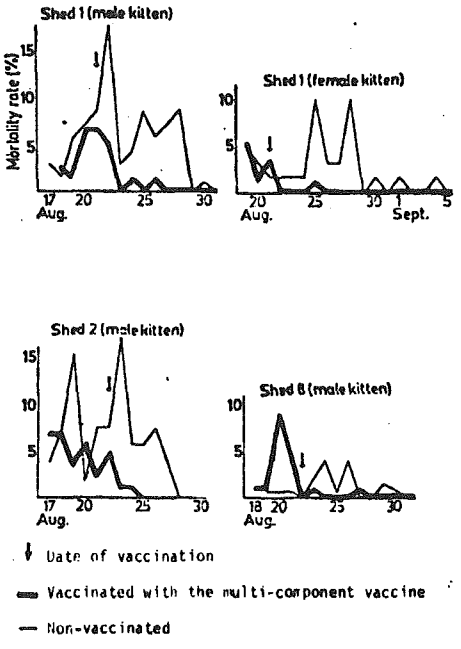
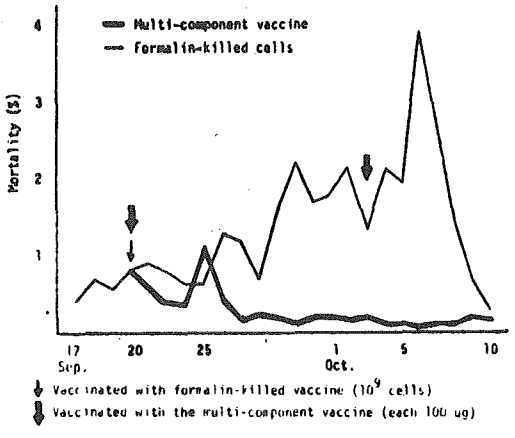


Fig. 3. Effectiveness of the multi-component vaccine and formalin-killed vaccine



Parts of this paper were read at the Symposium on Vaccine Production which was held at Mechnicov Research Institute for Vaccine, Moscow, on June 4-6, 1978, at the National Institute of Hygiene, Budapest on 24 October, 1979, and at the Symposium on Pseudomonas aeruginosa infections at Walter Reed Army Institute of Research, Washington D.C., on 6-7 December 1979.

Submitted to the Japanese Journal of Experimental Medicine, Vol. 5o (3), 198o.

Original contents and figures.
5 tables, 3 figs., 68 references.

Not abstracted.

★ UROLITHIASIS IN FERRETS (MUSTELA PUTORIUS).

Hai T Nguyen, A.F. Moreland, R.P. Shields, Animal Resources Division, J. Hillis Miller Health Center, University of Florida, Gainesville, FL 3261o, USA.

Urinary calculi were observed frequently in ferrets which were from a group used for influenza research. They were submitted for necropsy with various clinical signs. The calculi were composed of magnesium ammonium phosphate hexahydrate and were found in the pelvis of the kidney, urinary bladder and urethra. Crystals of undetermined nature occasionally were observed in the kidneys.

Lab. Animal Science, 29, 1979, 243-245.
1 fig.,18 references.

Authors summary.

★ BLOOD VALUES AND THE USE OF KETAMINE HC1 IN THE FOX.

Clyde Brooks, K.D. Morris, Mountain View Vet. Hospital, 646 Country Club Road, Brevard, North Carolina 28712, USA.

A study was done to determine secondary toxicity in wild Canidae fed rodents given a lethal dose of an anticoagulant rodenticide. Five red foxes (Valupes fulva) and 3 gray foxes (Urocyon cinereoargenteus) were used as models.

Before these foxes were exposed to the poisoned rodents different

blood values were determined, and their feces checked for intestinal parasite ova. To facilitate withdrawal of blood specimens, the foxes were anesthetized with ketamine HCl.

In this paper results of blood and parasite examinations and observations on the use of ketamine HCl in foxes are reported.

Ketamine HCl proved to be effective and valuable for anesthetizing the foxes. The dosage of 7-1o mg/1b was entirely suitable.

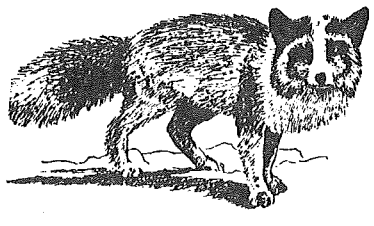
From laboratory data derived from blood analyses, all of the foxes appeared to be in good health, with the exception of No. 7. This animal had outward signs of coccidiosis, with a bloody diarrhea and an elevated SGPT.

With the exception of the WBCS, which were lower, the CBC values in this study parallel those of values for dogs. Eosinophil counts were elevated in 3 foxes, 2 of which had numerous parasite eggs in their feces. Values for PTT, SGOT, and SGPT were comparable to those for dogs.

More studies are needed to give statistical validity to the values found in our study. In the interim, normal values for dogs can be used as approximate normals for foxes.

Vet. Med./Small Animal Clinical, August 1979, 1179-118o.
2 tables, 7 references.

Abstract: G. Jørgensen



★ HEALTH SERVICE FOR FUR ANIMALS.

(Die Aufgaben im Pelztiergesundheitsdienst.).

H. Zimmermann, Bezirksinstitut für Veterinärwesen Rostock,
22 Greifswald, Petershagen-Allee 1, DDR.

A socialist sector of fur animal breeding was established about 1960. Its advent necessitated the introduction of an fur animal health service which is run for all regions of the GDR by the fur animal sections in the Regional Veterinary Institutes of Rostock and Leipzig. The Service has all affiliated fur animal farms under veterinary control.

Mh. Vet.-Med. 34, 1979, 798-800.
3 figs., 9 references.
In German with abstracts in German, Russian and English.

Authors abstract.

★ BILATERAL CATARACTS IN A FERRET.

Bill Utroska, William L. Austin, Stateline Animal Clinic,
9240 Highway 51 North Southhaven, Missisippi 38672, USA.

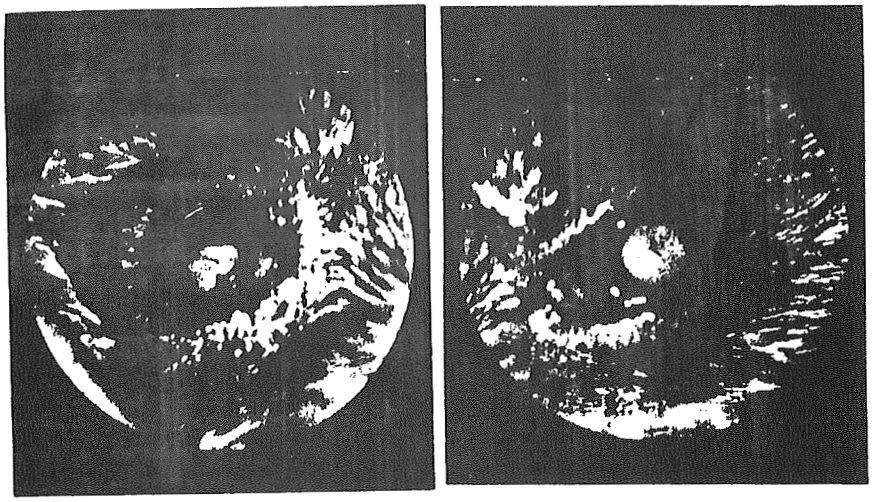
Case Report.

A male ferret, weighing approximately 3.45 lb (1575 g) and about 9 months old, was presented for neutering.

After the neutering was completed, the ferret's eyes were examined and bilateral mature cataracts were found. The cataracts appeared to involve both the nucleus and the cortex. There was some suggestion of tumescence causing accentuation of the "Y" suturae.

Limited further examination of the animal was conducted to determine

whether it was diabetic. No blood samples were obtained, but repeated urinalyses failed to show sugar in the urine. The owners were questioned, and nothing in the ferret's history suggested diabetes.

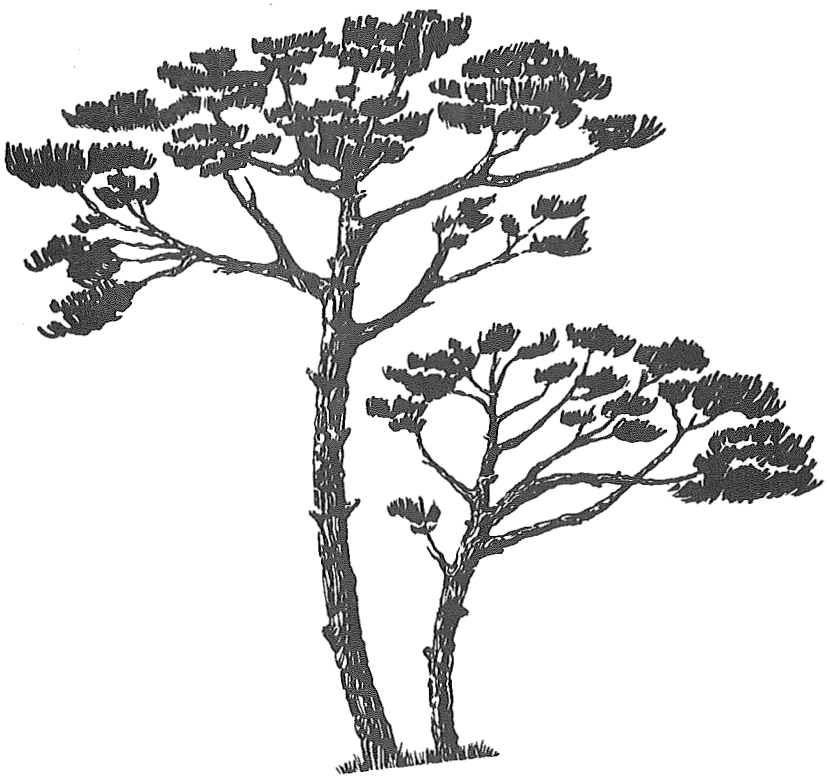


Figures 2 & 3
Right and left eyes. Note the Y suture in each eye.

VETERINARY MEDICINE SMALL ANIMAL CLINICIAN

Vet. Med./Small Animal Clinician, August 1979, 1176-1177.
3 references, 3 photos.

Abstract: G. Jørgensen



FOX FARMING IN CANADA

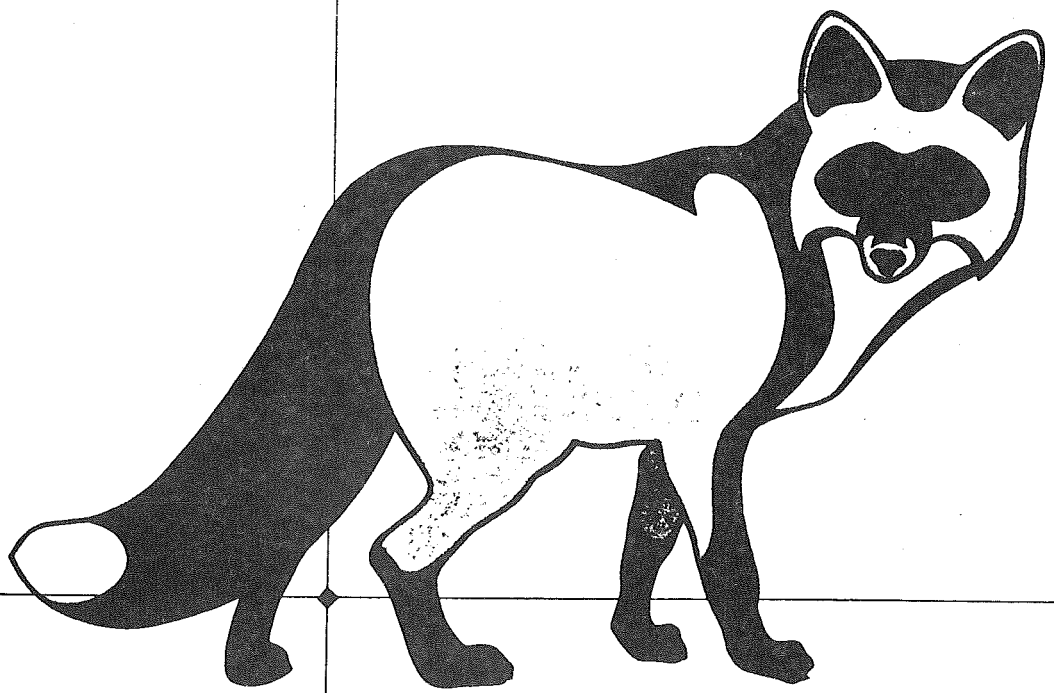
Livestock Division and Animal Pathology Division

PUBLICATION 1660, available from Information Services, Agriculture Canada, Ottawa K1A 0C7

Cat No. A63–1660/1979 ISBN 0-662-10347-3
Printed 1979 5M–6:79

Agriculture Canada

Publication 1660



FOX FARMING IN CANADA

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PUBLICATION 1660, available from
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Printed 1979 5M–6:79

A BIBLIOGRAPHY OF MUSTELIDS

Part VI: Wolverine

Compiled by

James C. Halfpenny, David Nead, Steven J. Bissell

and Richard J. Aulerich

MICHIGAN STATE UNIVERSITY
COLLEGE OF AGRICULTURE AND NATURAL RESOURCES
DEPARTMENT OF POULTRY SCIENCE
EAST LANSING · MICHIGAN · 48824

December 4, 1979

Dr. Gunnar Jogensen
2nd International Scientific Congress 1980
Scientific, 48 H Roskildevej
DK 3400 Hilleroed
Denmark

Dear Gunnar:

Enclosed is a copy of Part VI: Wolverine, of our Mustelid Bibliography. This publication is available free of charge and perhaps may be useful to some readers of "Scientifur". Copies are available from Dr. James C. Halfpenny or myself. Our addresses are listed on the first page of the bibliography.

I recently received the information you sent concerning the preliminary programme and registration for the Second International Congress in Fur Animal Production. I was certainly looking forward to attending the Congress and presenting a paper, however, it now appears that sufficient funds are not available for me to attend the Congress. It would be a rather expensive trip and University funding is just not available to support such travel, especially since the length of the oral presentations has been restricted to 5 to 6 minutes.

Kindest regards and best wishes for a happy holiday season.

Sincerely yours,

Richard J. Aulerich
Professor
Fur Animal Project

A BIBLIOGRAPHY OF MUSTELIDS
PART VI: WOLVERINE[1]

compiled by

James C. Halfpenny[2], David Nead[3], Steve J. Bissell[4], and Richard J. Aulerich[5]

This is the sixth of a series of bibliographies on Mustelids prepared to assist individuals interested in these species to obtain information published from 1900 through 1979. Although a fairly thorough search has been undertaken, this bibliography is not entirely complete. There are many general texts that pertain to Mustelids, as well as other animals, which are not included. Undoubtedly some foreign references have been omitted, although many are cited. For completeness, some selected references prior to 1900 have been included.

References in the bibliography are listed alphabetically by senior author under the following subjects:

I. Anatomy and Physiology
II. Conservation and Management
III. Disease and Parasitism
IV. Distribution
V. Ecology and Behavior
VI. Genetics
VII. Popular and Miscellaneous
VIII. Reproduction
IX. Taxonomy and Paleontology

Articles pertaining to more than one subject are listed under each appropriate heading. All authors names appear in the author index (page 43).

---

[1]This bibliography represents a contribution in part to Federal Aid Endangered Species Project SE - 3 - 2.

Journal Article No. 9214, Michigan Agricultural Experiment Station, Michigan State University, East Lansing, MI 48824.

[2]Department of Environmental, Population, and Organismic Biology, University of Colorado, Boulder, Colorado 80309

[3]c/o 2842 South Salsbury, Denver, Colorado

[4]Colorado Division of Wildlife, Denver, Colorado 80216

[5]Fur Animal Project, Department of Poultry Science, Michigan State University East Lansing, Michigan 48824

HETEROCHROMATIN IN MAMMALS, WITH SPECIAL REFERENCE TO ERINACEUS AND MUSTELA

by

NILS MANDAHL

LUND 1979

Genetiska Institutionen
Lunds Universitet
S-22362 Lund
Sweden

By due permission of the Faculty of Science
of the University of Lund,
to be publicly defended,
together with the papers listed overleaf,
in the lecture hall of the Institute of Genetics, Lund
on Friday, November 30, 1979 at 1 p.m.
for the degree of Doctor of Philosophy.

The thesis will be defended in English.

HETEROCHROMATIN IN MAMMALS, WITH SPECIAL REFERENCE TO ERINACEUS AND MUSTELA

by

NILS MANDAHL
Fil. kand. Mlm.

This thesis is based on the following papers:

I. MANDAHL, N. 1978. Variation in C-stained chromosome regions in European hedgehogs (Insectivora, Mammalia). - Hereditas 89:107-128

II. MANDAHL, N. 1979. Localization of nucleolar organizing regions in European hedgehogs (Insectivora, Mammalia). - Hereditas 91:149-161

III. FREDGA, K. and MANDAHL, N. 1973. Autosomal heterochromatin in some carnivores. - Nobel Symp. 23:104-117

IV. MANDAHL, N. and FREDGA, K. 1975. Q-, G- and C-band patterns of the mink chromosomes. - Hereditas 81:211-220

V. MANDAHL, N. and FREDGA, K. 1980. A comparative chromosome study by means of G-, C- and NOR-bandings of the weasel, the pygmy weasel and the stoat (Mustela, Carnivora Mammalia). - Hereditas 93, in press

The thesis is discussing following matters:

The era of chromosome banding.
Progress in molecular biology.
Amount and distribution of constitutive heterochromatin in mammals.
Interspecific variation of constitutive heterochromatin.
Intraspecific variation of constitutive heterochromatin.
Intraindividual variation of constitutive heterochromatin.
Variation within blocks of constitutive heterochromatin.
Genesis of variation of constitutive heterochromatin.
What does variation of constitutive heterochromatin mean?

24 pages, 103 references.

CARNIVORE

Carnivorous Mammals Including Man

19 March 1980

Editor
SCIENTIFUR
48 H Roskildevej DK-3400
Hilleroed
DENMARK

Dear Editor:

We thank you for sending us SCIENTIFUR on exchange for CARNIVORE, an issue of which is forthcoming and will be sent to you.

However, please note our change of address:

CARNIVORE
P.O. Box 370
Ashland, OR 97520
USA

Thank you for correcting our address.

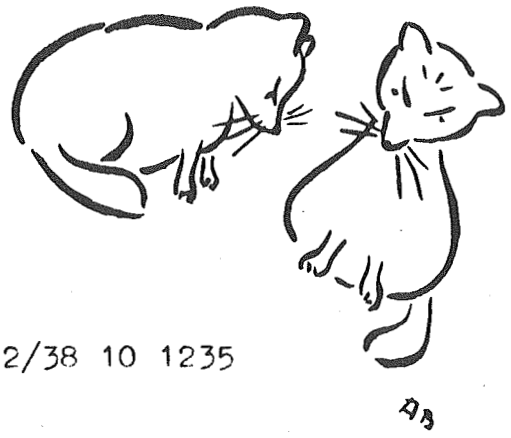
Sincerely,

Randall Eaton
Editor - Carnivore

P.O. Box 370
Ashland, OR 97520

P.S. Possibly, if not too much trouble, you could notify your readers of our change of address.

TELEGRAM TELEGRAM TELEGRAM TELEGRAM TELEGRAM TELEGRAM TELEGRAM TELEGRAM TELEGRAM TELEGRAM



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Dato 10 APR. 1980
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Why could they not get money to participate The Second International Scientific Congress in Fur Animal Production ?

gunnar joergensen
sciengyfur 48h roskildevej
dk-3400 hilleroed denmark

we greet the participants and organizers of the second international scientific congress in fur animal production and wish to have successful work sincerely yours

v afanasjev
g kuznetsov
n pereldik

cot ~~48h dk-3400~~

Bästa herr Jørgensen! 4 4. 1980

Jag tackar för Edert brev, särtryckerna och kongressens program. Dom mig mycket intresserar.

Det skulle glädja mig mycket om jag finge tillfälle att besöka kongressen. Tyvärr har jag inte möjligheten. Jag tillönskar kongressen ett framgångsrikt förlopp.

Många hjärtliga hälsningar

Dear friends !!

Thank you very much for your wishes for the Congress.

We really hope to meet you at the 3rd congress in Paris 1984.

And we also hope to recieve contributions from you to SCIENTIFUR.

Kind regards

2nd INTERNATIONAL SCIENTIFIC CONGRESS IN FUR ANIMAL PRODUCTION

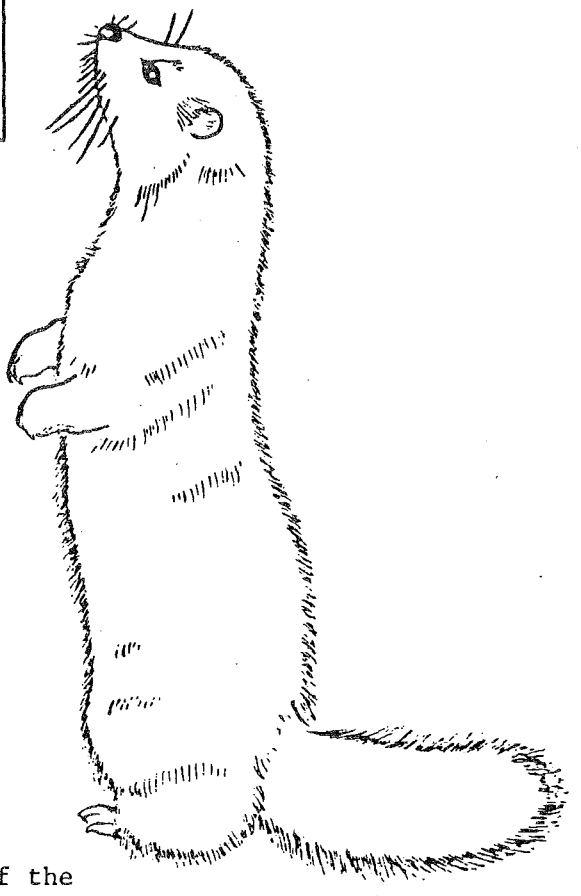
DENMARK, APRIL 1980

BOARD OF THE SCANDINAVIAN FUR FARM ORGANIZATIONS

PROGRAM AND LIST OF PARTICIPANTS

THE THIRD INTERNATIONAL SCIENTIFIC CONGRESS IN FUR ANIMAL PRODUCTION

PARIS 1984



Helge OLSEN, Secretary of the Scandinavian Agricultural Research Association suggested in Scientifur of May 1978, that scientists working on fur animal production should meet periodically and that the congresses should become a current international event.

In order to support this very positive idea, I proposed to our friend Dr. Gunnar JØRGENSEN, President of the 2nd Congress, to organize the 3rd one in France.

Dr. Gunnar JØRGENSEN has been so kind as to accept this proposal which has been agreed by the members of the 2nd Congress in Copenhagen.

Obviously it will be quite a heavy job fur us, but the work carried out during the first two congresses has been so efficient and the meetings so agreable that we accept this task with pleasure.

Thus, on behalf of the Institut National de la Recherche Agronomique, of the Institut Technique de l'Aviculture et des Elevages de Petits Animaux, of the Fédération française des Eleveurs d'Animaux à Fourrure, of the Association française des Eleveurs de Visons and of the Fédération Nationale de la Fourrure, I invite you to attend the 3rd International Scientific Congress in Fur Animal Production which will be held in Paris, or in its surroundings, at the beginning of April 1984.

So would you please think over the paper you intend to present, four years go so quickly ! (working language : English)

With kind regards,

Jean ROUGEOT
Institut National de la Recherche Agronomique
Laboratoire des Pelages, Toisons et Fourrures
78350 Jouy-en-Josas, France

Summaries of reports given at the Second International Scientific Congress in Fur Animal Production.

In SCIENTIFUR Vol. 4, No. 1 (February 198o) we printed summaries of the major part of reports which should be presented at the Second International Congress. However, not all summaries were in our hand in time. Therefore in the following pages we publish the rest of the summaries, so all reports given at the congress hereby are presented in SCIENTIFUR.

THE SECOND INTERNATIONAL SCIENTIFIC CONGRESS IN FUR ANIMAL PRODUCTION

.....

THE COMPLETE CONGRESS MAP CONTAINING ALL REPORTS, PROGRAM,AND LIST OF PARTICIPANTS CAN BE ORDERED FROM THE CONGRESS SECRETARIATE AT A PRICE OF US $ 30.- (DKr. 18o.-).

2nd Int. Scientific Congress 198o
SCIENTIFUR, 48 H Roskildevej
DK 34oo Hilleroed, Denmark

PREPAYMENT WILL BE APPRECIATED.

80 5

Genetische Formeln für die Farbphasen beim Nerz.

Farbphase	Genetischer Typ		
	U.S.A. System	Skandinavisches System	U.D.S.S.R. System
1.	2.	3.	4.
I. Rezessive			
a. Blaue Nerze			
1. Aleuten	al al	aa	aa
2. Cobalt (gelb cross)	gg	gg	qq
3. Steel blue	$p^s p^s$, $p^s p$	$p^s p^s$, $p^s p$	$p^s p^s$, $p^s p$
4. Silver blue	pp	pp	pp
5. Imperial platin	ip ip	ii	ii
b. Braune und beige Nerze			
6. Imperial pastel (Ungava)	bi bi	jj	jj
7. Royal pastel	bb	bb	bb
8. Socklot	bs bs	$t^s t^s$	$t^s t^s$
9 Schwedischer Palomino	$b_s S$ $b_s S$	tp tp	$t^p t^p$
10. Finländischer Weisse (Finn white)	bs^m bs^m	t^w t^w	t^w t^w
11. Nordic buff	bs^a bs^a	t^n t^n	t^n t^n
12. Pastel mit grünen Augen	bg bg	bg bg	gg
13. Ambergold pastel	ba ba	rr	rr
14. Buff (Moyl-olsen)	bm bm	mm	mm
15. Cameo	bm^H bm^H	m^c m^c	m^c m^c
16. Amerikanischer Palomino (Cain)	bp bp	kk	kk

1.	2.	3.	4.
c.Weisse Nerze			
17.Goofus	oo	oo	oo
18.Albino	c^H c^H	c^h c^h	cc
19.Hedlund	hh	hh	hh
II.Dominante			
a.-Intensivierung der Grundfarbe			
2o.Jet black	JJ, Jj	Nn, NN	Nn, NN
21.Finn Black	-	N^Fn, N^FN^F	N^Fn, N^FN^F
b.-Auflösung der Grundfarbe			
22.Ebony	Eb, eb	Ee	Ee
23.Colmira	Cm Cm	Mm	Dd
24.Shadow	-	S_H^s	SHs
25.Black cros	Ss	Ss	Ss
26.95% weiss dominant	SS	SS	SS
27.Royal silver	S^Rs, S^RS^R	S^Rs, S^RS^R	S^Rs, S^RS^R
28.Stewart	-	Ww	Ww
29.Homo	-	WW	WW
3o.Blue frost (Silver sable)	Ff	Ff	Ff

Dr. Păstirnac,Nicolae

Departamentul Agriculturii de Stat
I.A.S. Prejmer, judetul Brasov, R.S. Romania.

2nd Internat. Congress in Fur Animal Production
Denmark 198o.

89 19

2nd Int. Scientific Congress 1980
SCIENTIFUR
48 H, Roskildevej
DK-3400 Hilleroed

SEDATION AND ANAESTHESIA OF MINK. INFLUENCE ON THE HAEMATOLOGICAL VALUES.

Ø.R. Jepsen, J.S.D. Poulsen & G. Jørgensen, National Institute of Animal Science, Dept. of Fur Bearing Animals, Trollesminde
48 H Roskildevej, DK-34oo Hilleroed, Denmark.

The investigation has been carried out with a total number of 299 animals (Royal Pastel, males, genotype bb). In table I is shown the number of animals used for each drug and dose, and in table II the Ph ysiologic, pharmacologic and other caracteristics used for the drugs. Also the usefulness of each drug and the combinations of drugs is evalueted in table II.

The optimal therapeutic dosage of each drug has been fixed and by this dosage the influence of the respective drugs on haemoglobin-concentration, packed cell volume, blood pH, blood pCO_2 and base-excess has been investigated in the following way:

15 minuttes after the animals capture in a trap a blood-sample was taken from a clipped toe-nail and the parameters mentioned above were meseaured. A drug was injected and after 3o minuttes and again after 9o minuttes another blood-sample was taken.

Each group included 6 (or 12(group 5)) animals, and four groups were not injected a drug.

Group nr. 5 was stressed by work, and in the groups used for investigation of drug-combinations(sedation-anaesthesia) the anaesthetic was injected after sample number 2 (3o minuttes after start) was taken. The results are shown in table III (a-e) and i fig. 1 (a-e). In table IV (a and b) and in fig. 2 (a and b) the changes in haemoglobinconcentration and packed cell volume are shown and in table V (a and b) the degree of significance.

The investigation has shown, that it is necessary to known the pharmacology and the influence on the ph ysiologic, haematologic and clinical-chemical parameters caracteristic før each drug used for sedation and anaesthesia of mink before evaluation of the results found by bloodanalyses.

Some of the drugs used in this investigation ought tobe contra-indicated for use in mink (i e Chloralhydrate, Ketalar^{R}, pento-barbitalsodium and the combination, Rompun^{R}/pentobarbitalsodium) because some have a very litle therapentic index, and other have some unvanted secondary effects (muscle tremor, nausea).

Althesin^{R} is the most reliable and the most usefull af the drugs used in this investigation.

11 tables, 7 figs.

2nd Internat. Congress in Fur Animal Production
Denmark 198o.

DEPOSITION OF NUTRIENTS IN GROWING MINK RELATED TO FEEDING WITH SULPHURIC ACID PRESERVED FISH.

N. Enggaard Hansen, N. Glem-Hansen, Dept. af Animal Nutrition, Royal Vet. and Agric. University, Bülowsvej 13, DK 187o Copenhagen V, Denmark.

The deposition of nutrients in the period of growth is examined for mink (standard) fed with rations containing 0, 20 and 40 per cent sulphuric acid preserved fish. The individual groups have included 12 male and 12 female kits, killed at six different times. In the individual animals the content of dry matter, ash, nitrogen, crude fat, calcium, phosphorus and magnesium has been ascertained.

The content of calcium, phosphorus and magnesium increases as a function of time until the end of August after which it remains fairly constant until pelting. From July 7th to August 24th the found depositions of calcium, phosphorus and magnesium in grammes per week amount to 1.25, 0.64 and 0.034 for male kits and 0.62, 0.33 and 0.017 for female kits. The content of nitrogen and crude fat is rising during the entire period of the experiment.

Addition of sulphuric acid preserved fish causes a considerable reduction of the mineral deposition over a three-week period in August. Thereafter the mineral deposition is rising to the same level as found for the control group in mid-September.

2nd Internat. Congress in Fur Animal Production, Denmark 1980.
5 tables, 3 figs. , 28 references.

Authors abstract.

HERD HEALTH MANAGEMENT IN MINK FARMS.

J.S. Dirch Poulsen, Ph.D., Institute of Surgery, The Royal Vet. and Agricultural University, Bülowsvej 13, DK 1870 Copenhagen V, Denmark.

The continued development of industrialized societies results in a tendency of making larger and larger production units.

The same tendency is also found in the animal husbandry production including the production of fur animals.

Investments in stables, technical supply and manpower have or will increase in the future. For the survival of each single expanding production unit several problems of biological, technical, and agricultural-economic nature have to be solved in the coming period. Our resources of rawmaterial are limited by nature, therefore a need of a current research for obtaining an improved and optimal use of

the rawmaterial is necessary. Furthermore, the increasing prices of rawmaterial should force us to minimize the difference in price between the obtainable and the actual outfit.

During the last years more understanding of the nature, biology and pathology of the fur-animals have achieved. The infectious diseases are now under a certain control and programs for their eradications have been made. However, in advanced animal industry, a careful monitored management is needed to control production diseases (reproduction, metabolic), environmental pollution, chemical and microbiological contamination of animals and food.

In order to cope with these problems it will, however, be necessary to deal more detailed with surveillance of disease, prevention of production diseases, securing optimal productivity (feeding, management) and development of new measures of zootecnics (biotechnics of reproduction). Strictly control of the animal-, food- and labour hygiene should also be taken into consideration.

Several research programs have hitherto been used for quick solutions of acute more or less well defined problems. However, in dealing with the future management problems it would most possibly be advantageous to the mink producers to take the system of herd health management into consideration. Herd health management programs are for other kinds of animals designed to record data obtained by systematic, regular, purposeful and longlasting collection of information from the examined herds. By use of the collected data the problems can be presented in an obvious way and efforts taken for their solution. Highlights on the causes of disorders could in many cases be performed at an early stage and methods for their elimination be considered before the problems become catastrophic.

The registration of data could in Denmark within the mink industry with approximately 3,000 farms and 30 centralized kitchens be performed rather easily and the factors of variation seem to be rather limited in comparison to other species.

The herd health management program should be performed by registration of data concerning at least:

1. Reproduction
2. Production
3. Diseases
4. Mortality
5. Feeding
6. Environment
7. Management
8. Economic.

Certain information about the skin quality, feeding and breeding are already collected but not in a way to be used in this system. However, some of the information about the skin quality could be included in the sum of information necessary for the selection of participating farms.

The participating farms should be selected among those with severe problems and those without problems for the moment.

After an analysis of the data, action could be taken to find out whether the problems could be solved by pathological,microbiological, clinical-chemical and/or chemical methods. The use of metabolic profiles as a tool of controlling the health in the herds should also be taken into consideration. With the results obtained within the last years in the clinical-chemical analysis of mink disorders, this discipline can be solid tool in the work of herd health management.

It is a clear condition for the success of herd health management that the examination of farms both in relation to the clinical examination and the feeding and environmental condition as well as analysis of data should be worked out by veterinarians and agronomists in close co-operation. The success of the program will furthermore depend on the farmmanager's good-will.

For more than 100 years ago the Veterinary School and the Agricultural School were united in the Royal Veterinary and Agricultural University in the sense that the two educations should be build up in a way to support each other for the benefit of our country and society.

Let us in a project like this try to honour this goal.

SOME ASPECTS CONCERNING THE CONTROL OF METABOLISM IN RANCH MINK IN THE G.D.R. - A CONTRIBUTION TO THE REDUCTION OF LOSSES DUE TO METABOLIC DISTURBANCES.

Dr. Ulf D. Wenzel, Dr. H. Keil, Bezirksinstitut für Veterinärwesen, Abteilung Pelztiere, 7o1 Leipzig, Goldschmidtstr. 21, G.D.R.

Investigations made so far (Wenzel and Zeissler 198o) have shown that about 6o percent of all disease registered during rearing concern disturbances and damages due to faulty feeding with a mortality rate of 1o to 2o percent.

Apart from the direct losses during rearing there are, however, the indirect losses caused by disturbances and diseases during rearing, which can hardly be compensated for, as for example

- reduction of the performance of the animal
- disturbances in the immunity and adaptation system
- increased cost of feeding and drugs and
- prolonged keeping period.

The effects of these sequels are hard to recognize, to register and to calculate in the mink populations, it may, however, be safely assumed that the amount of indirect damages must be assessed far higher than of the direct losses of young animals.

Metabolic disturbances and losses occurring in mink populations may be categorized as follows:

- anemia syndrom
- fatty liver syndrom
- some hypovitaminoses, particularly as a consequence of a deficiency of the vitamins of the B group, A, and D
- nursing anemia
- urolithiasis in young animals.

Their early intravital recognition in the mink population is of great significance.

Mink diseases have always been diagnosed mainly with the help of various pathological and bacteriological methods in dead animals.

New perspectives are opened particularly for intravital function diagnostics of organ systems of ranch mink by the introduction of the system of the programmed examination of metabolism (according to Volker et al. 1976) in farming animals.

Along with post-mortem diagnosis as a sample pelting of indicator animals, clinical chemical and hematological examinations of body fluids and organ samples offer the following possibilities:

- to objectify suspected diagnoses in the mink population
- to simplify and - in particular cases, to enable - diagnosis and
- to carry out course controls for the planned survey of metabolic processes in ranch mink or for early recognition of disturbances and diseases caused by feeding.

At present the most comprehensive knowledge, practical pre-requisites and application methods are found in the field of hematology. Supported by the better recognition of considerable decreases in production, and of clinical diseases, respectively, the number of hematological examinations has constantly been rising. On the other hand, scientific processing of the biochemistry of mink plasma and serum is still in its initial stages, although several years ago the complex introduction of the microliter technique in connection with the unification and standardization of clinical chemical methods created favourable conditions for such investigations. This state-of-affairs may probably be caused by two reasons:

- A practically applicable field technique for blood sampling which enables taking blood samples of adequate quantity and quality is still lacking (Zeissler and Wenzel 1978).
- The methods of determination must be partly modified for some parameters (e.g. LAP activity), and there are relevant differences between animal species concerning

the values of some biochemical components in the normal range (Zeissler 1979).

One example (nursing anemia) serves for illustration of hematological and biochemical function diagnostics. This practical example leads to the following recommendations and conclusions for the introduction of measures for control of metabolism in mink populations:

1) Prophylactic control of permanent sources of danger (kit and young animal anemia, A hypovitaminoses).
2) Prophylactic control in periods of particular danger for the health of animals (e.g. in case of feeding anemia fish, fat fish, nursing period, anemia and fatty liver syndrom).
3) Prophylactic control of crucial periods (nursing period, development of kits and young animals, weaning of young animals).
4) Safe diagnostics in case of clinically manifest metabolic disturbances (case diagnostics).

In all cases the focal points of the control have to be observed:

1) Feed analytics, feed rationing and feeding consultation
2) Biochemical clinical and hematological function diagnostics according to search programmes still to be set up, in connection with post-mortem diagnosis as sample pelting (at least 10 indicator animals serve as basis for all checking operations).
3) Well-aimed pro- and metaphylactic administration of supplements and drugs.

In case of clinically manifest metabolic disturbances it is recommended, for exact definition and for supplementation, to take up measures to diagnose contagious diseases and toxological investigations as well.

Finally, based on the present results of investigations and experience, the following tentative conclusions may be formulated:

1) Based on the thesis that metabolic disturbances and derangements are avoidable, our mink populations may only come up to their genetically determined performance potential when we improve feed as one of the most important environmental factors.

2) The avoidance of feeding damages and metabolic disturbances is of great interest for securing high animal productivity which stable health of animals. Therefore the necessary presuppositions for biochemical clinical search and metabolic control programmes should be worked out in cooperation between science and practice.

3) For prophylaxis and avoidance of metabolic disturbances in mink, according to our experience, it is of primary importance to improve the supply of vitamins (B complex, E, D,A), trace elements (particularly iron) and high-quality proteins.

4) Metabolic control in mink fur production plants with the aid of programmed control systems should be carried out together with analyses of food rations, environment, performance parameters and with clinical and post-mortem diagnostics, to serve primarily for early recognition of metabolic disturbances and for avoiding reduced performance.

2nd Internat. Congress in Fur Animal Production,
Denmark 1980.

LECITHIN-ENRICHED VEGETABLE OILS IN MINK NUTRITION.

J. Hertrampf, Lucas Meyer, Postbach 280 246, 2 Hamburg 28,
Fed. Rep. Ger.

Fats and oils in mink nutrition are an important source of energy. The components of fats and oils - the fatty acids - are very significant for vital processes of the organism.

For the mink - with its sensitivity to liver diseases - the glycerine phosphatides are especially important.

It is known that the mink can utilize very efficiently high levels of feeding fat as a source of energy. Major factors influencing fat utilization (digestibility) seem to be fatty acid chain length and the number of double bonds as well as the relation between saturated and unsaturated fatty acids.

Lecithin in fats has a kind og synergic influence on the fat utilization in mink.

The digestibility of lecithin-enriched vegetable oil in mink compared with various other fats used in mink feeding has been tested. The digestibility of the crude fat of the lecithin-enriched vegetable oil has been calculated to be 89%. It was somewhat lower than the fat digestibility of soybean oil but the same as for the digestibility of animal destruction fat. Compared with the fat digestibility of tallow and lard, it was somewhat better.

In one experiment lecithin-enriched vegetable oil was tested at the Experimental Station West/Denmark in comparison with lard and herring oil - the most common fats in mink feeding.

Conclusion.

The results from this feeding trial together with the experiences of the digestibility test can be concluded as follows:

Lecithin-enriched vegetable oil is influencing the number of raised youngsters per bitch, the growth of the mink and - at the time of pelting - the colour and the gloss of the fur positively. More experiments are advisable in order to confirm the now existing results. The the time being the use of 3o% licithin enriched vegetable oil of the total fat quantity added to mink feed can be recommended for practical mink farming.

2nd Internat. Congress in Fur Animal Production,
Denmark 198o.
3 tables, 3 references.

Abstract: G. Jørgensen.

Report from:  **2nd Int. Scientific Congress**
in fur Animal Production
Denmark 1980

In April The Second International Congress in Fur Animal Production was held in Vedbaek. 13o scientists from 18 countries took part in the congress. Mr. Malcolm Graham Stuart Jones expressed the idea of the congress and he impressed to everybody that all scientific research first gets a meaning, when it gets out to the breeders knowledge, so that the fur animal production can get better and better.

At first occasion some of the manuscripts will be published in Dansk Pelsdyravl, so that everybody can turn to account the knowledge that we have at our disposal today.

"I welcome you to The Second International Congress" with these words Mr. Åke Qvist welcomed the 13o scientists in fur animal production at Hotel Marina in Vedbaek, when the Second International Congress was opened on the 8th of April.

And what do you get out of such a meeting, where each person speaks English in his own tongue, and what can this mean to the breeders? First much new knowledge and research are displayed, which not normally will get to your knowledge. But not less important all the contacts are, which are made across the country borders, which are of invaluable importance for the future work, because it is much easier to get a contact, when you know each other.

The First International Congress was held 4 years ago in Finland, where it besides the special yield also was considered that there should be published a scientific magasin in English.

After that time SCIENTIFUR has come out 4 times a year and everyone who wishes can subscribe (application to Gunnar Joergensen, Trollesminde). In this magasine you can get information about the fur animal production as far as breeding, feeding and diseases are conserned.

In the same way the congress was divided. There were sections within these three special fields where the latest research results were presented. 44 subjects were discussed of the scientists from 18 countries.

As an example of the discussion of a subject shall here be mentioned plasmacytosis, which in the whole world occupy the scientists. There were 5 reports, which treated with this disease and its eradication. In Canada they work intensively with the natural and acquired immunity of the mink. From Denmark came a research work about how you clean the antibodies and how it shall be classified. About the practical eradication there were reports from Denmark and Holland. It was several times at the congress mentioned that the scientific research do not get meaning until it gets used in practical breeding.

Plasmacytosis is a good example in how the research is converted into practical work, which can be used of the breeders.

In the same way you can mention research in feeding questions and research methods. Now, you shall not get the idea that the distinction between breeding, feeding, disease,a.o. are distinct separated disciplins. It came also out at the congress,that you must try to collect the different parts to a connected whole, so that you build up a system where many different observations can be used to a metabolic profile. This means that you in this way can learn, how you get the best possible benefit out of your animals. Further more you get a possibility very early to do something if one or another thing fails in feeding or breeding.

The congress lasted three days where the final reports included a discription of the practical work, when scientific work is used. Both from Argentina and USA were given information about the value by use of research results, so that the breeding result will get as good as possible.

After the congress an excursion to Jutland was arranged

in which 4o participants from the whole world were shown Danish farming and a centralkitchen, a cage factory, a sales factory for minkarticles, and a research farm.

The conclusion is that such a congress has meaning for the breeders, for herby they get a chance to ask special questions, which much easier can be solved because their advisers have got contacts out in the world, which stands open if you just understand to use it.

Mogens Hansen and Hans Pedersen.

Ministry of Agriculture and Food

Veterinary Services Laboratory,
Box 3612,
Guelph, Ontario,
Canada. N1H 6R8

April 21, 1980.

Mr. Gunnar Jorgensen,
Scientifur,
48 H Roskildevej,
DK 3400, Hilleroed,
Denmark.

Dear Mr. Jorgensen:

Just a note to express my appreciation for the hospitality of everyone hosting the Congress and congratulations on an excellently orgainized and successful 2nd International Scientific Congress in Fur Animal Production.

Sincerely,

BH/vj

B. Hunter, D.V.M.

International kongres

I april blev 2. Internationale kongres indenfor pelsdyrforskning afholdt i Vedbæk, Der var mødt 130 forskere fra 18 lande spredt ud over verden. Malcom Graham Stuart Jones udtrykte kongressens idé, idet han indprentede alle, at al videnskabelig forskning først får betydning, når den når ud til avlernes kundskab, således at pelsdyrproduktionen kan blive bedre og bedre. Ved lejlighed vil en del af manuskripterne blive offentliggjort i Dansk Pelsdyravl, så enhver kan drage nytte af den viden, vi i dag har til rådighed.

»I welcome you to the second International Congress«, sådan bød Åke Qvist 130 pelsdyrforskere velkommen på Hotel Marina i Vedbæk, da den 2. Internationale kongres blev åbnet den 8. april.

Hvad får man så ud af et sådant møde, hvor hver enkelt synger engelsk med sit eget tungemål, og hvad kan det betyde for avlerne?

Først og fremmest bliver megen ny viden og forskning lagt på bordet, som man ikke umiddelbart vil få kendskab til. Men ikke mindst er de mange kontakter, der knyttes over landegrænser af uvurderlig betydning for arbejdet fremover, idet det er langt lettere at få en kontakt i stand, når man kender hinanden.

Den første internationale kongres blev afholdt for 4 år siden i Finland, hvor det udover det faglige udbytte også blev besluttet, at der skulle udgives et engelsksproget videnskabeligt magasin.

Siden er SCIENTIFUR udkommet 4 gange årligt, og enhver, der ønsker det, kan abonnere (henvendelse Gunnar Jørgesen, Trollesminde). Her kan man få informationer om pelsdyrerhvervet inden for avl, fodring og sygdomme.

På samme måde er kongresserne opdelt. Der er sektioner inden for disse tre områder, hvor de sidste forskningsresultater bliver præsenteret. 44 emner blev behandlet, hvor forskere fra 18 lande diskuterede indholdet og værdien.

Som eksempel på emnebehandlingen skal omtales plasmacytose, som overalt i verden optager forskere. Der var 5 indlæg, der behandlede denne sygdom og bekæmpelse. I Canada arbejder man intenst med minkenes naturlige og erhvervede immunitet. Fra Danmark kom et arbejde om plasmacytosevirus, hvorledes man renser det for antistoffer, og hvorledes det skal klassificeres. Om den praktiske bekæmpelse kom indlæg fra Danmark og Holland. Det blev flere gange nævnt på kongressen, at den videnskabelige forskning ikke får betydning, før den i praksis kommer avlerne til gode.

Plasmacytose er et godt eksempel på, hvorledes forskning bliver omsat til praktisk arbejde, der kommer hver enkelt avler til gode.

På samme måde kan man nævne forskning i foderspørgsmål og undersøgelsesmetoder.

Nu skal man ikke få opfattelsen, at adskillelsen mellem avl, fodring, sygdomme m.m. er skarpt adskilte discipliner. Det kom også frem på kongressen, at man skal forsøge at samle de forskellige grene til et hele, så man opbygger et system, hvor mange forskellige måledata kan bruges til en metabolisk profil. D.v.s. at man ad den vej kan lære, hvorledes man får det bedst mulige udbytte af sin dyrebestand. Endvidere får man mulighed for på et meget tidligt tidspunkt at sætte ind, hvis et eller andet svigter i fodring eller avlsarbejde.

Kongressen varede tre dage, hvor de afsluttende indlæg omfattede en beskrivelse af det praktiske arbejde, når forskning tages til hjælp. Både fra Argentina og USA blev der orienteret om værdien ved brug af forskningsresultater, således at avlsresultat og skindproduktion kan blive bedst mulig. (Se referat fra Argentina side 213).

Efter kongressen var der arrangeret en ekskursion til Jylland, hvor 40 deltagere fra hele verden fik forevist dansk farmdrift og fodercentral, burfabrik, salgsvirksomhed for minkartikler samt en forsøgsfarm.

Jeg vil vove den påstand, at en slig kongres har betydning langt ud i avlernes rækker, thi dermed får de mulighed for at stille faglige spørgsmål, som langt lettere kan løses, fordi deres rådgivere har fået en lang arm ud i verden, som står åben, når blot man forstår at benytte den. ■

Referat & billeder
H. P. & M. H.

→

Translation of the proceeding picture texts.

1. Åke Qvist, Finland, welcomed the congress.

2. Gunnar Jørgensen, Denmark, was chairman of the congress. He has together with many others had a great preliminary work so that everything should be a success.

3. Outi Lohi, Finland, was of great assistance to the congress. First she has taken part in the arrangement, second she assisted during the speeches.

4. John R. Gorham, veterinarian, USA. Gorham is employed at the Pullman University as research leader. He was among the earliest describers of the plasmacytosis nearly a generation ago.

5. Veterinarian Tapio Juokslahti makes a statement of clinical chemistry of mink and foxes.

6. Dr. Jerzy Slawon, Poland, tells about hairs and colour of the Standard mink. Also participants from several other Eastern Countries (DDR and Romania) attented the congress.

7. Ordin Møller, Norway, spoke about reproduction and physiology and was the leader of one of the sessions.

8. M. Mondain-Monval, France, told about the sexual cycle of blue foxes. There were 8 participants from France, and you got the impression that although beeing a small fur animal producing country France has a very active scientific research.

9. Bent Åsted, Denmark, is an immunologist and employed at The Veterinary School in Copenhagen. Bent Åsted is of great assistance to the Danish Fur Animal Laboratory, because he investigates the characteristics of the plasma-cytosevirus and antigen production.

1o. J. Haagsma, Holland, spoke about erradication of plasma-cytosis and outbreak of botulism in blue foxes.

11. Leena Blomstedt, Finland, talked about Metallic in mink. Together with Outi Lohi she has done thorough histological investigations of hair follicles to find the causes of this fur defect.

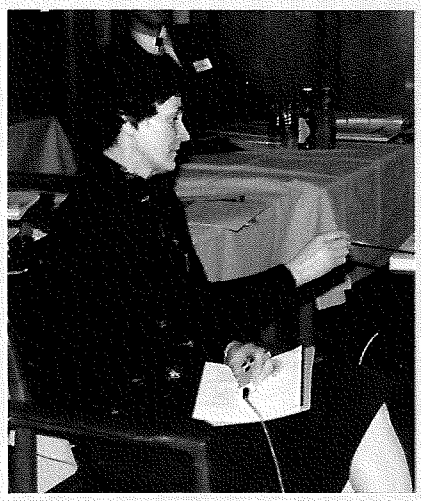
12. B. Wilkie, Canada, told about his work about plasmacytosis.

13. Veterinarian Gordon Finley, Canada, is employed at a local veterinary institute at Nova Scotia. There are around 5o fur farms at Nova Scotia, where Gordon Finley gives the farmers veterinary assistance and helps the farmers with advises.

Through the discussions microphones had to be used if all of the 13o participants should get enough yield of these.
As one of the active persons in the arrangement committee Hans Pedersen was responsible for the moving microphone.

Der var 130 deltagere fra 18 lande i den 2. internationale kongres. Her vises nogle af dem, som deltog i debatterne.

Gunnar Jørgensen var formand for kongressen. Han har haft et kæmpeforarbejde for at alt skulle lykkes.



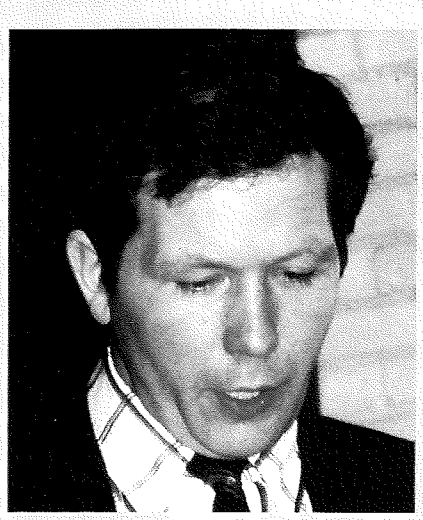
Outi Lohi, Finland var kongressens hjælpende ånd. Dels har hun deltaget aktivt i tilrettelæggelsen, dels var hun behjælpelig under foredragene.

Leena Blomstedt, Finland talte om metallic hos mink. Sammen med Outi Lohi har hun foretaget grundige histologiske undersøgelser af hårfollikler for at finde årsagen til denne hårdefekt.

John R. Gorham, veterinær, USA. Gorham arbejder på Pullman Universitetet som forsøgsleder. Han var blandt de første, som beskrev plasmacytosen for en menneskealder siden.

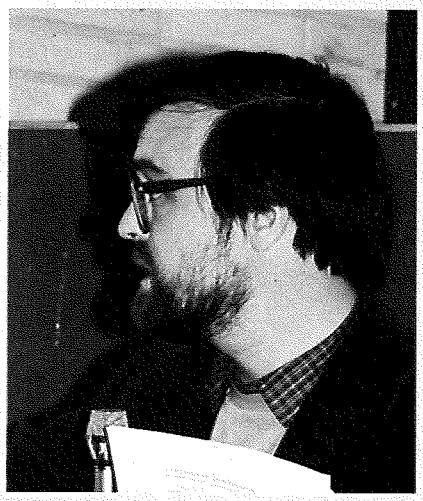
Dyrlæge Gordon Finley, Canada er ansat på et lokalt Seruminstitut på Nova Scotia. Der er ca. 50 farme på Nova Scotia, hvor Gordon Finley yder veterinær bistand og trækker i trådene, når avlerne skal rådgives i det daglige og på moder.

P. Wright, Canada fremlagde et arbejde om plasmacytose.



Ordin Møller, Norge, redegjorde for sine undersøgelser og målinger af slimhindernes elektriske modstand gennem brunstperioden hos blåræv og sølvræv.

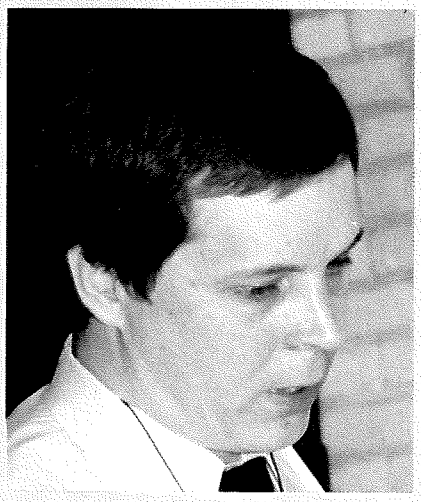
Mondain-Monval, Frankrig havde et indlæg om brunstcyklus hos blåræve. Der var 8 deltagere fra Frankrig, hvor man fik indtryk af, at selv i et lille pelsdyrproducerende land foregår der en aktiv forskning.



Bent Åsted, Danmark er immunolog og er ansat på Veterinærskolen i København. Bent Åsted er en stor hjælp for Dansk Pelsdyr Laboratorium, idet han undersøger egenskaber hos plasmacytosevirus og antigenfremstilling.

J. Haagsma, Holland, redegjorde om sine iagttagelser af botulisme (type C) hos blåræve.

Dr. Jerzy Slowon, Polen fortæller om hår og hårfarve hos standardmink. Der var iøvrigt deltagere fra flere østlande (DDR og Rumænien).



Dyrlæge Tapio Juokslathi, Finland redegør for klinisk kemi hos mink og ræve.

Selv under diskussioner må mikrofoner tages til hjælp, hvis alle 130 deltagere skal få tilstrækkelig udbytte af disse.