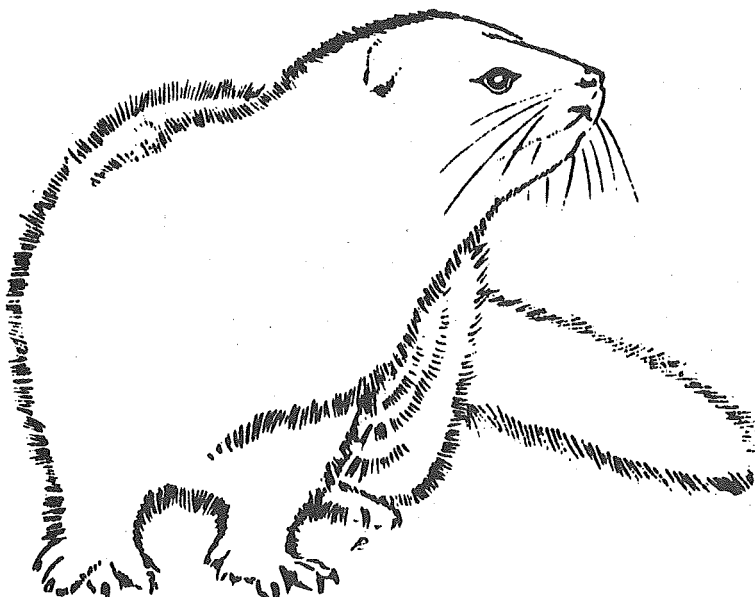


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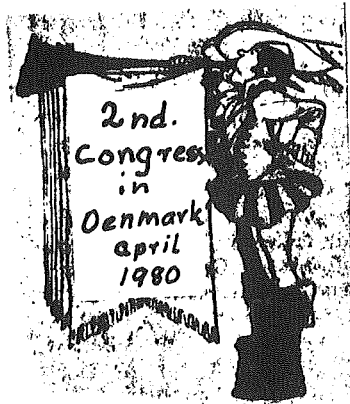
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NOTES

SCIENTIFUR

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It is springtime in Denmark. Not only the trees and flowers looks beautiful.

1. The reproduction results in the minks will this year pass the magic number of 4.0 skins produced per mated female. The rise in the reproduction result from average 3.5 years ago to 4.0 or more today, is not accidental. It is the result of purposeful research, breeding work, disease prevention and feed control. But also one of the most important things: EFFECTIVE COMMUNICATION BETWEEN RESEARCH, ADVISORY SERVICE AND FUR-FARMERS.
2. The future of SCIENTIFUR is ensured during guarantee from the Board of the Scandinavian Fur Farm Organizations of buying 40 subscriptions per country per year (total 160 subscriptions yearly). This is a satisfactory base of the economy of SCIENTIFUR, so it is also springtime for the international scientific communication in fur animal production.
3. The SECOND INTERNATIONAL SCIENTIFIC CONGRESS IN FUR ANIMAL PRODUCTION will be held in Denmark 8th to 10th of April 1980.

Further information are given under the COMMUNICATION pages.

All persons, institutions, and organizations known of SCIENTIFUR and The Scandinavian Fur Farm Organizations are receiving direct invitation to the congress, but we hope that all our readers will announce the congress for relevant persons and institutions as we can be sure that the congress can be an important and real step against more effective INTERNATIONAL SCIENTIFIC COMMUNICATION AND COOPERATION IN FUR ANIMAL PRODUCTION.


4. The Board of the Scandinavian Fur Farm Organizations have also agreed their interest and willingness of economical support of a systematic search for all relevant literature and the translation into English of reports.

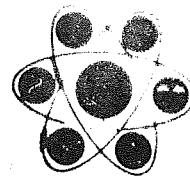
It is really springtime from near all points of view. But one small cloud on the sky is that nearly 15 percent of the subscriptions for 1979 is not paid yet. We cannot understand that such a thing should take more than 5 months to bring in order. It gives us much work with sending reminders. Therefore we will use the opportunity to THANK ALL OF YOU, WHO HAVE PAID THE 1979 SUBSCRIPTION FOR SCIENTIFUR IN TIME.

As you will see, the number of titles have decreased in this issue of SCIENTIFUR - if that can be a reminder to some of you to send reports or abstracts we are sure that this decrease will be temporary.

Best wishes for your work and your holidays.

The editor.



ORIGINAL REPORT.



ELEVATED CORTISOL LEVELS DURING SUMMER AND WINTER FUR MOULTS IN MINK

T.E. Pilbeam, Department of Animal Science, Cornell University, and H.F. Travis, U.S. Sheep and Fur Animal Experiment Station, Science and Education Administration, U.S. Department of Agriculture, 324 Morrison Hall, Cornell University, Ithaca, New York 14853.

Adrenocortical steroids have been suggested as initiating hair development and promoting pigmentation of the hair in mink (Rust, 1965; Rust *et al.*, 1965), weasels (Wright, 1950; Rust and Meyer, 1968) and the harbor seal (Riviere *et al.*, 1977). Basal plasma cortisol levels for mink have been reported to average from 14.1 ± 2.4 to 22.2 ± 3.1 ng/ml during nonmoulting periods (Travis *et al.*, 1972).

During 1974-1975, a study was conducted to determine the influence of altered photoperiods on the annual furring and reproductive cycles of mink. This report discusses the relationship of plasma cortisol levels to the moult of the winter and summer fur.

MATERIALS AND METHODS

Animals used in the study were brown-eyed pastel mink housed in either outdoor pens or controlled environment sheds as described by Travis *et al.* (1971). Mink were allocated to three treatments: (1) controls receiving ambient light (42° North latitude) in outdoor pens; (2) exposed to 6 hours light:18 hours dark (6L:18D) July 2 to October 14 and then placed on ambient light in outdoor pens; (3) exposed to 6L:18D July 2 to October 28 and then 15L:9D until February 18. Blood samples were obtained by jugular venipuncture after sodium pentobarbital anesthesia (30 mg/kg I.P.). Samples from mink in each treatment were taken (1) before the moult started and (2) from 2 to 4 weeks after the moult started. Sample dates were: treatment 1 - July 2, August 7, April 8 and April 22; treatment 2 - July 2, August 7, January 7 and February 5; and treatment 3 - July 2, August 7, December 24 and January 7. The development of the winter and summer pelages was assessed by the method of Bassett and Llewellyn (1949).

Plasma samples were analyzed for cortisol because studies in our laboratory have determined that it is the major corticoid in mink adrenals (T.E. Pilbeam and H.F. Travis, unpublished data). Assay techniques used were the protein-binding assay of

Murphy (1967), as modified by Seggie and Brown (1973).

Hormone levels for each sample date are mean values for 20 mink (5 kit males, 5 kit females, 5 adult males and 5 adult females). All means are presented as mean \pm standard error (SEM). Results of hormone assays were subjected to analysis of variance, and significant differences were determined by Duncan's New Multiple Range Test (Steel and Torrie, 1960).

RESULTS AND DISCUSSION

Plasma cortisol levels before and during the winter and summer pelage moults are shown in Table 1. Cortisol levels for the summer fur moult for treatments 2 and 3 are combined because they were receiving the same photoperiod.

Plasma cortisol levels before the summer pelage moult in July are comparable with basal levels reported by Travis *et al.* (1972). Cortisol levels were elevated ($P < .05$) during the moult of the summer fur. Because of the difference in light schedules, the moulting pattern of the winter fur of mink in treatment 2 was advanced $2\frac{1}{2}$ months, and that in treatment 3 was advanced $3\frac{1}{2}$ months. Plasma cortisol levels during the winter fur moult were elevated ($P < .05$) in all treatments.

Basal corticoid measurements are difficult to obtain because stress and anesthesia can induce elevated levels. Seggie and Brown (1975) have reported that a 5-second handling of rats will elevate corticosterone levels for up to 1 hour. The use of barbiturate anesthesia in sheep did not prevent the elevation of cortisol levels (Green and Moor, 1977). Absolute cortisol levels referred to in this study may represent stressed values. Studies in our laboratory found cortisol to be elevated in mink blood 10 minutes after handling and drawing of the initial blood sample.

The results of this study show a definite trend of elevated cortisol levels during summer and winter fur moults. Cortisol levels in the harbor seal are elevated at the initiation of the fur moult and are reported to interact with thyroxine to induce the moult (Riviere *et al.*, 1977). Thyroxine deficiency has also been shown to inhibit the normal moulting pattern in mink (Reineke *et al.*, 1962). The initiation of the moult of the summer and winter fur in mink may be caused by an increase in cortisol levels. Also thyroxine possibly plays a role in moulting patterns. No conclusions can be drawn until both cortisol and thyroxine levels are determined simultaneously during the moulting cycle.

Table 1. Plasma cortisol levels before and during winter and summer fur moults

	Treatment 1	Treatment 2	Treatment 3
Number of mink	20	20	20
	<u>S u m m e r F u r M o u l t</u>		
Approximate date of initiation of moult	Mid-July	Mid-July	Mid-July
Cortisol (ng/ml) before moult	25.8±3.1	23.2±2.8	
Cortisol (ng/ml) during moult	48.1±5.6	48.9±6.3	
	<u>W i n t e r F u r M o u l t</u>		
Date of initiation of moult	April 22	February 3	January 3
Cortisol (ng/ml) before moult	51.2±5.1	41.1±5.7	39.1±6.2
Cortisol (ng/ml) during moult	77.5±7.2	62.3±7.3	65.7±7.5

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THE FERRET AND ITS DISEASES.

Lennox M. Ryland, John R. Gorham, Pioneering Research Laboratory,
Science and Education Administration, US Department of Agric.,
Pullman, WA 99164, USA.

The report is an review about the Ferret (*Mustela putorius furo*)
containing the origin and characteristic of species, reproduction,
housing, diet, routine veterinary procedures, diseases and
miscellaneous problems.

J. of the Amer. Vet. Med. Ass., Vol. 173, no.9, 1154-1158, 1978.
20 references.

Abstract G. Jørgensen.

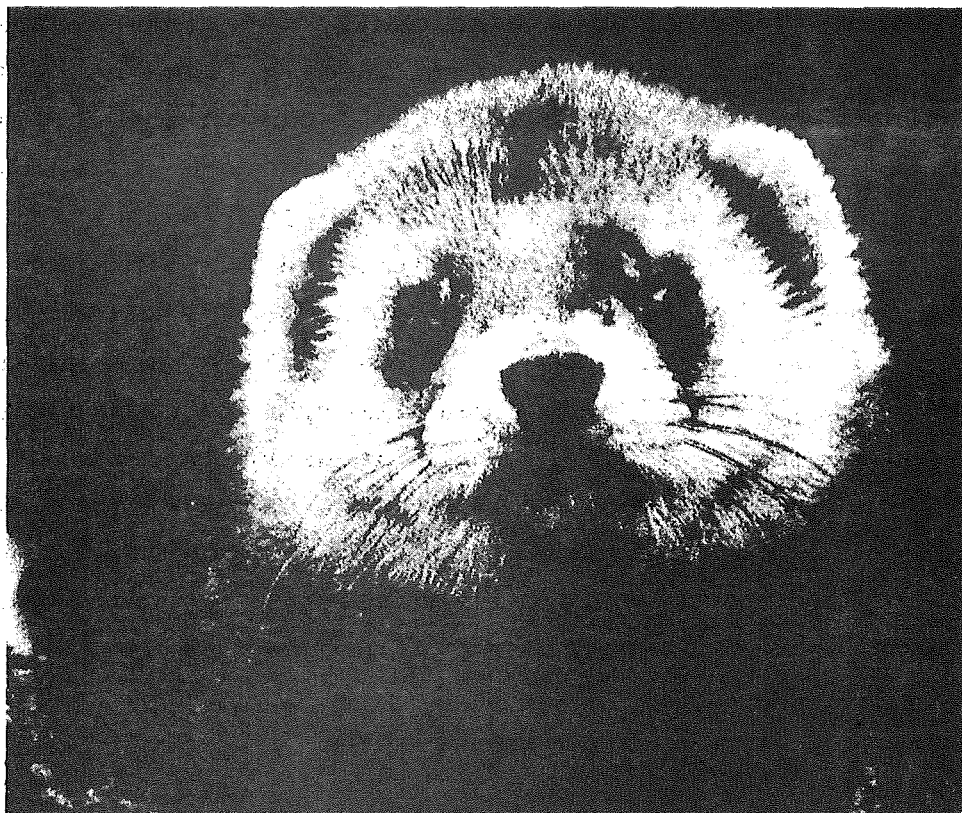


STEPPE POLECAT *MUSTELA EVERSMANNI* LESSON, 1827 - A NEW
SPECIES IN THE FAUNA OF POLAND.

(Tchórz stepowy, *Mustela evermanni* Lesson, 1827 -
nowy ssak w faunie Polski).

Tadeusz Buchalczyk, Andrzej Lech Ruprecht, Mammals Research Institute
of the Polish Academy of Sciences, Bialowieza Woj. Bialystok,
Poland.

The authors describe the first statement in Poland of *Mustela*
eversmanni Lesson, 1827. A nest with 9 youngs was found by
Włodzimierz Puchalski on 11 June, 1970, in the territory of a colony
of *Citellus suslicus* (Guel.) in Lublin voivodeship (50°52' N,
23°39' E). The article presents some details concerning the nest,
the rearing of youngs in captivity and fragmentary notes on parents'
activity in freedom. A description of colour of animals and
comparative description of skulls of *Mustela putorius* and *M. ever-*
manni are given.



Fot. W. Puchalski

Ryc. 7. Portret samca (*M. eversmanni*) (1974)

Przegląd Zoologiczny, XXIX, 1, 1975.

7 photos, 1 fig. 6 references.

(In Polish with English summary.)

Authors summary.

* CRANIOMETRIC VARIATIONS IN CENTRAL EUROPEAN POPULATIONS
OF ONDATRA ZIBETHICA (LINNAEUS, 1766).

Andrzej L. Ruprecht, Mammals Research Institute of the Polish
Academy of Sciences, Białowieża, Woj. Białystok, Poland.

Examination was made of the degree of population differentiation in skull measurements and also in the formation of the skull during individual development, on the basis of a collection of muskrat skulls (n=352) from three Polish populations and one Czech population, divided into four age classes. The muskrats from the three

populations differ significantly be reason of their larger dimensions and different proportions of the skull, and also the statistical distances of shape and size, from animals from the central part of Bohemia. Differentiation was also found in the correlation structures of skull dimensions of muskrats from different populations. The number of differences found increases with the animals' age, and also with increasing distance in both space and time from the population closest to the place in which the muskrat was originally introduced into Europe. The skull of the muskrat is distinguished by a slight degree of sex dimorphism in dimensions which increases with the animals' age. Intensive increase of the majority of its dimensions ends in the second calendar year of the animals' lives. Age changes in skull dimensions of the muskrats are also reflected in changes in correlation structures corresponding to periods of isometric and allometric growth.

Acta Theriologica, Vol. 19, 31,463-607, 1974.

8 tables, 11 figs., 62 references.

Authors summary.



AERIAL AND UNDERWATER VISUAL ACUITY IN THE MINK
MUSTELA VISON SCHREBER.



W. Sinclair, N. Dunstone, T.B. Poole, Dept. of Zoology,
University College of Wales, Aberystwyth, SY 23 3DA,
Cardiganshire, U.K.

A technique for estimating both the aerial and the underwater visual acuity of ranch mink is described. The animals were required to discriminate, at 200-mm range, between pairs of simultaneously presented acuity gratings of vertically ruled black-and-white bars which had an average luminance of 34 mL. The minimum resolvable angle was 15 min in air and 31 min underwater. The mink oriented to the stimuli most frequently when the discrimination was near threshold. It is suggested that mink have not perfected the

adaptations of the eye necessary for underwater vision.

Anim. Behav. 1974, 22, 965-974.

6 figs., 2 tables, 11 references.

Authors summary.



* UNDERWATER PREDATORY BEHAVIOUR OF THE AMERICAN MINK
(MUSTELA VISON).

Trevor B. Poole, Nigel Dunstone, Dept. of Zoology, University
College of North Wales, Bangor, Gwynedd, U.K.

Underwater predatory behaviour of American mink (*Mustela vison*)
was investigated in the laboratory using ciné film.

The behaviour of mink and responses of three species of fish are described. It was necessary to train ranch-bred mink to enter water and catch fish; young mink appeared to be easier to train than adults. Mink spent 5-20 sec under water when fishing; prey had usually previously been located from an aerial vantage point. Predatory behaviour was highly organized sequentially whereas fish were more prone to indulge in unpredictable strategems; the behaviour of mink and fish were highly correlated.

The mink's efficiency in catching fish was related to prey size (smaller individuals being more vulnerable to capture) and shoaling. Minnows which form highly organized shoals were less easily caught when present in larger numbers; this was not true of a non-shoaling species, the carp.

Of the three species of prey presented, vulnerability to capture took the form goldfish > carp > minnow; these differences, however, may have been influenced by the fish's previous experience of underwater predators.

J. Zool., Lond. 1976, 178, 395-412.

8 figs., 4 tables, 29 references.

Authors abstract.

* COMPARATIVE AERIAL AND UNDERWATER VISUAL ACUITY OF THE MINK, *MUSTELA VISON SCHREBER*, AS A FUNCTION OF DISCRIMINATION DISTANCE AND STIMULUS LUMINANCE.

Nigel Dunstone, William Sinclair, Dept. of Zoology, Univ. College of Wales, Aberystwyth, Dyfed, Wales, U.K.

The aerial threshold visual angle of mink rose from 15.4 min at 10 cm stimulus distance to 19.1 min at 90 cm and the underwater angle varied from 32.7 min at 10 cm to 46.6 min at 90 cm, all at 34 mL luminance. At constant 30 cm stimulus distance, the aerial angle rose from 15 min at 34 mL to 51.7 min at 0.012 mL, the underwater angle from 31.4 min at 34 mL to 95 min at 0.012 mL, the aerial and underwater data forming similar curves. If mink hunt in water at somewhat higher light levels than in air they can obtain equal acuities in the two media.

Anim. Behav. 1978, 26, 6-13.

5 figs., 17 references.

Authors abstract.

* ORIENTING BEHAVIOUR DURING AERIAL AND UNDERWATER VISUAL DISCRIMINATION BY THE MINK (*MUSTELA VISON SCHREBER*).

Nigel Dunstone, William Sinclair, Dept. of Zoology, University College of Wales, Aberystwyth, Dyfed, U.K.

Orienting responses by mink during aerial and underwater visual discrimination tests were most frequent when the grating lines subtended angles at the eye near the visual threshold angle. Factorial analysis showed that in air and in water at ranges from 10 to 90 cm most responses occurred at 30 cm discrimination distance and more occurred to marginally supra-threshold than to marginally sub-threshold stimuli. Between media, more responses occurred in air than in water. At longer ranges the mink oriented less readily

than at 30 cm but if orienting occurred better discrimination followed than if the mink did not orient.

Anim. Behav. 1978, 26, 14-21.

5 tables, 6 figs., 8 references.

Authors abstract.

* AN ANALYSIS OF SOCIAL PLAY IN POLECATS (MUSTELIDAE) WITH COMMENTS ON THE FORM AND EVOLUTIONARY HISTORY OF THE OPEN MOUTH PLAY FACE.

Trevor B. Poole, Dept. of Zoology, University College of Wales, Aberystwyth, Dyfed SY23 3DA, Wales, U.K.

A description is given of social play in polecats (*Mustela putorius* L.) based on frame-by-frame analysis of cine film. Social play more closely resembles fighting than any other form of adult behaviour, but biting is inhibited, occupying only 2% of the polecats' time as opposed to 40% in fighting. A meta-communicatory function can be ascribed to behaviour occupying 48% of the time spent in social play; the open mouth play face is displayed for 16% of the time. It is postulated that the play face has

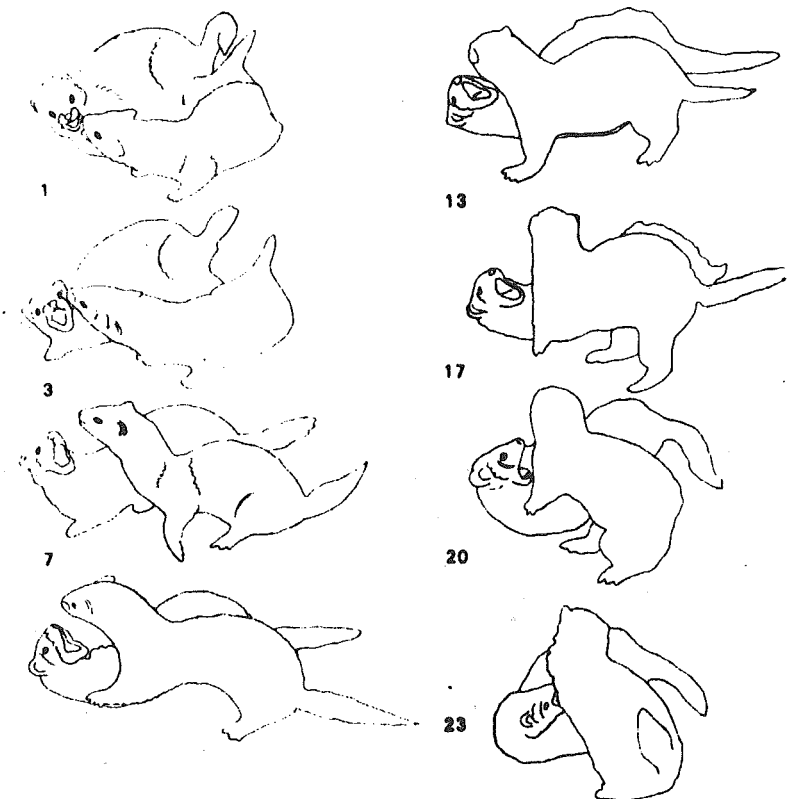


Fig. 2. Open mouth in rough and tumble play; frames 1 to 13 in defence; frames 17 to 20 in offence; frame 23 bite.

involved by a ritualization of inhibited biting. Mink (*Mustela vison* Schreber) differ from polecats in showing aquatic social play, both on the surface and under water.



Fig. 3. Mutual open mouth in play



Fig. 4. Open mouth in attack during uninhibited fighting of adult male polecats

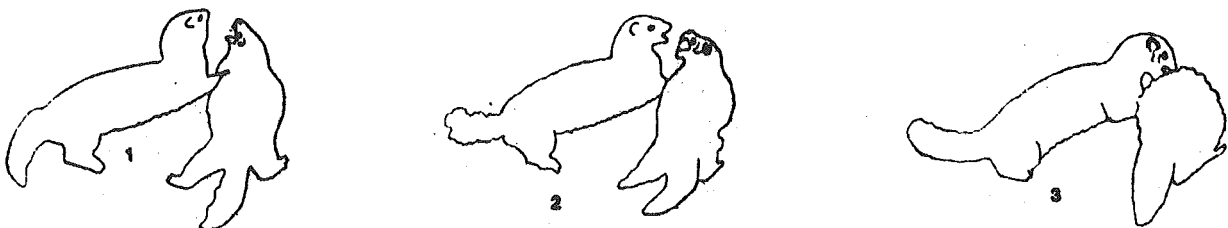


Fig. 5. Defensive open mouth in uninhibited fighting between adult male polecats. Note the retraction of the lips.

Anim. Behav. 1978, 26, 36-49.

7 tables, 5 figs., 46 references.

Authors summary.

* EFFECTS OF GNRH ON PLASMA LH AND FERTILITY IN MINK.

Bruce D. Murphy, Dept. of Biology and Veterinary Physiological Sciences, University of Saskatchewan, Sask. S7N 0W0, Canada.

The magnitude and duration of the luteinizing hormone (LH) response to 2 µg gonadotropin releasing hormone (GnRH) in ranch mink during the early mating season was determined by double antibody radio-immunoassay. Elevations in LH were observed at 15 min following treatment. Mean maximum concentration occurred at 45 min post treatment in animals treated early in the breeding season. Administration of GnRH later in the breeding season resulted in a slightly more prolonged response. Electrical stimulation of the cervix had no apparent effect on plasma LH concentrations during the 3 h following treatment. In field studies, administration of 2 µg GnRH followed by a single mating 7 or 8 days later resulted in percent reproductive success (number of females producing litter/number treated) slightly below that of animals mated two or three times. The same dose of GnRH administered within 1 h after the first of two matings had no effect on increasing litter size or percent reproductive success. Administration of a single dose of GnRH either after both matings or after the second of two matings, spaced 1 wk apart, reduced reproductive success by 25-30%. It is presumed that exogenous GnRH interfered with the ovulatory process. Electrical stimulation of the cervix in lieu of first mating resulted in a low-level reproductive success, and was comparable to single mated females in previous experiments.

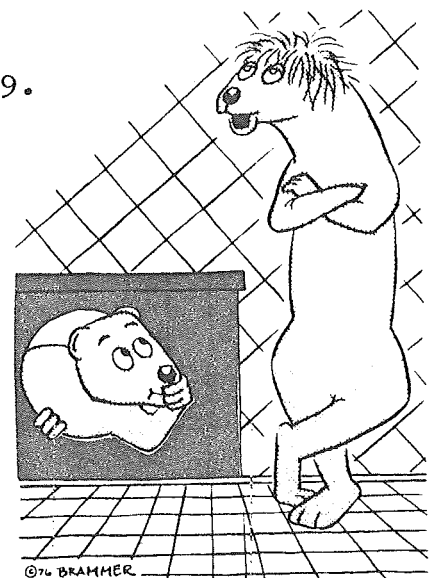
Canadian Journal of Anim. Science, 59, 25-33, 1979.

1 table, 2 figs., 23 references.

(In English with French and English summary).

Authors summary.

How long will it last before
your LH-level is optimal for
your play?



* AGE-RELATED FERTILITY AND PRODUCTIVITY IN RED FOXES,
VULPES VULPES IN SUBURBAN LONDON.

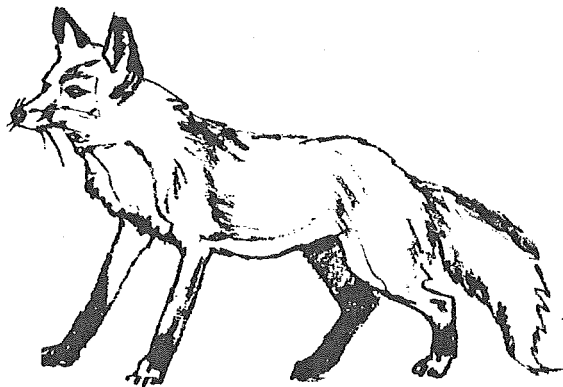
Stephen Harris, Dept. of Zoology, The University, Woodland Road,
Bristol, England.

In some areas of the Red fox's range such as northern Sweden, the number of yearling vixens which breed each year is dependent on food availability, and in years of poor food supply a high incidence of barren yearling vixens may occur. But most previous studies on Red fox reproduction record an overall low incidence of barren vixens, and it has therefore been assumed that most vixens breed in their first year. The present study shows that in suburban London, an area of high fox population density in which food availability is not limited, 52% of yearling vixens fail to breed. Possible reasons for this are discussed. It is also shown that senescence reduces the reproductive capability of vixens in their fifth and sixth breeding seasons.

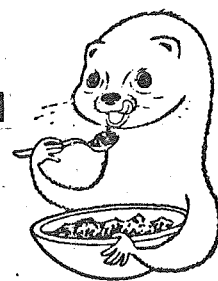
J. Zool., Lond. 1979, 187, 195-199.

2 tables, 21 references.

Authors abstract.



NUTRITION



ORIGINAL REPORT.

* EXPERIMENTS WITH SODIUM CHLORIDE (NaCl) AND OTHER SODIUMSALTS IN FEED FOR LACTATING MINK FEMALES.

R. Sandø Lund, B. Sc. research leader, Fur Animal Research Farm "Vest", Tranevej 22, DK 7451 Sunds, Denmark.

During the breeding season Danish mink feed in average contains .38% NaCl in wet feed (appr. 1.2% in dry matter). Relatively large variations in the basic diets and variations in supplementary addition of NaCl during the lactating period from .2 to .5% have given rise to the question of the optimum level of sodium or sodium chloride during this period.

During 1977 and 1978 investigations were carried out on the research farm Vest. The effect were measured with the kit weights as 6 weeks as parameter and in addition to that the NaCl balance were controlled in 1977 on the 21. day after whelping. Supplementation of NaCl and other Na-salts were both years started the 10th of May.

Table 1. Treatment, NaCl-balance and kit growth in experiments with different amount of NaCl in feed to lactating females 1977.

Treatment	Gr.per animal per day						Kit weights at 6 weeks, gr.			
	NaCl intake	NaCl in faeces	NaCl in urine	NaCl utilization	c.v. of utilization x)	Uptake of dry matter	Standard		Pastel	
							Males	Females	Males	Females
Control ^{xx)}	1.737	0.356	0.997	0.384	50	144	380	320	375	325
+ 0.3% NaCl	2.950	0.550	1.938	0.464	60	142	413	308	369	285
+ 0.6% NaCl	3.222	0.555	2.246	0.421	55	123	380	330	326	280
+ 0.9% NaCl	4.954	0.689	3.817	0.448	45	130	365	300	290	235

x) c.v. = coefficient of variance ($\frac{SD}{\bar{X}} \times 100$).

xx) NaCl content in the control feed = 0.35% (1.1% in dry matter).

As it can be seen from Table 1 the NaCl utilization was not affected of the NaCl content in the feed. Different amount of NaCl did not affect the growth rate in standard kits significantly, but increasing amount of NaCl showed a significant negative effect on growth in the pastel kits. Also decreased feed uptake was observed with increasing amounts of NaCl. How far this decreased feed uptake (dry matter) was depending of poisoning of the kits or reduced taste of the feed is still a question.

In 1978 the influence of different sodium salts was investigated. Treatment and results can be seen from Table 2.

Table 2. The effect on kit growth of addition of different sodium salts to feed for lactating mink females, 1978.

Treatment	Kit weights at 6 weeks, gr.			
	Standard		Pastel	
	males	females	males	females
Control ^{x)}	350	310	330	307
+ 0.3% NaH ₂ PO ₄ Sodium hydrogenphosphate	407	340	365	305
+ 0.3% CH ₃ CO ₂ Na, 3H ₂ O Sodium acetate	380	311	360	304
+ 0.3% NaCl Sodium chloride	403	330	285	270

x) NaCl content of control feed = 0.50% (1.5% in dry matter).

From Table 2 it can be seen that the growth rate in standard were improved when the diet was supplemented with a sodium salt regardless of which, while the pastels showed negative effect of addition of NaCl but positive effect of the other Na salts.

The conclusion may be that the Cl-ion is responsible for the negative effect in the pastels, but for both minktypes a positive effect should be expected by addition of Na to normal feed during the lactating period.

Further investigations will show the optimal level of sodium additon to the mink feed during the lactation period.

Translated by
Gunnar Jørgensen.



* Effect of extra supplementation of B-vitamins, A and D vitamins and minerals for mink during the reproduction period.

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

Some mink breeders in Denmark add a certain amount of vitamins and/or minerals to the mink feed they receive from the central kitchens during the period of reproduction. They do it just to be sure to meet the requirement during this very important period. This experiment was carried out to investigate the effect of such a supplementation.

Extra supplementation of the vitamin B-complex, A and D-vitamin and minerals were given in amounts which doublet the content of each single nutrient compared to normal feeding practice in Denmark. The investigation comprised two different levels of a vitamin B-complex, vitamin A and D, and a mineral mixture representing a 2x2x2 factorial approach. The experimental period lasted from January 15th until weaning.

There was no significant differences between any groups according to number of kits alive at weaning per mated female. Also the weight gain of the kits were rather equal in the groups. Thus it can be concluded that common feeding practice in Denmark meet the requirement for B-vitamins, vitamin A and D and minerals satisfactorily.

The basic diet for all group had the following composition: Cod offal 77.5%, Slaughterhouse offal 5.0%, Blood meal 1.0%, Fish meal 3.0%, Full fat soy meal 1.0%, Precooked cereal mixture 4.0%, Wheat bran 1.0%, Vitamin mixture^{x)} 5.0%, Lard 2.0% and Soy oil 0.5%.

x) The vitamin- and mineralmixture supplemented the basic diet with the following amounts per gr. of feed containing 29% of dry matter:

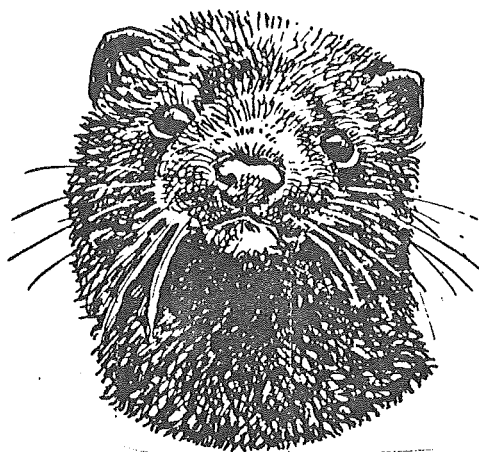
10 i.u. vitamin A, 1 i.u. vitamin D₃, 50 mcg vitamin E, 20 mcg vitamin B₁, 10 mcg vitamin B₂, 8 mcg niacinamide, 3.5 mcg pantothenic acid, 6.5 cholin chloride, 3.5 mcg vitamin B₆, 1.5 mcg para amino benzoic acid, 0.2 mcg folic acid, 0.0025 mcg vitamin B₁₂, 1.2 mg calcium carbonate, 1.1 mg dicalcium phosphate, 0.4 mg sodium chloride, 0.1 mg ferrous fumarate, 0.15 mg ferrous sulphate, 0.04 mg manganese oxide, 0.015 mg copper oxide, and 0.021 mg zinc oxide.

Dansk Pelsdyravl, 1979, 42, 146-147.

4 tables.

(In Danish).

Authors summary.



* Digestibility of feedstuffs determined on mink.

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

As a supplement to the results published in Scientifur 1978 Vol. 2, No. 2 the digestibility of some additional feedstuffs has been determined. In the following, a short description of the feedstuffs and the results will be given. The experimental procedure is the same as described in the above mentioned publication.

Potato protein is a high grade protein isolate separated from the juice of the potato by means of thermal coagulation. The product used in the present experiment, Lysamine, originated from Roquette Frères, France, but other product has been investigated. The potato protein most commonly used as mink feed in Denmark, Protamyl A from Avebe, Holland, showed in a later trial a digestibility of protein at 95% compared to 88% for most other potato proteins.

Meat meal and Meat and bone meal used in this investigation were specially produced to be suitable as feedstuffs for mink. The ash content was reduced by a separation of some of the bones during the manufacturing process.

Pancreas meal is produced from the pancreas glands after extraction of the insulin with ethanol. The meal is dried at a comparatively low temperature.

Blood meal is commonly used in the mink feed industry in Denmark and the sample for this investigation represents normal Danish blood meal.

Soy TA meal is a special treated soy meal, which is defatted and very finely ground. The treatment also include extra heat treatment.

Table 1. Chemical composition, digestibility coefficients, and content of digestible protein, fat, and carbohydrates and metabolizable energy in feedstuffs for mink.

Feedstuff	Gross content							% digestible			% Met. energy (ME)	Content digestible			Kcal ME/kg	
	Dry matter	Ash	g/kg					kcal/kg	Crude protein	Crude fat		Carbohydrate	g/kg			
			Crude protein	Crude fat	Carbohydrate	α-linked Glucose	Crude fibre						Crude protein	Crude fat		Carbohydrate
Potato protein	931	30	788	8	105	-	-	5000	88	-	73	69	690	0	77	3435
Meat meal 4)	865	229	529	101	-	-	-	3975	76	80	-	65	401	81	0	2575
Meat and bone meal	911	330	488	107	-	-	-	3800	76	80	-	65	370	86	0	2480
Meal meal 4)	905	277	484	133	-	-	-	4020	77	76	-	66	373	101	0	2640
Pancreas meal	935	31	439	439	26	-	-	6780	95	87	80 ¹⁾	82	416	383	21	5600
Blood meal	918	53	887	8	5	-	-	5150	90	90 ²⁾	-	71	798	8	0	3670
Soy TA meal	912	60	519	32	322	138	-	4580	81	54 ²⁾	24	52	419	18	78	2380
Barley protein conc.	924	26	229	45	624	-	5	4290	97	90 ²⁾	77	78	222	40	478	3340
Pregelatinated Maize	909	33	128	13	736	573	-	3870	77 ³⁾	-	71	67	99	0	525	2600
Maize germ-pellets	927	17	220	29	669	118	132	4270	57	80 ²⁾	5	22	126	23	34	925
Bread meal	926	32	140	49	712	652	8	4180	58 ³⁾	33 ²⁾	82	70	81	16	585	2915
Oat polishing	881	23	156	60	649	545	-	4120	80 ³⁾	71 ²⁾	66	66	125	43	427	2720
Molasses, sugar beets	758	130	109	0	524	500	-	2770	48 ²⁾	-	66	60	52	0	347	1660
Molasses, sugar canes	706	100	36	0	572	432	-	2550	48 ²⁾	-	31	32	17	0	178	810

1) The digestibility coefficient estimated.

2) Digestibility determined on pigs.

3) Digestibility coefficients based on experiments with rats but corrected for mink according to Glem-Hansen & Eggum (1974).

4) Meat meal from two different factories.

Barley protein concentrate is the protein rich fraction of dehulled air classified very finely ground barley.

Pregelatinated maize is produced from broken kernels of maize from cereal producing factories. The product is added some corn steep liquor which increase the protein content up to about 13%.

Maize germ pellets is defatted maize germs pressed into pellets.

Bread meal is a byproduct from bakeries, which is available in limited amounts for the mink industry.

Oat polishing is a byproduct from the milling factories.

Molasses from sugar beets as well as from sugar canes are on the market in considerable amount and could be a potential mink feed if it is suitable for that purpose.

Dansk Pelsdyravl, 1979, 42, 164-165.

1 table.

(In Danish).

Authors summary.

* EFFECT OF DIETARY FAT SOURCE ON THE DIGESTIBILITY OF FAT AND FATTY ACIDS IN RAINBOW TROUT AND MINK.

Erland Austreng, Anders Skrede, Åshild Eldegard, Dept. of Poultry and Fur Animal Science, Agricultural University of Norway, 1432 Ås-NLH, Norway.

The study was conducted to obtain information on factors influencing the digestibility of marine fats and fatty acids. Experimental fats were soybean oil (control), cod liver oil, crude capelin oil, and three hydrogenated capelin oils, the melting points being -8, -3, 10, 21, 33 and 41° C, respectively. With the purpose of comparison, fat digestibility was determined in rainbow trout and mink. Since the fish are poikilothermic the experiment with rainbow trout was carried out at two different water temperatures, 3 and 11° C.

The comparison of digestibility coefficients of different fats in rainbow trout and mink showed somewhat higher values in mink than in fish. Digestibility coefficients in fish did not reveal distinct differences between the two water temperatures.

Rainbow trout and mink reacted very similar with regard to digestibility differences between dietary fats and fatty acids. Both species revealed a depression in digestibility of total lipids and fatty acids when the melting point exceeded about 10° C. Thus soybean oil, cod liver oil and capelin oil were efficiently digested, ▼

while hydrogenation of capelin oil caused declining digestibility with increasing melting point. This effect was fairly slight by mild hydrogenation to 21° C melting point. The digestibility of saturated and unsaturated fatty acids was similarly influenced by hydrogenation.

The digestibility of individual fatty acids decreased with increasing chain length up to C₁₈. A further increase in chain length up to C₂₂ caused increased digestibility. Unsaturated acids showed higher digestibility than their saturated counterparts.

Acta Agric. Scand. 29, 2, 1979.
7 tables, 1 fig., 30 references.

Authors summary.

* STUDIES ON THE ABSORPTION OF LABELLED AND DIETARY
α-TOCOPHEROL IN MINK AS INFLUENCED BY SOME DIETARY
FACTORS.

Bjødne Eskeland, Hans Rimeslåtten, Dept. of Poultry and Fur
Animal Science, Agricultural University of Norway,
1432 Ås-NLH, Norway.

Two experiments were conducted, each with 24 seven to nine months old male mink to study the absorption of tocopherols using the d, l, α-tocopheryl 1; 2-³H-acetate at 25 and 40 μCi in experiments 1 and 2, respectively.

In the first experiment, three diets were used, two composed of dry feed ingredients only, with and without vitamin E addition, and the other mainly of fresh feed ingredients. In experiment 2, eight diets were used varying in amount of fat (high and low fat diets) and in quantities of saturated and unsaturated fatty acids.

The absorption rate varied from 26 to 35 in the first experiment, and the lowest absorption of labelled tocopheryl acetate was observed in the vitamin E supplemented group. Mink on the fresh and dry feed ingredient diet had lower GOT, GTP and LDH, and during the 3 months preceding the experiment, no mink died on this diet showing symptoms of vitamin E deficiency.

In the second experiment using somewhat older mink there was generally higher absorption of the isotope than in the first experiment. Significantly lower absorption of the tocopheryl acetate was observed in mink on the high fat diets, and within these groups, the lowest absorption was noted in mink on the high unsaturated fatty acid diets.

Compared to other species, the absorption percentages of tocopheryl acetate recorded in these experiments were low and may indicate a relatively higher requirement of vitamin E in mink.

Acta Agric. Scand. 29, 1, 1979.

7 tables, 14 references.

Authors summary.

* BACTERIOLOGICAL QUALITY OF READY-MIXED FEED IN
FINLAND.

Tapio Juokslahti, Finnish Fur Breeders' Association, Feed Laboratory,
Vaasa, Finland.

Frozen samples of Finnish ready-mixed mink feed were analyzed for total bacterial count, the number of faecal streptococci, the coliform count, the number of haemolytic bacteria and the number of sulphite-reducing bacteria. The investigation comprised 242 feed samples from 38 central kitchens and larger private farm kitchens, the combined feed production of which is about 85% of the yearly feed production of Finland.

Of all samples 48.3% had a total bacterial count of 10^6 6×10^6 bacteria per g of feed. The total bacterial count was relatively constant during the first four production periods of the year (December-August) and was elevated during the last period (September-November). The percentage of samples containing less than 2.5×10^4 faecal streptococci per g of feed was 49.8%; 62% of the samples contained less than 2.5×10^4 coliform bacteria per g. The content of coliform bacteria was lowest during the third production period (May); 48.5% of the samples contained 5×10^3 ... 10^5 haemolytic bacteria per g, and 4.6% were negative. The content of haemolytic bacteria was relatively constant during the whole production year; 52.6% of the feed samples contained 5×10^3 ... 10^5 sulphite-reducing bacteria per g, and 17.2% were negative. The mean content of sulphite-reducing bacteria was lowest during the second production period (March-April).

The results are discussed and compared with corresponding results from Norway and Denmark.

Acta vet. Scand. 1978, 19, 520-534.

8 tables, 5 figs., 18 references.

Authors summary.

* HYPERVITAMINOSIS D IN FUR-BEARING ANIMALS.

A. Helgebostad, K. Nordstoga, Dept. of Husbandry and Genetics, Research Station for Fur-Bearing Animals, 1380 Heggedal, and Dept. of Pathology, Veterinary College of Norway, Postboks 8146, Oslo Dep., Oslo 1, Norway.

Investigations concerning the effect on fur-bearing animals of large doses of vitamin D_3 were carried out. The material comprised 62 animals in all - 10 silver foxes, 17 blue foxes and 35 mink (Table II). Daily doses of 5 IU vitamin D_3 /g body weight for two months did not produce clinical symptoms in the foxes.

However, a short while after the dose was increased to 10 IU, the animals showed loss of appetite, had difficulty in moving, were apathetic and developed dark coloured faeces. Analysis of blood serum showed markedly raised calcium values (Table III). Calcium deposits were demonstrated in the kidneys and in some cases also in the musculature, gastric mucosa, bronchi and the larger blood vessels.

No abnormal signs were shown by 30 mink which received 0.6-0.7 IU vitamin D₃/g body weight for five months. PM findings were normal.

Nord. Vet.-Med. 1978, 30. 451-455.

3 tables, 1 fig., 5 references.

Authors summary.

* PROTEIN REQUIREMENT FOR MINK IN THE LACTATION PERIOD.

Niels GLEM-HANSEN, National Institute of Animal Science,
 Fur Bearing Animals, Trollesminde, 48 H Roskildevej,
 DK 3400 Hillerød, Denmark.

The requirement for protein in mink females and their kits during lactation and very early growth until weaning was examined with five groups of seven female mink, each with a litter of four or more kits.

The protein content in the diets was limiting of the growth of the kits during this period, but it did not influence the amino acid composition of the bodies.

The protein requirement during lactation was found to be the amount of digestible crude protein which provides 34-42% of the metabolizable energy using diets with a net protein utilization of 82% measured on rats.

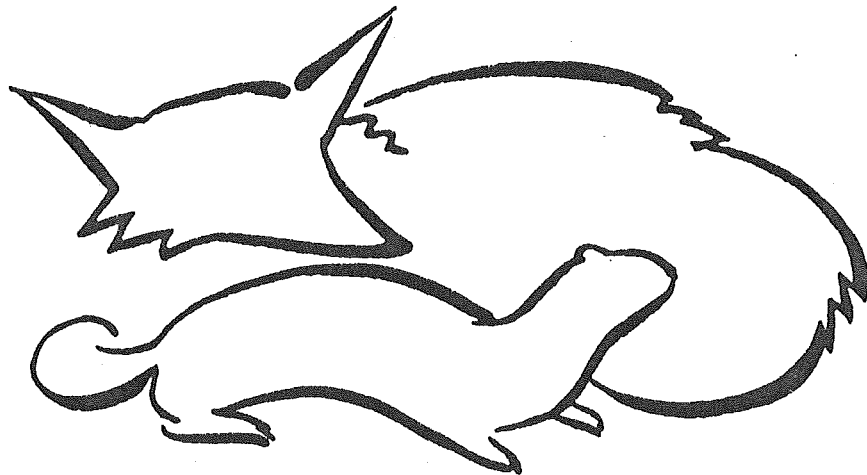
The requirement of protein with a normal quality, i.e. NPU = 65%,

must constitute 43 to 53% of the ME during the period from parturition until weaning at six weeks of age.

13 tables, 3 figs., 29 references.

Acta Agriculturae Scandinavica, 29, 2, 1979.

Authors summary.





Veterinary

VIRUS ENTERITIS OF MINK.

* A SCANNING ELECTRON MICROSCOPIC INVESTIGATION.

Thor Landsverk, Knut Nordstoga, National Veterinary Institute and the Department of Pathology, Vet. College of Norway, Oslo, Norway.

Advanced lesions in the jejunal mucosa in virus enteritis of mink were studied by scanning electron microscopy. The changes were found to be in good accordance with those observed in the light microscope, and included ballooned degeneration of enterocytes, epithelial desquamation, the occurrence of fibrinous pseudomembranes, atrophy or total loss of villi; partially atrophied villi were frequently fused. In some areas there were incipient regenerative processes, including proliferation of ballooned cells which covered the luminal surface of the damaged jejunal wall.

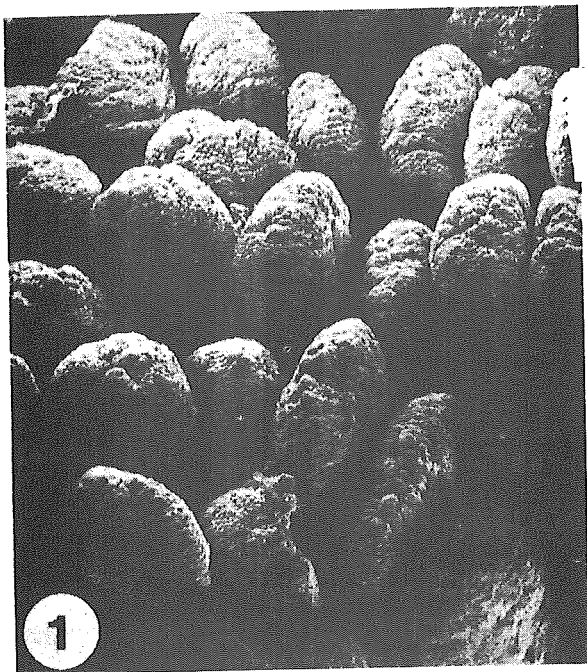


Figure 1. Scanning electron micrograph of control animal, 5 cm posterior to pylorus. Normal finger-shaped villi with bulged cells. $\times 150$.



Figure 11. Scanning electron micrograph of VEM-diseased animal, 70 cm posterior to pylorus, with villous atrophy and ulcerated apical areas (arrows). $\times 150$.

Acta vet. scand. 1978, 19, 569-573.

12 photos, 12 references.

Authors summary.

* VIRUS ENTERITIS ENZOOTY IN A MINK-FARM IN CHARENTES.

(Une enzootie d'entérite à virus dans un élevage de visons des Charentes).

Anne Moraillon, A. Parodi, R. Moraillon, B. Gras, Serv. de Path. med. des Equidés et Carnivores, Ecole nationale vétérinaire d'Alfort, F 94704 Maisons-Alfort Cedex, France.

In the course of the summer 1976, a fatal enzootic virus enteritis in the mink was identified by clinical, histological and virological surveys. The best approach for diagnosis is doubtless an histological examination of the intestinal mucosa which enables the isolation of degenerating epithelial cells in villosities and primarily, in glands. On the contrary, the tests for the virus in cell cultures are uncertain and deprived of real interest in the diagnosis.

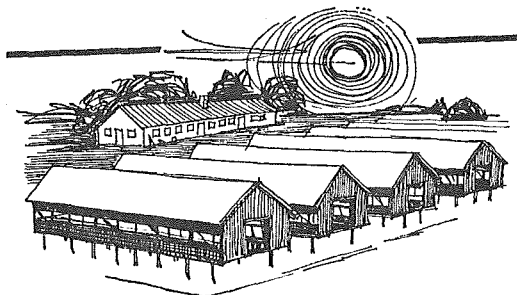
As a result, the problem of the specificity and pathogeny of intestinal lesions, as well as of the connection of the disease with feline panleucopenia can be discussed.

Rec. Méd. Vét. 1979, 155, 1, 29-36.

6 photos, 28 references.

(In French with English summary).

Authors summary.





MICROSPORUM CANIS INFECTION IN MINK.

G.G. Finley, J.R. Long, Veterinary Pathology Laboratory,
Livestock Services Branch, NS Dept. of Agri. and Marketing,
Truro, Nova Scotia, Canada, B2N 5E3.

SEVEN standard dark ranch mink kits, about 6 weeks of age, were submitted for diagnosis of skin lesions. All were from one litter on a ranch of about 11,000 kits and were the only ones affected.

Lesions varied from slight hair loss around the ears to complete hair loss in circular 1- to 3-cm areas around the face, neck, and front limbs (Fig 1).

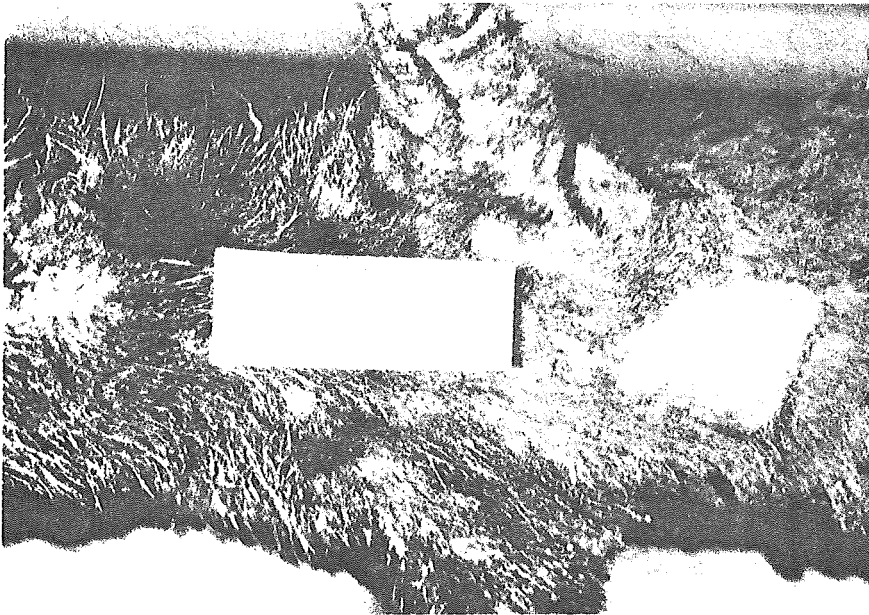


Fig 1—Skin lesions of *Microsporium canis* on neck and front limb of 6-week-old mink kit.

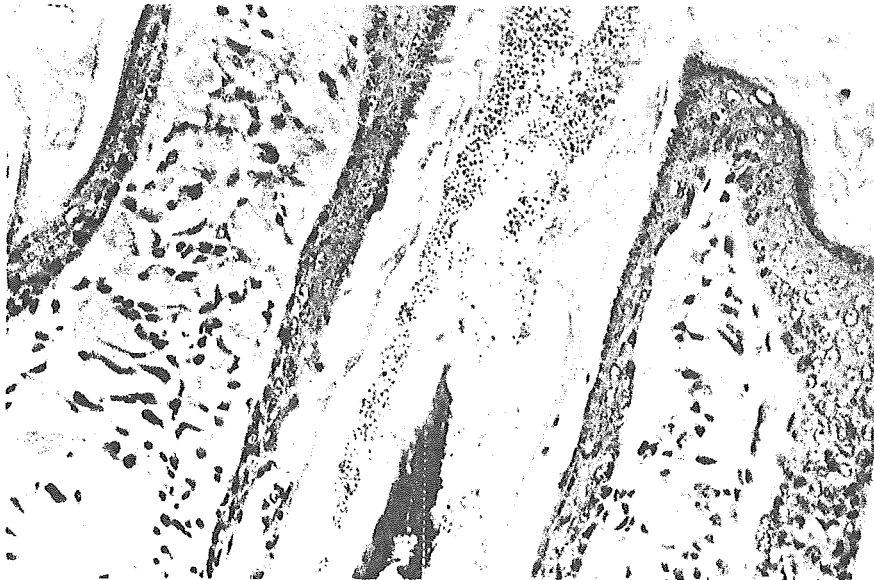


Fig 2—Photomicrograph of mink skin, showing *M canis* spores around hair shaft. H&E stain; original magnification $\times 320$.

The most severely affected animals had diffuse hair loss over the thorax and front limbs.

Lesions were examined with a Wood's lamp, and hairs at the edge of lesions gave fluorescence.

Skin scrapings taken from each animal were digested with 10% potassium hydroxide. Microscopic examination revealed large numbers of arthrospores around hair shafts.

Cultures of selected hairs on Sabouraud's dextrose agar yielded pure cultures of *Microsporum canis*.

Histologic examination of skin revealed broken hair shafts surrounded by massive numbers of spores (Fig 2). All involved animals were killed.

The source of infection could not be determined, although the rancher reported killing a litter of domestic kittens with similar skin lesions several weeks before the involved mink were observed. These domestic kittens had been sleeping in shavings used for nestbox bedding of mink, including the 7 kit. examined by us.

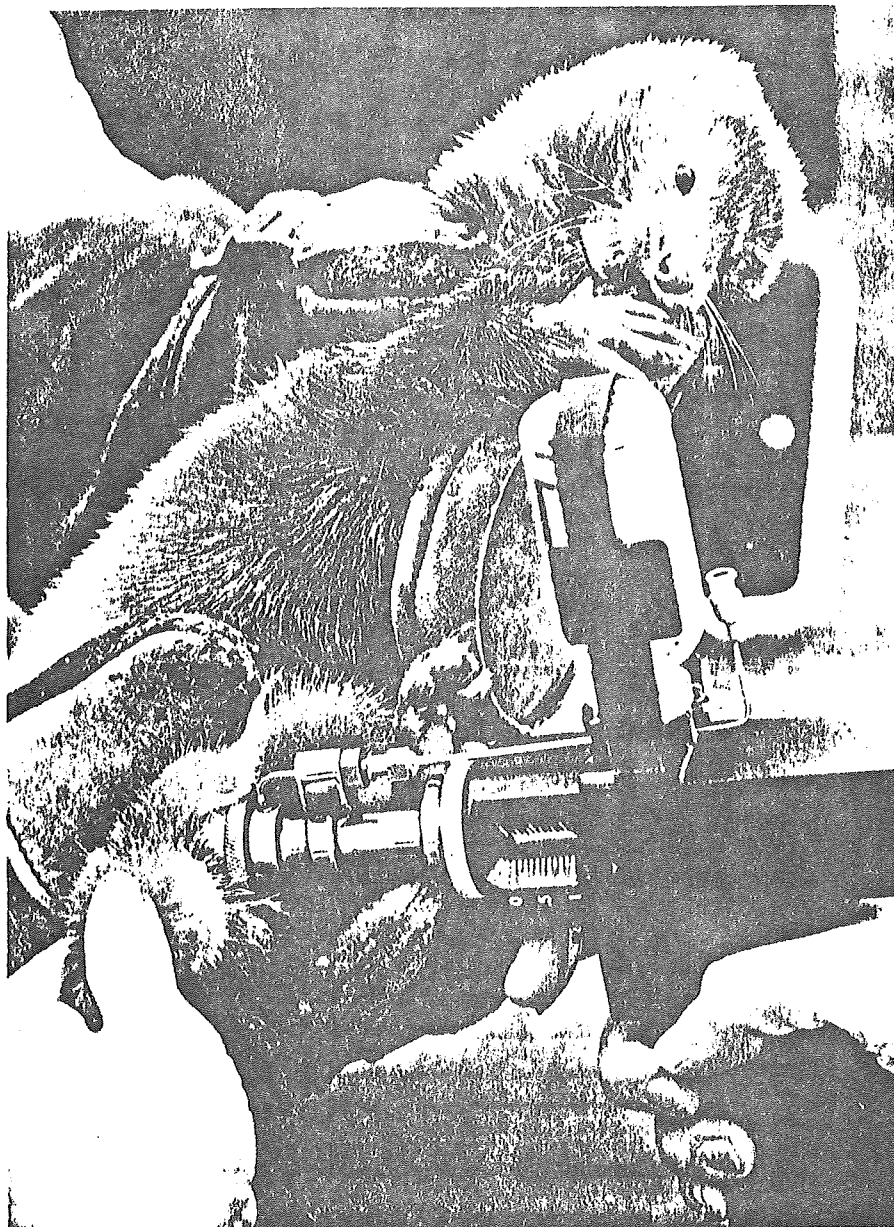
Microsporum canis infection in mink has been reported on one other occasion.¹—G. G. Finley, DVM, and J. R. Long, DVM, Veterinary Pathology Laboratory, Livestock Services Branch, NS Department of Agriculture and Marketing, Truro, Nova Scotia, Canada, B2N 5E3.

1. Hagen KW, Gorham JR: Dermatomyces in fur animals: Chinchilla, ferret, mink and rabbit. *Vet Med Small Anim Clin* 67: 43-48, 1972.

Copy of report in

JAVMA, Vol 173, No. 9





A jet spray injector instantly "pumps" vaccine into this adult mink at a pressure of 12,000 to 15,000 pounds psi. Injections are most conveniently made in the leg where there is less hair (0678X762-11).

Jet-spray Inoculation of Minks

A SUCCESSFUL mink vaccination program which used a jet-spray injector rather than the standard, needled syringe may have presaged the end of disease contamination problems that occur during mass inoculation of mink and other livestock.

SEA microbiologist David Shen and veterinarian John Gorham, Pullman, Wash., inoculated large numbers of mink and ferrets against a highly contagious distemper virus using the same jet-spray injector that is used to vaccinate people against influenza. Because the jet injector did not puncture the

skin—vaccine is forced into the animals' tissues by air pressure—no disease was passed along from one animal to another via contaminated equipment.

Currently, mink farmers—like other livestock owners—inject their animals with syringes and needles. As large numbers of animals are often involved, it is impractical to use a sterile needle and syringe for each inoculation. Consequently, the chance of contamination is always possible.

For example, one drop of mink blood infected with Aleutian disease virus can

infect 250,000 susceptible mink! The jet injector eliminates this danger.

Drs. Shen and Gorham are among the first to use the jet injector to vaccinate livestock. Their technique should be applicable to other animals and though the present price of the equipment involved is high, the reduced spread of diseases during mass inoculations should more than offset increased inoculation costs.

Dr. David Shen and Dr. John Gorham are located at Room 202, Wegner Hall, Washington State University, Pullman, WA 99161.—L.C.Y.

* TYPE-SPECIFIC RADIOIMMUNOASSAYS FOR THE gp70s OF MINK CELL FOCUS-INDUCING MURINE LEUKEMIA VIRUSES: EXPRESSION OF A CROSS-REACTING ANTIGEN IN CELLS INFECTED WITH THE FRIEND STRAIN OF THE SPLEEN FOCUS-FORMING VIRUS.

Sandra Ruscetti, David Linemeyer, John Feild, David Troxler, Edward Scolnick, Lab. of Tumor Virus Genetics, National Cancer Institute, Bethesda, Maryland, 20014, USA.

We have isolated the gp70 of a helper-independent strain of a Friend mink cell focus-inducing (MCF) virus, Fr-MCF-1. This recombinant virus, like the previously described AKR-MCF viruses, has been shown by both biological and biochemical means to be an envelope gene recombinant between Friend murine leukemia virus (F-MuLV) and a mouse xenotropic virus. Utilizing ¹²⁵I-labeled Fr-MCF-1 gp70 and antiserum prepared against an MCF strain of Moloney type-C virus (Mol-MCF₈₃), we have developed a radioimmunoassay which detects immunological determinant(s) contained in the gp70s of MCF viruses derived from F-MuLV, Mol-MuLV, and AKR-MuLV. This MCF determinant(s) is not detected in the ecotropic parents of each of these MCF viruses, nor in helper-independent murine xenotropic viruses derived from Swiss of BALB/c mice. A protein partially cross-reactive with the MCF gp70 determinant(s) is detected in a replicating xenotropic virus derived from NZB mice. Utilizing this MCF gp70 specific immunoassay, we can detect a cross-reacting gene product coded for by the Friend strain of the spleen focus-forming virus (SFFV) in rat fibroblasts nonproductively infected with SFFV. The results support earlier molecular hybridization studies which indicated that the genome of SFFV contains genetic information derived from both F-MuLV and xenotropic virus, and that the xenotropic-related sequences in SFFV are highly related to those found in MCF murine type-C viruses.

Journ. of Expt. Med., 148, 1978, 654-663.

5 figs., 14 references.

Authors summary.



* HELPER-INDEPENDENT MINK CELL FOCUS-INDUCING STRAINS OF FRIEND MURINE TYPE-C VIRUS: POTENTIAL RELATIONSHIP TO THE ORIGIN OF REPLICATION-DEFECTIVE SPLEEN FOCUS-FORMING VIRUS.

David H. Troxler, Elinor Yan, David Linemeyer, Sandra Ruscetti, Edward M. Scolnick, Laboratory of Tumor Virus Genetics, National Cancer Institute, Bethesda, Maryland 20014, USA.

Recent studies have indicated that both the replication-defective spleen focusforming virus (SFFV) in the Friend virus complex and the helper-independent mink cell focus-inducing (MCF) viruses derived from AKR-murine leukemia virus (MuLV) are env gene recombinants between ecotropic virus and xenotropic virus. In an attempt to isolate additional env gene recombinants between Friend murine leukemia virus (F-MuLV) and xenotropic virus, we have inoculated cloned ecotropic F-MuLV into newborn NIH Swiss mice and analyzed MuLV released from preleukemic and leukemic spleens of infected mice. Two helper-independent MCF strains of F-MuLV have been isolated. Like the previously described AKR-MCF viruses, the Friend MCF viruses are env gene recombinants between an ecotropic virus (F-MuLV) and a mouse xenotropic virus, as shown by host range, interference pattern, and tryptic peptide analysis of the gp70s of these MuLV. Furthermore, RNA from the Friend MCF viruses hybridizes completely to cDNA_{SFFV}, a nucleic acid probe which detects that portion of SFFV which was not derived from F-MuLV. The ability to isolate replicating MCF viruses derived from F-MuLV further strengthens the parallels between the Friend erythroleukemia system and the AKR thymic leukemia system. Finally, the potential relationship of helper-independent env gene recombinants between F-MuLV and xenotropic virus to be highly leukemogenic SFFV is discussed.

J. Exp. Med. 1978, 639-653.

3 tables, 2 figs., 31 references.

Authors summary.



* MORPHOLOGY AND BIOCHEMISTRY OF BLOOD IN SOME MUSTELIDS.
 (Beiträge zur Morphologie und Biochemie des Blutes einiger
 Musteliden).

R. Zeissler, U.D. Wenzel, DDR-701 Leipzig, Zwickauer Strasse 55.

An account is given of various techniques of blood sampling in the context of certain mustelids, including cardiopuncture, amputation of tail tip, talon cutting, incision of the ear vein, puncture of the jugular or femoral vein, and catheterisation of the abdominal aorta. References is made to details of use of all techniques, characteristics, advantages and potential setbacks, and preferable use of some of the tested methods to collect blood from mustela and martes species. Blood collection from the abdominal aorta may be helpful in obtaining no-haemolysis and no-additive plasma for biochemical multi-screening. Biochemical, pharmacological, and toxicological follow-up checks may be feasible under certain conditions following surgical exposure of the external jugular vein.

The use of "Fimomed" (n-butylcyano-acrylate), a tissue adhesive, may help to reduce efforts in terms of time and material and, consequently, rationalise veterinary hygiene action as a whole, provided that the conditions for its application are observed. The skin adhesive is properly applicable to skin lesions of mustelids. A combination of suturing with adhesive should be used to close laparotomy wounds for better mechanical strength of the abcominal wall. Possible applications of "Fimomed" should be tested with other species as well.

Arch. exper. Vet. Med., Leipzig, 32, 1978, 5, 727-736.

3 tables, 53 references.

(In German with summaries in German, English and Russian).

Authors summary.



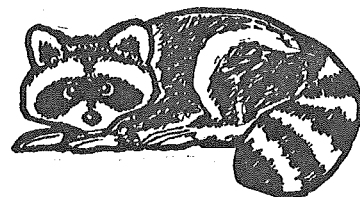
* HEMATOTROPIC PARASITES OF TRANSLOCATED RACCOONS IN THE SOUTHEAST.

Gary D. Schaffer, William L. Hanson, William R. Davidson, Victor F. Nettles, Southeastern Cooperative Wildlife Disease Study, Dept. of Parasitology, Coll. of Vet. Med., University of Georgia, Athens, GA 30602, USA.

Ninety-four raccoons (*Procyon lotor*) from 6 southeastern states were examined for hematotropic parasites, to evaluate the carrier potential of these animals as they relate to translocation and release for hunting purposes. Four species of hematotropic parasites were identified, viz, *Babesia procyonis*, *Haemobartonella procyoni*, *Hepatozoon procyonis*, and *Trypanosoma cruzi*. Lesions in infected raccoons were associated only with *H procyonis*. *Babesia procyonis* was enzootic in populations of raccoons used as sources for exportation and in raccoons resident in typical release areas. *Haemobartonella procyoni*, *H procyonis*, and *T cruzi* were prevalent only in locales on raccoon origin. Due to the potential pathogenicity of *H procyonis* and *T cruzi* in raccoons or other hosts, the practice of translocating raccoons from enzootic to nonenzootic areas was considered biologically hazardous.

Journ. of the American Vet. Medical Ass. 173, no.9, 1148-1151, 1978. 1 table, 6 photos, 15 references.

Authors summary.



ASTROCYTOMA IN A RACCOON.

R.W. Diters, C.H. Kircher, S.W. Nielsen, Northeastern Research Center for Wildlife Diseases, Univ. of Connecticut, Storrs, CT 06268, USA.

A wild mature male raccoon (*Procyon lotor*) was noticed to be lingering around a rural neighborhood wandering aimlessly in circles, seemingly unaware of its surroundings.

Gross examination of the formalin-fixed brain revealed a small, solid mass in the right cerebral hemisphere, posterior to the olfactory bulb. Microscopically, the mass was composed of densely packed pheomorphic cells (polyhedral to spindle shape), frequently in a whorled pattern. The cell borders were indistinct, and the cytoplasm foamy and lightly stained. Mitotic figures were numerous. Several microhemorrhages and perivascular lymphocytis cuffs as well as scattered lymphocytes and plasma cells were seen throughout the mass. The mass was identified as a fibrous astrocytoma.

Although neoplasms, particularly thyroid tumors, have been reported in captive raccoons, this represents the 1st recorded brain tumor in a wild raccoon.

Journ. of the American Vet. Med. Ass., 173, no.9, 1152-1153, 1978.
2 photos, 5 references.

Abstract:G. Jørgensen.

* NATURALLY OCCURRING TYZZER'S DISEASE IN THE GRAY FOX.

Susan M. Stanley, Ronald E. Flatt, George N. Daniels, Laboratory Animal Resources and the Vet. Diagnostic Laboratory in the College of Veterinary Medicine, Iowa State University, Ames, IA 50011, USA.

Four gray fox became anorectic and developed diarrhea. Their condition worsened until death. Diagnosis of Tyzzer's disease was made on the basis of clinical signs, gross and microscopic lesions, and the demonstration of *Bacillus piliformis* in the liver.

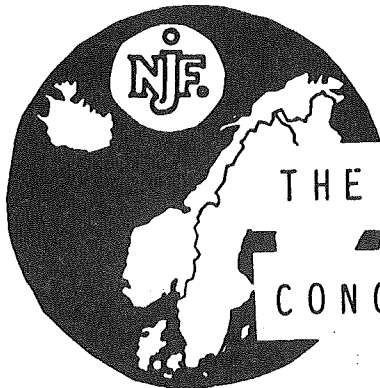
Journ. of the American Vet. Med. Ass., 173, no.9, 1173-1174, 1978.
1 photo, 17 references.

Authors summary.





Scientifur
COMMUNICATION.



THE SECOND INTERNATIONAL SCIENTIFIC
CONGRESS IN FUR ANIMAL PRODUCTION

DENMARK APRIL 1980.

On behalf of Scandinavian Association of Agricultural Scientists, Fur Animal Division and Board of the Scandinavian Fur Farm Organizations we are happy to invite all scientists interested in Fur Animal Production to the SECOND INTERNATIONAL SCIENTIFIC CONGRESS IN FUR ANIMAL PRODUCTION.

Date and place:

The congress will be held in Denmark on April 8 (1 pm) - 10 (3 pm), 1980 and will take place at a modern congress hotel (Marina) beautifully situated close to the sea in Vedbaek, 20 km north of Copenhagen.

The date is planned in order to co-ordinate the congress with two other important events: the York conference in fur animal production April 11-13 and the Frankfurt Fur Fair April 16-19, 1980.

An excursion to Copenhagen Fur Center, a big central kitchen, fish silage factory and mink and fox farm will be included in the congress program.

Reports:

This congress will continue the tradition started in Helsinki 1976 and we try to make it a real international meeting of scientists dealing with fur bearing animals.

Therefore we hope to receive many participants and reports of research work from all over the world. All reports concerning genetics, reproduction, veterinary science, physiology and nutrition will be appreciated.

The arrangement committee has already received promise for reports concerning plasmacytosis, hormonal and photoperiodic control of implantation and autumn molts in mink, energetic and nitrogen balance in mink, reproduction in blue foxes, preservation and use of fish silage, blood profiles in mink and use of alternative feed-stuffs in fur animal production.

Accompanying program:

Special sight seeing program including famous castles, boat trip to Sweden and shopping trip to Copenhagen will be arranged for accompanying persons.

Excursion after the congress:

An excursion to Jutland will be arranged on 11th and 12th of April. The excursion program includes visits to mink and fox farm, central kitchens, silage plant, research farm, producer of fur animal houses, pens and cages and suppliers for feed, machines and other equipments for fur farms.

PRICES.

Congress: Circa 200 US \$ (Dcr. 1200) including hotel (2 nights), all meals, congress fee or special program for accompanying persons.

Excursion: Circa 175 US \$ (Dcr. 900) including flight, hotel (one night), meals and transportation.

Extra night: At the congress hotel Marina or similar hotels including breakfast: approximately 35 US \$ or Dcr. 200 per person per day.

Enrollment: All persons known to the arrangement committee are sent a personal invitation with preliminary entry form. If you have not received such a letter please send your name and address to the arrangement committee and ask for an invitation.

Address to the arrangement committee:


Finnish Fur Breeders Association
(Outi Lohi)
PB 5, 01601 VANDA 60
Finland
Phone 90-848 822.

Best regards from the arrangement committee:

Hans Pedersen (DK)

Mogens Hansen (DK)

Helge Olsen (DK)

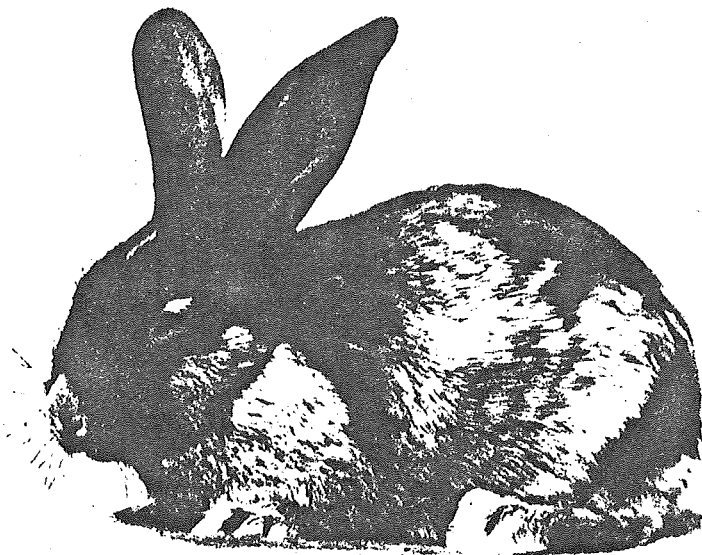

Gunnar Jørgensen (DK)
chairman


Outi Lohi (SF)
secretary

NEW BOOK

KANINCHEN KRANKHEITEN

Friedrich Knorr



4., überarbeitete Auflage
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Für die menschliche Ernährung spielt Kaninchenfleisch eine wichtige Rolle. Es ist eiweißreich, fettarm und leicht verdaulich. Daher wird der Kaninchenhaltung in vielen Ländern eine wachsende Bedeutung beigemessen. Kaninchen werden hauptsächlich von Kleintierhaltern gezüchtet und gehalten.

Der Autor war selbst Kleintierpraktiker und behandelte als solcher fast täglich auch Kaninchen. Er vermittelt in dem vorliegenden Buch Wissen und jahrelange Erfahrungen bei der Behandlung von Kaninchenkrankheiten. In leicht verständlicher Form beschreibt er Infektionskrankheiten, Invasionskrankheiten, Haut- und Haarpilzkrankungen, Vergiftungen, Mangelkrankheiten sowie sporadisch auftretende Organkrankheiten. Ausgehend von den Symptomen über die Behandlungsmöglichkeiten, die dem Tierhalter selbst gegeben sind, bis hin zum Ausheilen bzw. Schlachten und Verwerten des Fleisches erkrankter Tiere spannt sich der Bogen dieser Ausführungen. Voran stellte der Verfasser das sehr wichtige Kapitel über die Hygiene bei Haltung und Fütterung der Kaninchen sowie ein Kapitel, das allgemeine Erläuterungen über Krankheitsreize, Krankheitsbereitschaft, Übertragung von Viren, Bakterien, Parasiten usw. enthält. Nicht nur in diesem allgemeinen Abschnitt, sondern auch bei der Beschreibung jeder einzelnen Krankheit ist immer wieder auf die Bedeutung vorbeugender Maßnahmen hingewiesen. Daher wird das Buch „Kaninchenkrankheiten“ ein wichtiger Ratgeber und Helfer für alle Kaninchenhalter und -züchter sein.

FOX diseases

Book review.

FOX DISEASES. Publication 1979.

Dr. Gordon Finley,
Veterinary Pathology Laboratory,
Livestock Services Branch,
N.S. Dept. of Agriculture,
Truro, Nova Scotia
Canada, B2N 5E3

The authors introduction:

Due to the decline of fur values in the 1940's, there is little current information on foxes in the English literature. There have been only a few North American publications on diseases recently. More work has been done in the Scandinavian and Russian countries.

Therefore, this booklet combines some personal experience with a review of available literature.

It is recognized that information is somewhat technical in nature. However, it can serve as a guide for ranchers and veterinarians working with foxes. It should not be used to replace veterinary advice as several diseases are similar in appearance.

Gordon Finley

Because of the price the production of foxes has increased. The farmers and the veterinarians need more information about the fox diseases and this little book cover those requirements on an easily way. There is only 18 pages with 9 figures where all the common situations are described. The passage about the diseases related to nutrition is too short. The farmer and the veterinarian need more knowledge about this questions and about the methods to measure some clinical parameter.

I am sure that the farmes will welcome the booklet and it will be a good help to make the right diagnosis in case of trouble among the foxes.

Mogens Hansen
Danish Fur Breeders Association

Questions about soybean meal.

If colleagues do have answers on some of the questions in Dr. J.C. Martins letter, please write him as far as possible and send a copy of the letter to me.

Gunnar Jørgensen.

CANADA MINK
BREEDERS
ASSOCIATION



ASSOCIATION DES
ELEVEURS DE VISONS
DU CANADA

58 OAKWOOD AVE., N., MISSISSAUGA, ONTARIO L5G 3L8
Tel. 274-5812

April 12th, 1979

Mr. Gunnar Jørgensen.
National Institute of Animal Science,
Department of Fur Bearing Animals.
Trollesminde Roshildevej 48H,
DK 3400, Hilleroed, Denmark.

Dear Mr. Jørgensen:

By way of introduction, I was the representative from Canada Mink Breeders Association at the Helsinki Congress in Fur Animal Production.

Recently we received your review of the recent research work 'The Use of Soybean Products in Feeds For Fur Bearing Animals'. We have reason to believe that a certain amount of soy bean oil is a valuable addition to the diet of growing and furring mink, therefore we are very much interested in the feeding of a full fat soy bean meal.

In your review, two products seem to have given very good digestibility percentages:

Nurupan - to quote from your review (Lucas Meyer, Hamburg) has given the information that the Nurupan is heated in a special, not exact described way. Do you now have any more information on the process used to produce Nurupan and do you know if the product is available in United States or Canada?

Did (Glen Hansen 1978) carry any feeding trials with Nurupan to the completion of growth and pelting, and with what results?

Nutridan TF100 (Hilleman 1978) - Nutridan seems to rate about the same as Nurupan. The table at the bottom of page 4, your review, lists heating time and temperature for different treatments, i.e. moderate heat, normal heat and extra heat. Were the beans ground into a meal before heat treatment, or, were the beans heated as whole beans and then ground.

No doubt you are familiar with the extrusion process, I believe it originated in Europe. We have a manufacturer of pet foods here in Ontario using some extruded full fat

soy beans in his product, apparently with good results. However I have seen no record of any experimental work using extruded soy beans in mink feed. Do you know of any?

Last September, October and November we carried out a very limited feeding experiment by replacing 25% of the animal protein in the minks feed with sprouted and boiled soy beans. The results were good, therefore we plan to continue the experiment this year with at least 100 male mink for the months of August, September, October and November.

The soy bean sprouts used were 5 day sprouts boiled for 10 minutes, ground into a paste and mixed with the regular type of feed. Fresh sprouts each day.

Two questions come up - what chemical and biological changes take place within the bean during the sprouting process. Is it possible that the trypsin inhibiting factor can be destroyed with less heat in sprouted beans?

On our ranch we feed a very low level of carbohydrate - we use from 5 to 8% of cooked cereal grains.

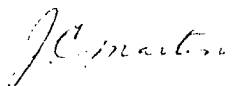
I note in your review, Page 4, 2nd Paragraph (Hilleman 1976) "there was reduction in carbohydrate digestibility with increasing amounts of soy bean meal in the diet".

In these experiments was additional carbohydrate from cereal grains added, or, was the carbohydrate from the soy bean meal the only source in the ration?

We trust that you will not consider the answering of this letter too demanding on your time and we hope that you will be able to give us some help regarding our questions.

We also hope to be able to attend the Second International Scientific Conference in 1980.

Sincerely,



J. C. Martin.
Research Co-Ordinator.

JCM:ak

cc: Hugh Freeman

The
University
of
Connecticut

STORRS, CONNECTICUT 06268
COLLEGE OF AGRICULTURE
AND NATURAL RESOURCES
The Northeastern Research Center for Wildlife Diseases

February 9, 1979


Dr. Gunnar Jorgensen
Nation Institute of Animal Science
Dept. of Fur Bearing Animals
Trollesminde, Roskildevej 48 H
DK-3400-Hillerød, Denmark

Dear Dr. Jorgensen:

Enclosed please find our Progress Report which may be of interest to you.

We would appreciate any reprints you may have on diseases of wild living animals.

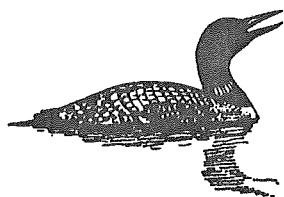
Very truly yours,



Svend W. Nielsen, D.V.M., Ph.D.,
Director & Professor of Pathology

SWN/mo
Encl.

THE NORTHEASTERN RESEARCH CENTER
FOR WILDLIFE DISEASES



1971 -
1977
PROGRESS
REPORT

prepared by

S. W. Nielsen, D.V.M., Ph.D.
Director and Professor of Pathology

for

Steering Committee Meeting
January, 17, 1978

COLLEGE OF AGRICULTURE
AND NATURAL RESOURCES
UNIVERSITY OF CONNECTICUT
STORRS, CONNECTICUT

06268

THE NORTHEASTERN RESEARCH CENTER FOR WILDLIFE DISEASES

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