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I. Quantitative changes with age in the skeleton of sables, *Martes zibellina*. II. Structural differences in the bone tissue of adult sable kept under different conditions.

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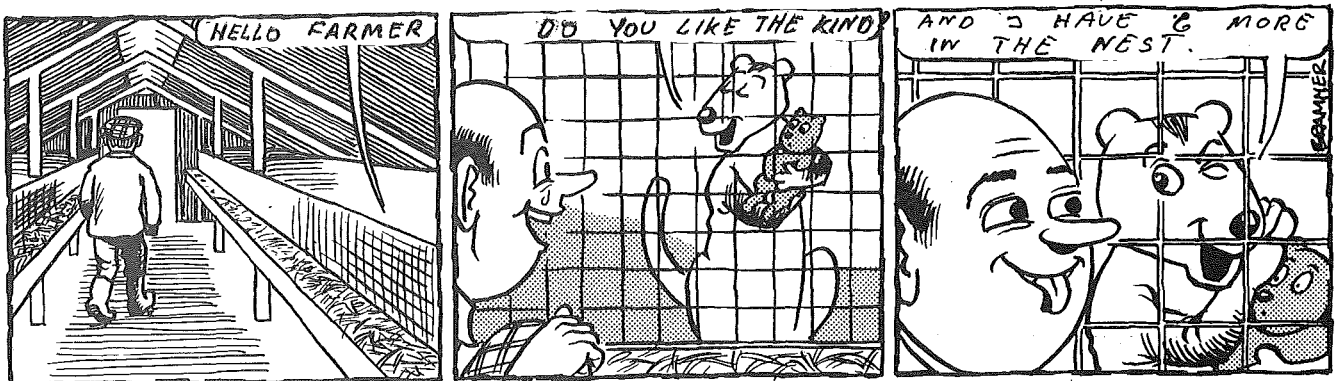
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5. REPRODUCTION.

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- Fox breeding: heat detection, importance and possibilities.**
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The life cycle of Eimeria vison in minks. M.D. Umurzakov, K.K. Nukerbaeva, USSR. (Izvestiya Akademii Nauk Kazakhskoi SSR, Biologicheskaya, 2, 48-53, 1985). In RUSS. Code 9-M.

Angiostrongylus vasorum (Baillet, 1866) in Red Foxes (Vulpes vulpes L.) in Italy. A. Poli, M. Anispici, A. Marconcini, f. Mancianti, D. de Monte, Italy. (Journ. of Wildlife Diseases, 20, 4, 345346, 1984). Code 9-F.

Helminth parasites from Illinois raccoons (Procyon lotor). Daniel E. Snyder, Paul R. Fitzgerald, USA. (J. Parasit., 71, 3, 274-278, 1985). Code 9-0.

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Spinal cord pathomorphology in neonatal mink kits affected by the Alutian disease. V.A. Naumov, E.G. Vasil'eva. (Fur Animal breeding in consumer's cooperatives) Pushnoe zverovodstvo potrebitel'skoj kooperatsii, Kirov, USSR, 157-166, 1983). In RUSS. Code 9-M.

Experimental immunization of mink with a Clostridium botulinum C vaccine. J.Z. Luo, Z.W. Chen, H.S. Ma, J.F. Guo. (Fur Animal Farming (Maopi Dongwu Siyang), 4, 6-9, 1983). In CHIN. Code 9-M.

Control and treatment of diseases commonly seen in mink. K.M. Ma. (Chinese Journ. of Vet. Med. (Zhongguo Shouyi Zazhi), 9, 1, 49-50, 1983). In CHIN. Code 9-M.

8. COMMUNICATION.

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Scientific meetings, symposiums and congresses:

2. Internationales Pelztiersymposium, Leipzig 1986.

37th Annual Meeting of the EAAP, Budapest 1986.

LETTERS TO THE EDITOR.

NEW BOOKS:

SCIENTIFIC FUNDAMENTALS OF FUR-BREEDING. Berestov, V.A.

MINK IN NATURE - MINK AS DOMESTICATED ANIMAL.

B.L. Hansen, K.H. Andersen

ZOONOSES AND THE FARMING OF FUR BEARING ANIMALS.

M.M. Rementsova, O.V. Postricheva, S. Rybalko.

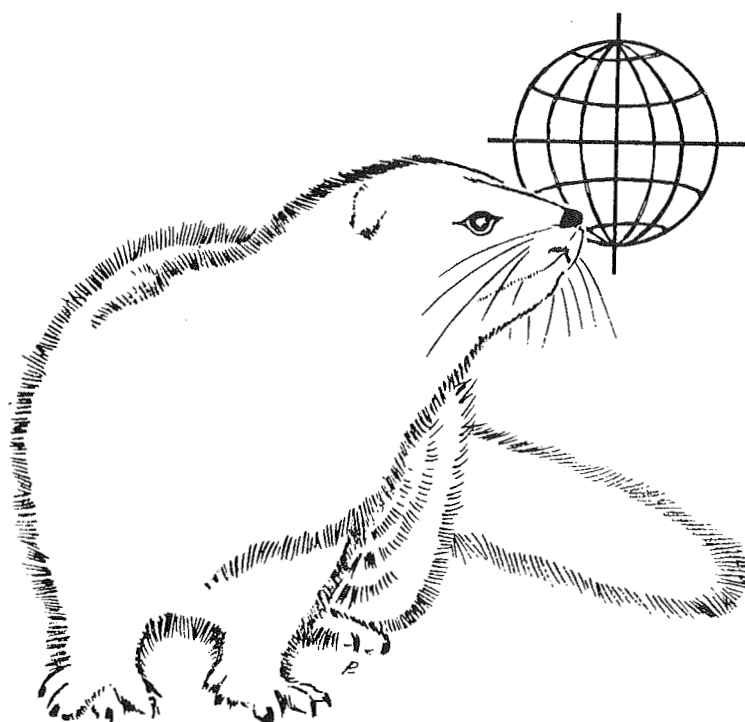
DISEASES OF FUR BEARING ANIMALS.

E.P. Danilov, A.I. Maierov, V.A. Chizhov, I.I. Dakur,
A.V. Grabovskii, V.P. Akulova, O.A. Metelkin, V.P.
Ryutova, V.S. Slugin.

OLD BOOKS:

THE DOMESTICATED SILVER FOX.

Ned Dearborn. (1917).



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NOTES.

SCIENTIFUR, VOL. 10, No. 2, 1986.

Just back from the 2nd International Fur Animal Symposium in Leipzig and the Frankfurt Fur Fair your editor can certify that the world of fur animal producing is on full speed, and it seems to - in spite of the stagnating prices - that nobody think to use the reverse gear.

In this issue of SCIENTIFUR you will find less original reports, abstracts and titles than in the further issues. But, as we know that a number of reports are on the way, we think that this phenomenon is of temporary nature.

I wish to draw your attention to - of course to all kind of scientific news in this issue - but especially to the abstract about GENETIC TRANSFORMATION OF THE MUTANT CELLS OF MOUSE BY METAPHASE CHROMOSOMES OF MINK (page 115).

The fur animal world has by this entered the age of Genetic Engineering - an age which, during many years, has been under preparation thanks to our colleagues at the Institute of Cytology and Genetics, Siberian Branch, Academy of Sciences of the USSR, for which I will like to congratulate.

I regret the delay of my congratulations, but the fact is that I not until January 1986 received the English translation of the excellent report dated on December 1, 1983 - also 2 year after presentation.

This fact should tell some of us that the international information system within the fur animal production is not yet working satisfactory. HAVE YOU BEEN TRYING TO FIND A SATISFACTORY SOLUTION TO MY QUESTION REGARDING THE LANGUAGE BARRIER mentioned in NOTES, SCIENTIFUR Vol. 10, No. 1 ? The solution of this big question is crucial in order to obtain a more effective information organization than the present.

Owing the bank, the authors, the printer and SCIENTIFUR 50,000 poor US Dollars for MINK PRODUCTION I really wish to thank for the fine compliments for the book sent to me (letters reported under communication).

If it should be of some help to open the breeders eyes for the attractiveness of the book - independent of his geographical place or his present

method of production – it might be – in my very private point of view – the best text in the present issue of SCIENTIFUR.

During the last days of April the Scandinavian scientists has held a working meeting regarding fur animal research in the fifth Scandinavian fur animal producing country – namely Iceland. Unfortunately, your editor did not have money for attending, but the inspired talks about interesting results and new projects from the participants I have met tells me that other thing but the very special and very beautiful nature of Iceland have given the scientists power to the next year in the race.

Already in the days 9.-11. of September the Scandinavian Association of Agricultural Scientists Division of fur animals will arrange a seminar at Kuopio University, Finland. At this seminar advisers, colleagues and people from connected industries on the productive side and members of the association boards are going to present the newest research results regarding genetics, reproduction, feeding, management, physiology and veterinary sciences, etc. The seminar is usually attended by 125-150 people.

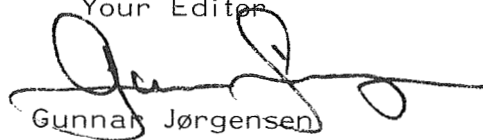
The meeting has been advertised in the members journal, but if somebody have not recognized it, further information can be obtained by:

Finlands Fur Breeders Association
att. Ilse Olenius/Maija Valtonen
PB 5, 01601 Vanda 60, Finland
phone: 358-0-84981.

Have a good summer and do not forget us with contributions, the book, and good ideas.

Best regards

Your Editor



Gunnar Jørgensen



Original Report

Dirtyness and Ammonia Levels in Nests of Growing Raccoon Dogs

Hannu Korhonen and Liisa Nurminen, University of Kuopio, Department of Applied Zoology, POB 6 70211 Kuopio 21, Finland

Correspondence: Dr. Hannu Korhonen

Summary

The suitability of nests for growing, juvenile raccoon dogs (*Nyctereutes procyonoides* Gray 1934) were determined from the hygienic point of view from June to November. Dirtyness of the nests were ranked visually into 0 to 3 groups (0 = clean, 3 = very dirty). Ammonia (NH₃) concentrations in the nests were measured with a Dräger gas detector. Dirtyness of the hair coat was also evaluated.

The results revealed that there were animals which tended to defecate in their nests throughout the observation period. Also ammonia levels in those nests were highest. Ammonia concentrations in the nests studied varied from 1 to 42 ppm. Animals with dirty nests had also dirty hair coats and feet.

The findings did not confirm the speculation that the tendency to defecate inside the nest has a hereditary origin. It is obvious that the present nest type is not good enough to prevent animals from defecating inside the nest, and thus new nest designs have to be developed to improve the situation.

Introduction

Farmed raccoon dogs (*Nyctereutes procyonoides* Gray 1834) have been conventionally caged out-of-doors throughout the year, except the pregnant bitches during the whelping time in spring. In recent years, however, the question of the advantages (or possible disadvantages) a nest could provide for this species during growth and winter periods has been raised. Thermoregulatory studies (Korhonen *et al.*, 1983; Korhonen & Harri, 1984; Korhonen *et al.*, 1985) support the conclusion that besides use during the coldest mid-winter, the nest can possibly provide energetic advantages for this species during late autumn in October-December. This is due to the fact that the lower critical temperature (T_{lc}) of the raccoon dog is as high as +10° C, and that already at ÷ 20° C the metabolic rate of this species is twice as high as at thermoneutrality (Korhonen *et al.*, 1983; 1985). Furthermore, previous papers reveal that when the raccoon dog is farmed in a cage wire-mesh floor, heat is markedly lost from the animal's ventral surface and feet (Korhonen & Harri, 1986). Heat loss in this species could

also be effectively reduced by providing a nest or a sleeping plate during winter.

The other important point is that the nest can provide light conditions different from that experienced outside the nest. It is well known that the hair growth cycle - and the rate of this cycle - is markedly regulated by the photoperiodic conditions of the animals (Rust *et al.*, 1965; Allain & Rougeot, 1980; Underwood & Reynolds, 1980; Korhonen *et al.*, 1984). Furthermore, recent observations confirm the speculation that hormones like melatonin play an important role in this photoperiodic regulation (Allain & Rougeot, 1980). Melatonin, in addition, is found to be at its highest level in the dark. Thus, when regulating light conditions of the animals we could possibly manipulate melatonin hormone levels, thereby affect the hair growth rate of the animals also. One could expect that the nest would be at suitable tool for such a manipulation. However, it has been speculated that the animals do not keep their nests clear, but willingly defecate inside them which consequently means that they easily mess up their hair coat.

The present paper aims at clarifying to what extent farmed raccoon dogs have tendency to defecate inside their nest when a nest is provided them from June to November. Animals used are juveniles, and we also evaluate how the nest affects the dirtyness of their hair coat. Furthermore, hygienic conditions of the nests are monitored by ammonia level measurements.

Materials and methods

Animals and general procedures

The study was carried out on the research fur farm of Kuopio university, in eastern Finland. All animals used in this study were farmborn males originating from four different litters. After weaning at the age of 7 weeks, they were housed in standard rearing cages measuring 105 x 120 x 60 cm (width x length x height). their nests consisted of wooden boxes made of 1.7 cm thick board. For further description of the nest see Korhonen & Harri (1984). Ready-mixed, fresh feed was available for conventional farm procedures. The diet was composed to agree as far as possible with the standards of Finnish

Table 1. Ammonia concentrations and visually estimated dirtyness of nests of growing raccoon dogs. Seven different nests were monitored.

Date	1		2		3		4		5		6		7	
	NH ₃ (PPM)	D	NH ₃ (PPM)	D	NH ₃ (PPM)	D	NH ₃ (PPM)	D	NH ₃ (PPM)	D	NH ₃ (PPM)	D	NH ₃ (PPM)	D
Jun 25	2	0	16	1	33	2	2	0	2	0	38	3	3	1
Jul 18	-	2	-	1	-	3	-	0	-	3	-	3	-	1
Aug 28	3	2	3	0	31	3	2	0	3	0	42	3	13	1
Sep 17	-	2	-	0	-	3	-	0	-	3	-	3	-	1
Oct 12	-	1	1	0	17	3	1	0	2	3	21	3	3	1
Nov 12	-	2	-	0	-	3	-	0	-	3	-	3	-	1

Dirtyness score: 0 = clean, 1 = slightly dirty, 2 = moderate dirty, 3 = very dirty.

Fur Breeders' Association. Water was supplied by an automatic watersystem and supplementation in water-cups took place as required. The animals were inspected daily, and the remained healthy throughout the experimental period.

Measurements

Dirtyness of the nests was ranked subjectively by the same person 6 times during the experimental period. For the time schedule see Table 1. The following dirtyness scores were used: 0 = clean, 1 = slightly dirty, 2 = moderately dirty, 3 = very dirty. After each ranking, the nests were cleaned. At the same time the soiling of the hair coat also was monitored.

Ammonia (NH₃) concentrations were measured three times during the observation period using Dräger ammonia tubes in conjunction with the Dräger gas detector. Before each series of measurements, the pump was tested for tightness using an unopened tube. Ammonia indication was based on the colour reaction of ammonia with bromophenol blue and acid. Air samples inside the nest were sucked through the tube with 10 pump strokes. Ammonia changed the colour of the indicating layer from orange to blue. Thus, the length of the discolouration indicated the concentration. Indication was evaluated immediately since the colour could change somewhat in the course of time. Ammonia levels as well as visual dirtyness were determined from the same 7 nests throughout the experimental period.

Results

The results can be deduced from Table 1. Ammonia levels in the nests varied from 1 to 42 ppm. However, two types of nests were found: (1) nest with low ammonia levels and (2) nest with high ammonia levels. In every sampling period, the highest ammonia levels were found from nests no: 3 and no: 6. This same tendency is observed when surveying the dirtyness score of the nests. There were nests which were very dirty in every observation period, but there were also nests which were clean throughout the experiment. The nests

which were ranked with a dirtyness score value 3 (= very dirty) also had the highest ammonia levels. Ammonia levels tended to decrease during the course of experimental period which is probably due to decreasing air temperatures in the late autumn.

The hair coat of animals living in moderate or very dirty nests was clearly dirty - in some cases even very dirty. Also, their feet were covered with small to large amounts of faeces. Animals which kept their nests clean also had a clean hair coat. In spite of the dirtyness grade of the nest, the animals generally preferred to stay inside the nests.

Discussion

The present findings support the farmers' observations that there are animals which very willingly defecate inside their nests. From Table 1 we can roughly estimate that one of four animals has a tendency to keep its nest very dirty. Furthermore, although we cleaned their nests every three weeks, they still messed up it repeatedly. However, there were also animals which did not defecate inside the nest during the course of the experiment. We can also see from the results that no correlation was found between the litter of origin, and dirtyness of the nests. Thus, animals originating from the same litter could keep their nests either clean or dirty. Based on the present observations we cannot say that a tendency to defecate inside the nest has a hereditary background. Further studies will be needed to clarify the situation more completely.

Ammonia is a colourless gas with a pungent odor. It is released in alkaline conditions from urine and faeces by bacterial decomposition. Such conditions could be easily produced in a nest if enough faeces is present. Ammonia levels found in the present study were rather low, and clearly below the harmful levels documented for the mammals. The lowest ammonia concentrations which have been found to reduce feed intake and average daily weight gain are about 100 (Stombaugh *et al.*, 1969). In our previous paper (Korhonen *et al.*, 1986) we compared the growth rate of raccoon dogs reared with and without a nest, and found that the nest had no negative effect on the growth of the animals.

In conclusion, we can say that raccoon dogs could be reared in cages with nests, but the problem is that present nest types easily promote the animals' defecating inside the nest. This generally means that such animals have dirty hair coat which, of course, impairs the quality of the fur. Other nest designs, possibly a nest with a low roof, could prevent animals from defecating inside their nests. However, more studies will be needed to confirm the speculation.

Acknowledgements

The authors greatly appreciate the valuable assistance of Mrs. Leila Venäläinen throughout the study. Financial support was provided by the Finnish Research Council for Natural Sciences and by the Alfred Kordelin Foundation.

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SCIENTIFUR, VOL. 10, NO. 2, 1986.



Scientifur

48 H ROSKILDEVEJ, DK-3400 HILLEROED, DENMARK,

DIFFERENTIAL DISTRIBUTION BY SIZE OF LAYER V PYRAMIDAL NEURONS IN RACCOON (*PROCYON LOTOR*) SENSORIMOTOR CORTEX.

Donald F. Buxton.

Layer V pyramidal neurons were measured and their perikaryonal volumes were calculated in portions of the primary motor (Msl), supplementary motor (MslI), primary sensory (SmI) and second sensory (SmII) cortical areas of the raccoon. Throughout Msl large pyramidal neurons were interspersed with smaller ones. The heaviest concentration of large pyramidal neurons was rostrally in Msl, mainly in the caudal wall of the cruciate sulcus. In caudal Msl, where digital movements have been elicited from electrical stimulation, these large neurons were scarce. In MslI, SmI and SmII the pyramidal neurons were smaller than those of Msl. However, large pyramidal neurons were found concentrated laterally in MslI, mainly in the rostral wall of the cruciate sulcus. The layer V pyramidal neurons in the forepaw region of SmI were significantly smaller than comparable cells in the other sensory and motor regions. The differential distribution by size for these neurons was compared to differential distribution in other species. The relationships among cell size, ease of excitability and type of elicited movements also were compared.

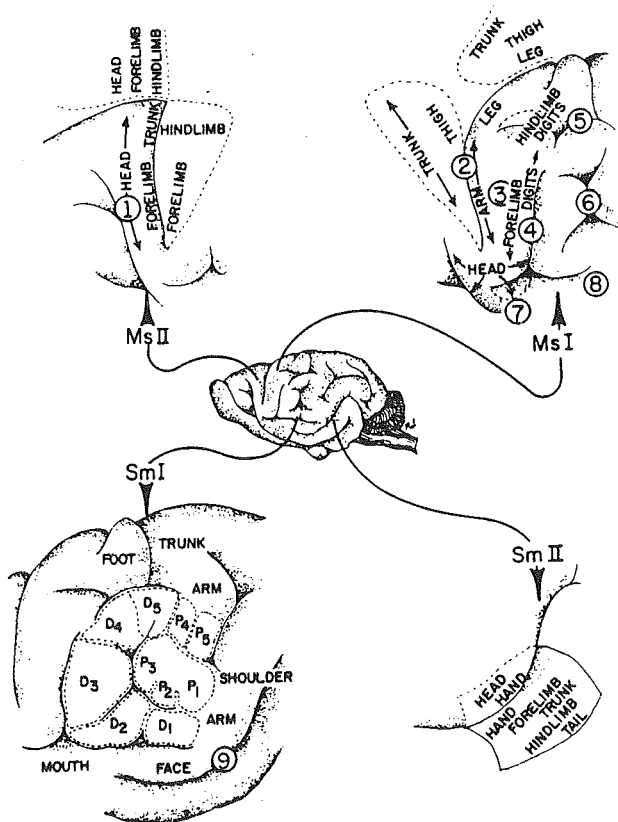


Fig. 1. Center: Left lateral view of raccoon brain. Upper left: Supplementary motor area (MsII) of cerebral cortex. Dotted line enclosures represent rostral wall of cruciate sulcus (hidden precruciate gyrus) reflected caudally and medial surface of precruciate gyrus reflected dorsally. Ipsi- and contralateral regions of the body moving when the cortex was electrically stimulated (as determined by JAMESON/ARUMUGASAMY/HARDIN, 1968) are indicated by the labels HEAD, FORELIMB, etc. Upper right: Primary motor area (MsI) of cerebral cortex. Dotted line enclosures indicate caudal wall of cruciate sulcus (hidden postcruciate gyrus) reflected rostrally and medial surface of postcruciate gyrus reflected dorsally. Contralateral regions of the body moving when the cortex was electrically stimulated (as determined by HARDIN/ARUMUGASAMY/JAMESON, 1968) are indicated by the labels ARM, FORELIMB, DIGITS, etc. Lower left: Primary sensory area (SmI) of cerebral cortex. Contralateral regions of the body from which tactile stimulation produces cortically-evoked electrical

Zbl.Vet.Med. C. Anat. Histol. Embryol. 13, 156-173, 1984.

2 tables, 7 figs., 52 references.

Author's summary

In ENGL. Summary in GERM, FREN, SPAN.

THE EFFECT OF NUTRITIONAL CONDITION OF CAGED ARCTIC FOXES BEFORE MATING ON THEIR REPRODUCTIVE PERFORMANCE.

B.D. Babak.

For females (30-84 per group) grouped according to body size (92.5, 92.5-105 or 105 g body weight/cm body length), the percentage not whelping was 10.4, 12.0 and 17.6 resp., and the litter size per housed female at weaning 8.10, 7.75 and 7.01 for 1st-parity females; for older females the figures were 6.6, 8.0 and 7.4 for the percentage not whelping, and 9.69, 8.28 and 7.98 for litter size per housed female at weaning.

Sbornik Nauchnyk Trudov., Moskovskaya Veterinarnaya Akademiya, 89-92, 1984.

2 Tables.

CAB-abstract.

In RUSS.

THE OCCURRENCE OF COTTON FUR AND ITS CORRELATION TO OTHER SKIN PROPERTIES IN FINNISH MINK SKIN PRODUCTION.

Anne Näveri, Tapio Juokslanti, Aale Roos.

The annual cotton fur incidence varied from 2.2 to 4.1% of all the standard mink skins produced in Finland during the years 1978-1980. In the pastel skins, cotton fur was found yearly in 0.7-1.8% of all classified pastel mink skins. Cotton fur was found to be negatively correlated ($p < 0.001$) with skin size and skin quality both in the standard and pastel skins, in males as well as in females. The annual cotton fur incidence varied between 0.5% and 14.6% depending on the year and the feed kitchen area during the production years 1977-1981. It is concluded that the cotton fur defect is accompanied by impaired skin quality and reduced skin size in the whole skin production of a farm, including both male and female skins.

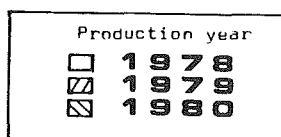
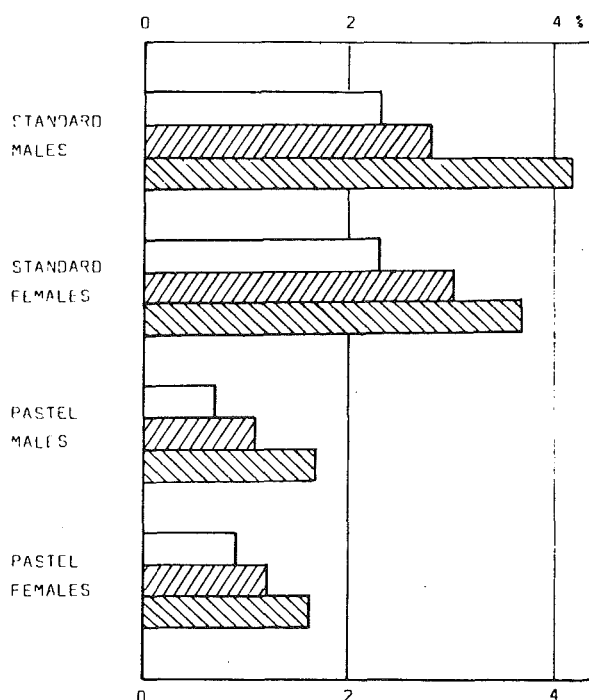


Fig. 1. The percentage of cotton fur skins in Finnish standard and pastel mink skin production presented as histograms in the production years 1978, 1979 and 1980.



VARIABILITY IN MILK COMPOSITION OF THE DOMESTIC FERRET (*MUSTELA PUTORIUS*).

Patricia A. Schoknecht, Jack A. Cranford, R. Michael Akers.

Milk samples from 6 ferret on days 5, 11, 19, 25, 33 and 39 after the young were born. Individual ferrets differed in milk fat, protein and lactose concentrations. Proteins and fat concentrations varied during the course of lactation. Lactose was the only component to differ across teat pairs.

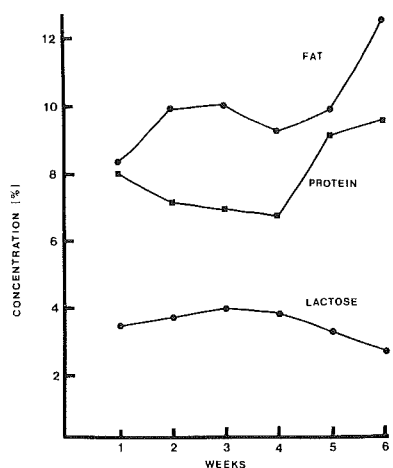


Fig. 1. Mean concentration of fat, protein and lactose during lactation for all females.

Comp. Biochem. Physiol., Vol. 81A, 589-591, 1985.

3 tables, 1 fig., 13 references.

CAB-abstract.

CONTRIBUTIONS CONCERNING THE SEASON AND AGE VARIABILITY OF THE FUR COVER AT SOME SPECIES OF CARNIVOROUS FUR ANIMALS.

Nicolae Pastirnac, Romulus Gruia.

In the work there have been analysed a series of aspects already dealt with in the reference material, which prove that at the species of fur animals the moulting and replacing of the hair is done under endocrine control, as well as, under the influence of several biophysical, nutritive elements etc. References have been done to the influence of the visible radiations of light, to some dismetabolisms, or lacks in certain amino acids, vitamins, or other nutritive substances leading to various troubles of the moulting physiology.

There have been described several histomorphological and functional modifications, not only of the fur, but also of the dermis, modifications which occur in the physiological process of moulting at silver and blue foxes.

Studying the season variability of the species of foxes, we have tried to draw a chronological scheme of the periods, order and region of replaced fur, in the context of several elements having an endo- and exogenous influence (endocrine, age biophysical, nutritive, species, geographical region, individual etc.)

To understand the fur moulting mechanisms at the carnivorous species we have mentioned constitutes the decisive element of directing the autumn variability of the fur, then the choosing of the optimum time for the killing and to get in, in order to improve the fur structure, colour and shade.

The biological study of the moulting becomes applicable in the context of the elaboration of a precise technology of a fur production in concordance with the moulting evolution in order to hurry the fur formation and to improve its quality.

Revista de cresterea animalelor, No.10, 49-59, 1985.

3 figs., 9 references.

Authors' summary.

In ROMN. Abstract in ENGL.

THE INTERFERENCES OF THE ETHOPHYSIOLOGICAL AND ECOLOGICAL ASPECTS CONCERNING THE MANIFESTATION OF THE REPRODUCTION INSTINCT IN MINK, ELEMENT WHICH MIGHT IMPROVE THE TECHNOLOGY IN THE INDUSTRIAL EXPLOITATION SYSTEM.

Romulus Gruia.

Through a systemic and ecological approach, the work puts into evidence some elements of ethophysiology concerning the reproduction instinct of the mink.

Thus have been studied a series of elements of the zooproductive ecosystem in order to avoid the perturbations of the chain of psychophysiological mechanisms characteristic to the mink mating, due to the impact with the applied modern technologies, which is mostly reflected in the behaviour sphere.

From the observations we have done and the given examples, which define the instinctive behaviour of the mink during the mating season, can be noticed its characteristics as being spontaneous, typified, inborn as well as the fact that it includes an appetizing comportament, the releaser mechanism and the consuming act.

The reproduction instinct at mink is based on internal elements ready to overflow and on external elements given by the signal-excitations resulted from the biological, technological and ecological complexity of the zooproductive ecosystem specific to the industrial exploitation of this species.

The applicative character of the ethological descriptive method of the behaviours linked to the reproductive instinct of the mink and, respectively, the interaction of the ethophysiological phenomena with the ecological ones lead to the elucidation and, at the same time, to the direction of some aspects concerning the mink mating. The optimization of these technics makes possible the rentability maximization of the field, through the number of kits and, respectively, of the furs obtained.

Revista de cresterea animalelor, No. 11, 48-57, 1985.

5 tables, 1 fig., 12 references.

Author's summary.

In ROMN. Abstract in ENGL.

**THE SYSTEMICAL AND ECO-ETHOLOGICAL CONCEPT AS A MANNER
OF REGARDING BIOLOGY AND THE FUR ANIMAL BREEDING TECHNOLOGY.**

Romulus Gruia.

There are presented a series of elements linked to the technology of the fur animal breeding making part of a given zooproductive ecosystem, in comparison to natural biological systems. The animals' behaviour thus integrated, being studied in the context of the recent researches of ethology, together with some aspects regarded from an ecological point of view from a biocibernetical one and from other more recent integrative disciplines, make possible the substantial growth of the quantity and quality of the fur production.

It is underlined the operational and applicative character of the concept we have presented, aiming to the final progress of the efficiency of the technologies applied.

St. comunic., Tîrgu-Mures, apr. 1985.

12 references.

Author's summary.

In ROMN. Abstract in ENGL.

**SEASONAL CHANGES IN POLECATS.
(Illerns år växlande)**

Hannu Korhonen, Mikko Harri.

The behaviour (including sexual behaviour) of polecats at 2 farms in Finland was studied over a 2-year period, and body weight was recorded at intervals of 2 weeks during this time. Body weight of females did not fluctuate over the year, but males weighed significantly more in winter (with weights averaging 2.1 kg in Feb.) than in summer (approx. 1.5 kg in June-july). In winter, polecat spent 95% of the day indoors, whereas in summer they spent up to 10 h daily outside.

Finsk Pälstidskrift, 19, 9, 484-486, 1985.

3 figs., 1 reference.

CAB-abstract.

In SWED.

HOUSING EXPERIMENTS WITH MINK KITS IN 1984.

(Inhysningsförsök med minkvalpar 1984).

Maria Neil.

From the end of June until pelting in Nov., Standard, Pastel, Sapphire and wild-type mink (30-60 per group) were housed in (1) cages containing 1 male and 1 female or (2) in cages containing 2 males or 3 females. For mink of the 4 types in group 1, body weight in Nov. averaged 2580, 2384, 2147 and 2944 g resp. for males and 1278, 1245, 1216 and 1469 g for females vs. 2432, 2451, 2148 and 2927 g for males and 1296, 1268, 1240 and 1493 g for females in group 2, and pelt length averaged 75.7, 74.4, 71.5 and 80.5 cm for males and 60.3, 60.1, 60.0 and 63.4 cm for females in group 1 vs. 74.4, 74.0, 72.5 and 81.2 cm for males and 61.4, 60.4, 60.6 and 64.7 cm for females in group 2.

The percentage of undamaged male pelts in the 4 types was 35, 39, 56 and 2 in group 2 vs. 23, 24, 71 and 5 in group 1, the corresponding percentages for females being 59, 23, 80 and 13 in group 1 vs. 59, 33, 76 and 9 in group 2. Economic aspects are considered

Vår Pälsdjur, 56, 10, 292-296, 1985

3 tables, 1 figs.,

In SWED.

CAB-abstract.

FARMBORN INJURIES IN FUR BEARING ANIMALS AND ITS ANIMAL WELFARE LAWFUL VALUATION.

(Farmbedingte Schadensmöglichkeiten bei Pelztieren und ihre tierschutzrechtliche Beurteilung).

Hans-Christoph Löliger.

By the farming from numerous species of fur bearing animals the trapping of wild living fur bearers was stopped and the wild stocks recovered. Today, the farming of fur animals like silver- and polar foxes, minks, polecats, nutrias and others is well established worldwide with high level of the animal health, fur quality and reproductivity.

Adverse animal welfare situations in the farm may arise, if carefulness in housing, feeding and management is neglected and/or the indispensable knowledge about the animals and the animal farming is absent.

Animal welfare adversities among farmed fur bearers may result by: feed born injuries, technical born injuries and injuries by wrong housing and environmental situations.

The valuation of the different injuries in farmed fur bearing animals on the basis of the legal animal welfare rules depends on the measures to prevent damages, on the fact of possible strong negligences in the care of animals and on the possible responsibility of the farmer for the origin of the respective damages in the animals.

Evidence of animal welfare adverse situations in the farming of fur bearing animals are demonstrated and discussed. Today, the praxis of fur animal farming has proved that animal welfare adverse situations are very rare, because the economic success of these farming presumes a high level of health among the animals with high reproductive rate, best skin and hair (fur) quality and low incidence of disorders and damages among the animals.

Landbauforschung Völkenrode, 35, 1, 37-39, 1985.

Author's summary.

In GERM. Summary in ENGL.



BREEDING RESULTS FOR CHINCHILLAS.**(Avlsstatistik for chinchilla).**

John Sommer.

Of 2240 chinchilla females mated with 392 males in 1984 in Denmark, 18.66% were infertile and 28.83% returned to service. The annual number of litters produced averaged 1.29 per mated female and 1.51 per female whelping. Litter size averaged 2.29, and the percentage of litters with 1, 2, 3 and 4 young was 39.36, 39.55, 27.98 and 2.96 resp. Kit mortality to weaning was 21.13% and that to 6 months of age 22.94%. Comparative data are given for 1983.

Dansk Pelsdyravl, 48, 5, 344, 1985.

3 tables.

In DANH.

CAB-abstract.

PRESENT SITUATION OF COYPU BREEDING IN YUGOSLAVIA.**(Aktuelna pitanja uzgoja nutrija u nasoj zemlji).**

Arpad Dudas.

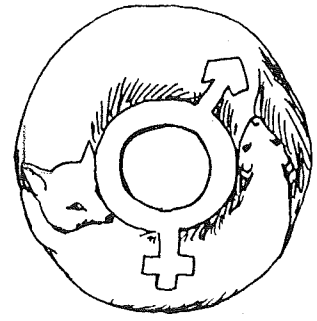
Article contains analysis of all which has been attained during eight years of coypu breeding. The author treats the present situation and prospects of future work.

Zeitschrift "Koza i obuća" in SRCR-Sprache, 10, 226-227, 1985.

In YUGO. Summary in ENGL and GERM.

Author's abstract.





GENETICS

FORMATION OF THE NEW NUCLEOLUS ORGANIZER REGIONS IN THE EUROPEAN MINK/POLECATS HYBRIDS.

A.S. Graphodatsky, Yu. G. Ternovskaya, D.V. Ternovsky.

The chromosomes of european minks ($2n=38$, $NF=62$), polecats ($2n=40$, $NF=68$), their F1 hybrids ($2n=39$, $NF=65$) and F1/polecats hybrids were studied with G-, C-, AgNOR-banding techniques. In the european minks AgNORs karyotype could be detected on the 3th and 4th acrocentric pairs. In the polecats AgNORs karyotype could be only detected on the 3th acrocentric pairs. In some hybrids, the new AgNOR could be detected in the short arm of the 1st acrocentric.

Genetika, USSR, 21, 4, 640-665, 1985.

2 figs., 17 references.

In RUSS. Summary in ENGL.

Authors' summary.

PRODUCTION OF SCAN BROWN AND WILD-TYPE SCAN BROWN MINK.

(Produktion av Scanbrown/Scanbrown Wild).

Lars Elofson.

Scan Brown mink, which have resulted from crossing of Pastel with Silverblu, Sapphire, Pearl and Violet mink, have been bred in Sweden since the mid-1970s. The production of Scan Brown wild-type mink, resulting from crossing Demi Buff mink with imported French wild mink, began in 1980. In 1984-85, the production of mink pelts of the 2 types was 154,000 and 130,000 resp., together accounting for 18.6% of total mink pelt production in Sweden. Details are given of various mating combinations which can be used to produce Scan Brown mink, and of grading and selection of wild-type brown mink.

Våra Pälsdjur, 56, 10, 272-276, 1985.

3 figs., 1 table.

In SWED.

CAB-abstract.

GENETIC PRINCIPLES OF BREEDING GOLDEN-PLATINUM FOXES.

ГЕНЕТИЧЕСКИЕ ОСНОВЫ РАЗВЕДЕНИЯ
ЗОЛОТИСТО-ПЛАТИНОВЫХ ЛИСИЦ

E.D. Il'ina.

The possible genotypes of platinum/golden foxes are discussed.

Sbornik Nauchnyk Trudov, Moskovskay Veterinarnaya Akademiya, 19-24, 1984.

In RUSS.

CAB-abstract.

**A NORWEGIAN PEARL FOX MUTATION WITH A SYNDROME SIMILAR TO
THE CHEDIAK-HIGASHI SYNDROME.**

(Norsk perlerev-mutant med Chediak-Higashi-liknende syndrom).

Norodd Nes, Bjørn Lium, Øystein Sjaastad, Anne Blom.

Omberg Pearl is a new fox mutation which appeared in Norway in 1984. The original mutant male had medium grey coat colour at birth, later turning to a dark blue-grey with darker stripes, and was healthy apart from a tendency to bleed, suggesting that it was affected by the Chediak-Higashi syndrome, which has previously occurred in mink, cattle, mice, cats and blue foxes. Matings of this male to a related silver fox female resulted in 1 silver and 4 Omberg Pearl cubs, suggesting that the mutation is due to a recessive, autosomal gene.

Norsk Pelsdyrblad, 59, 7, 325-328, 1985.

5 figs., 8 references.

In NORG.

CAB-abstract.

BREEDING FOR PELT QUALITY.

AN ANALYSIS OF AUGUST AND NOVEMBER GRADING AND PELT DATA.

**(Avel för pälskvalitet - analys av augusti- och novembergradering
samt skinndata).**

Gabrielle Lagerkvist, Nils Lundeheim.

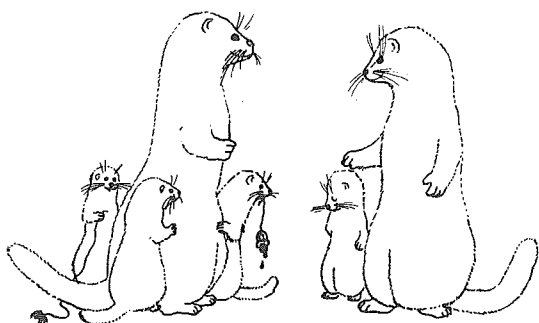
Data on approx. 3000 mink were analysed. Colour, fur density, pelt quality and overall quality scores averaged 5.72 plus or minus 0.63, 3.08 plus or minus 0.70, 3.22 plus or minus 0.75 and 3.38 plus or minus 0.72 resp. in Aug. vs. 5.76 plus or minus 0.71, 3.23 plus or minus 0.72, 3.10 plus or minus 0.70 and 3.29 plus or minus 0.69 in Nov., and body weight in Sept. averaged 1570 plus or minus 0.480 g. In Aug., there were significant genetic correlations of colour score with overall quality score (0.42), of fur density score with pelt quality score (0.80) and overall score (0.68), and of pelt quality score with overall score (0.86). In Nov., there were significant genetic correlations of colour score with fur density (0.35), pelt quality (0.36) and overall scores (0.65), of fur density score with pelt quality (1.0) and overall (0.82) scores, and of pelt quality score with overall score (0.95). Based on 1100 mink graded in 1980 and 1981, there were significant genetic correlations between the Aug. and Nov. gradings for pelt colour (0.44), pelt quality (0.29), and overall (0.33) scores. For 3000 mink, graded in 1980, 1981 and 1983 the h^2 s of pelt colour, fur density, pelt quality and overall scores were 0.50, 0.11, 0.13 and 0.35 resp. in Aug. vs. 0.93, 0.15, 0.23 and 0.35 in Nov., and the h^2 of body weight in Sep. was 0.23. Economic aspects are considered.

Våra Pälsdjur, 56, 7, 197-200, 1985.

6 tables.

In SWED.

CAB-abstract.



I really hope that the August grading will not put our kits direct in the pelter group!

VARIATION IN MICROCHROMOSOME NUMBER IN THE SILVER FOX (*VULPES VULPES* L.).

Marja-Terttu Kuokkanen, Outi Lohi, Auli Mäkinen.

The number of microchromosomes varied from 0 to 7 within and between individuals, the most frequent number being 1, 2 or 3. Animals with 0 or more than 4 microchromosomes were less common. We found that a mosaic karyotype was present in 85% of the animals. The higher the average number of microchromosomes in the animal the greater was the variation in the number in the somatic cells of the same animal. The average number of microchromosomes in the offspring could be predicted from the number found in the parents.

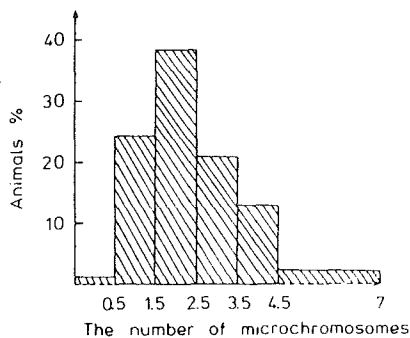


Fig. 1. Frequency distribution of modal numbers in the individual silver foxes studied.

Acta Agric. Scand. 35, 432-437, 1985.
4 tables, 3 figs., 20 references.

Authors' summary.

GENETIC TRANSFORMATION OF THE MUTANT CELLS OF MOUSE BY METAPHASE CHROMOSOMES OF MINK.

M.A. Sukoyan, N.M. Matveeva, N.D. Belyaev, S.D. Pak, A.A. Gradov,
A.G. Shilov, O.L. Serov.

Since the publication of the first article on gene transfer into mammalian cells with the help of metaphase chromosomes, a large number of publications have appeared. Up to 1% of the donor genome enters into the recipient cell under such a method of transformation; the transferred genes are either incorporated into the chromosomes of the recipient cells and stable transformed phenotypes result, or they are not incorporated and then the exogenous genetic material is lost during culture of the transformants under nonselective conditions. Incorporation of the foreign genetic material into the genome of the recipient cells is a key process, since the final formation of the transformant phenotype takes place at this stage, whereas the unstable condition of the transformed phenotype should be considered as incomplete transformation. The mechanism of integration has been studied poorly. The integration of foreign genes seems to depend on the tissue and species to which the donor and recipient cells belong.

We used a fibroblastoid cell culture of mink MV as the donor of metaphase chromosomes to transfer the thymidine kinase (TK) and hypoxanthine phosphoribosyl transferase (HPRT) genes to three recipient mutant cell lines of mouse.

The isolation of metaphase chromosomes of mink and their incubation with the recipient cells was done by the method of Lewis et al.

Electrophoretic analysis of 27 independent transformed clones showed that 18 clones of series A have the TK gene of mink and 9 clones of series B have the HPRT gene of mink. The selected marker genes coding for TK and HPRT of mink are located on the eight chromosome and X chromosome of mink, respectively.

The stability of the TK⁺ or HPRT⁺ phenotype of the clones from series A and B was assessed on the basis of the ability of the cells to maintain this phenotype during growth under nonselective conditions for 30-40 days. The comparison of the clones of series A and B shows that five out of nine clones of series B are stable.

There are no published reports on the transfer of genes to the teratocarcinoma cells with the help of metaphase chromosomes; however, transfer of the cloned genes of herpes virus into the teratocarcinoma cells resulted in the formation of transformant colonies at the rate of 10^4 - 10^5 times less than the LTK-cells. Combined with our findings, this fact leads to the conclusion that the teratocarcinoma cells possess lower ability for transformation.

These results lead to the conclusion that the genetic material of mink enters the nucleus of the A9 cells in a more dispersed conditions than into the nuclei of the LMTK- cells.

There is an apparent need to standardize the technique of obtaining stable cellular transformants resulting from incorporation of large gene blocks or chromosomal fragments of the donor genome, as in this case the foreign genetic material is expected to have greater influence on the recipient's phenotype.

Inst. of Cytology and Genetics, Siberian Branch, Academy of Sciences of the USSR, Novosibirsk.

Translated from: Doklady Akademii Nauk SSSR, Vol. 277, 1, 219-222, 1984. (0012-4966/84/0708, 1985 Plenum Publ. Corporation).

1 table, 15 references.

Fragments of report selected by G. Jørgensen



Sorry Professor, we didn't finish our experiments in time!

Original Report

Some Observations on Semen Quality in Mink of Different Fur Quality

C. Sundqvist and T. Sundqvist, Department of Biology, Åbo Akademi, 20500 Turku, Finland

Introduction

Reproduction is one of the most important factors for the economy of mink husbandry. The success of a minkfarm depends largely on the quality of the breeding animals. As minks having a good-quality fur generally result in a better selling-price, mink farmers preferably select their breeding animals according to the best available fur quality.

Several fur colour genes influence fertility and viability in animals. This was clearly shown in genetical and reproductive investigations in mutant mice and rats (Hunt & Johnson, 1971; Gumbreck *et al.*, 1972; Russell & Gardner, 1974). Recently there has been reports on increased reproductive problems in mink with fine black fur (Tung *et al.*, 1981; Tung *et al.*, 1984). Also other colour varieties of mink affect reproductive quality, e.g. Shadow and Hedlund White (Venge, 1973).

We have in this paper investigated the influence of increasing quality of fur on one important reproductive parameter, the semen quality.

Materials and methods

Animals

Altogether 1559 one-year-old mink males were studied on a conventional fur farm in SW Finland. The most common colour varieties were represented and in this investigation we paid attention to the Pastel, Black-Cross, Standard, Sapphire and Jet-Black colour varieties. The mink, which were raised in standard conditions and fed a standard wet diet, were kept on an open-air farm with normal weather and daylight conditions.

Mink Semen Assay

Vaginal sperm smears were collected in March immediately after interrupted mating, that had lasted no more than 20 min. The samples were evaluated according to a graded scale. Scores from 0 to 4 were given with rising points with elevating semen quality. We have found that the following graded scale is useful in evaluating the semen in mink:

- 0 = no spermatozoa present in the investigated sample.
- 1 = spermatozoa occasionally present but they are immotile (sluggish to no motility) or more than 30% of spermatozoa are morphologically abnormal.
- 2 = motile spermatozoa (good to fair motility) present but in low concentrations (< 10 mill. spermatozoa/ml) or more than 20% of the spermatozoa are morphologically abnormal.
- 3 = small amounts of immotile spermatozoa present, sperm concentration close to normal (10-50 mill. spermatozoa/ml) and less than 20% of spermatozoa showed abnormalities.
- 4 = spermatozoa with normal motility present in high concentrations (50-150 mill. spermatozoa/ml) and less than 10% of the total amount of spermatozoa in the sample showed abnormalities.

Estimation of mink fur quality

An expert from the Finnish Fur Breeding Co. checked the fur quality of the investigated minks in December. For sake of clarity we have in this study used an graded scale (A, B, C), »A« denoting lowest fur quality and »C« highest fur quality. The results of the fur quality estimations were not told to the investigators of semen quality.

Results and discussion

Although the significance of testing mink semen by vaginal sperm smear collection has been questioned (Rottensten, 1959; Venge, 1973) there is an increasing amount of reports about its effectiveness (Onstad, 1967; Kangas, 1972; Elofson, 1981; Ericson & Lagerkvist, 1983). The mink semen assay has recently been evaluated in an morphometric study (Sundqvist, 1985) and semen quality has also been found to give a good picture of mink male reproductive capacity (Sundqvist *et al.*, 1985).

Our present results are summarized in Table 1. Although the differences in mink semen quality presenting different categories of fur quality were not statistically significant (tested by single classification

Table 1. Results of investigations into the semen quality of mink graded according to their fur quality. Fur quality has been estimated so that Group A has the poorest fur quality and Group C the best fur quality. Readers should consult the graded semen score scale in the Materials and methods section of this paper. All values are mean \pm SD.

Colour variety of mink	Semen quality (scores from 0 to 4)					
	Group A	n	Group B	n	Group C	n
Pastel	3.15 \pm 1.25	101	3.03 \pm 1.33	263	3.00 \pm 1.32	29
Black-Cross	2.73 \pm 1.79	11	2.93 \pm 1.49	55	4.00 \pm 0.00	1
Standard	3.02 \pm 1.37	45	3.03 \pm 1.29	70	3.50 \pm 0.58	4
Sapphire	3.09 \pm 1.35	90	2.98 \pm 1.38	165	3.25 \pm 1.20	36
Jet-Black	3.26 \pm 1.18	159	3.12 \pm 1.25	495	3.05 \pm 1.34	57
All	3.14 \pm 1.28	406	3.05 \pm 1.28	1048	3.13 \pm 1.27	127

random ANOVA and Wilcoxon's non-parametric test) there was a tendency for a decreased semen quality in Pastel and Jet-Black mink of the finest fur quality. This means that breeding for fine fur quality only hazards the reproduction results.

In accordance with previous investigations we could find that Black-Cross and Sapphire males had a higher percentage of infertile males (Sundqvist & Gustafsson, 1983) giving thus rise to lower semen score counts. Hypoplasia (maldevelopment of testes) and cryptorchidism (abnormal position of testes in the abdominal cavity) was found more often in more highly bred mink (Sundqvist et al, 1986) giving rise to the assumption that testicular quality and fur quality parameters are genetically linked. Together with improving the fur quality an increasing percentage of infertile black mink males have been reported (Tung et al, 1984). Infertile black mink are unique in having the features of testicular disturbances together with testicular autoimmunity.

In conclusion we would like to point out that reproduction results must not be afflicted by progress in mink fur quality. Investigations on other parameters of reproduction are in progress in our laboratory and should give a more precise description on infertility problems in the male mink.

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SCIENTIFUR, VOL. 10, NO. 2, 1986.



Scientifur

48 H Roskildevvej, 3400 Hilleroed

REPRODUCTIVE PERFORMANCE OF SILVER-BLACK VIXENS OF DIFFERENT NERVOUS TYPES.

ВОСПРОИЗВОДИТЕЛЬНЫЕ СПОСОБНОСТИ САМОК
СЕРЕБРИСТО-ЧЕРНЫХ ЛИСИЦ В ЗАВИСИМОСТИ
ОТ ТИПА НЕРВНОЙ ДЕЯТЕЛЬНОСТИ

A.P. Maksimov, E.D. Shevchenko.

For 97 placid, 63 vicious, 67 timid and 55 temperamentally unstable females, the percentage mated within 3 wk of the onset of the breeding season was 24, 18, 28 and 20 resp., the percentage mating with 1 male 34, 59, 28 and 36, and the percentage of females whelping 94, 87, 84 and 93. Litter size averaged 5.1, 5.1, 4.0 and 5.1 at birth, and 4.9, 4.8, 3.8 and 4.7 at weaning.

Sbornik Nauchnyk Trudov, Moskovskaya Veterinarnaya Akademiya, 92-98, 1984.

5 tables.
In RUSS.

CAB-abstract.

FERTILITY IN SILVER FOX FEMALES OF DIFFERENT AGE AND THE EFFECT OF NUMBER OF MATINGS.

(Plodnost u ruzne starych samic sribrnych lisek a vliv poctu pareni).

L. Stolc, H. Vachatova, M. Fantova, J. Smehyl.

The investigations carried out in the years 1975 to 1982 involved some 474 silver fox females out of a total population of 786 animals, and the data evaluated in this paper were taken from routine breeding records. The following indices of performance were considered: litter size at birth and at weaning, number of died-away offspring in relation to the number of matings and female age, female sterility percentage.

The highest number of live-born fox cubs was found in seven-year-old females (5.00[±]1.825), the lowest one in the five-year olds (4.03[±]1.527). There was a great difference in the number of weaned cubs, the 7-year old females showed on the average 4.14[±]2.794 weaned cubs, the 6-year old females 1.94[±]2.205 ones only.

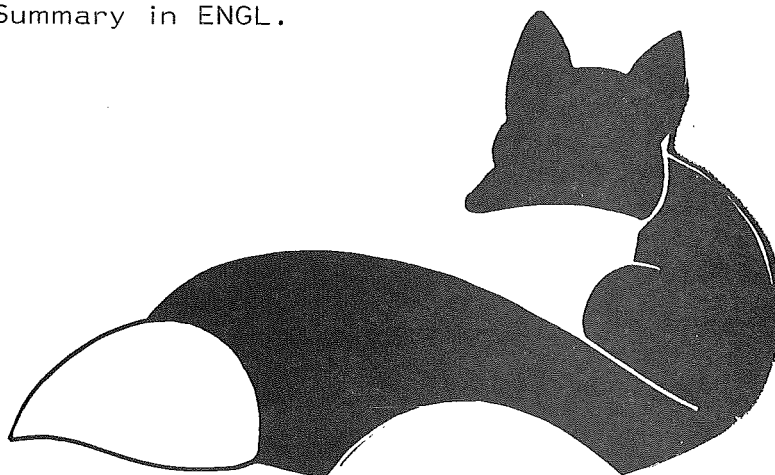
When studying the number of matings, we found the highest prolificacy in three times mated females (4.64[±]1.361), (3.91[±]1.814), the lowest one in those mated once. the results obtained are in line with the sterility percentage for the sample under study.

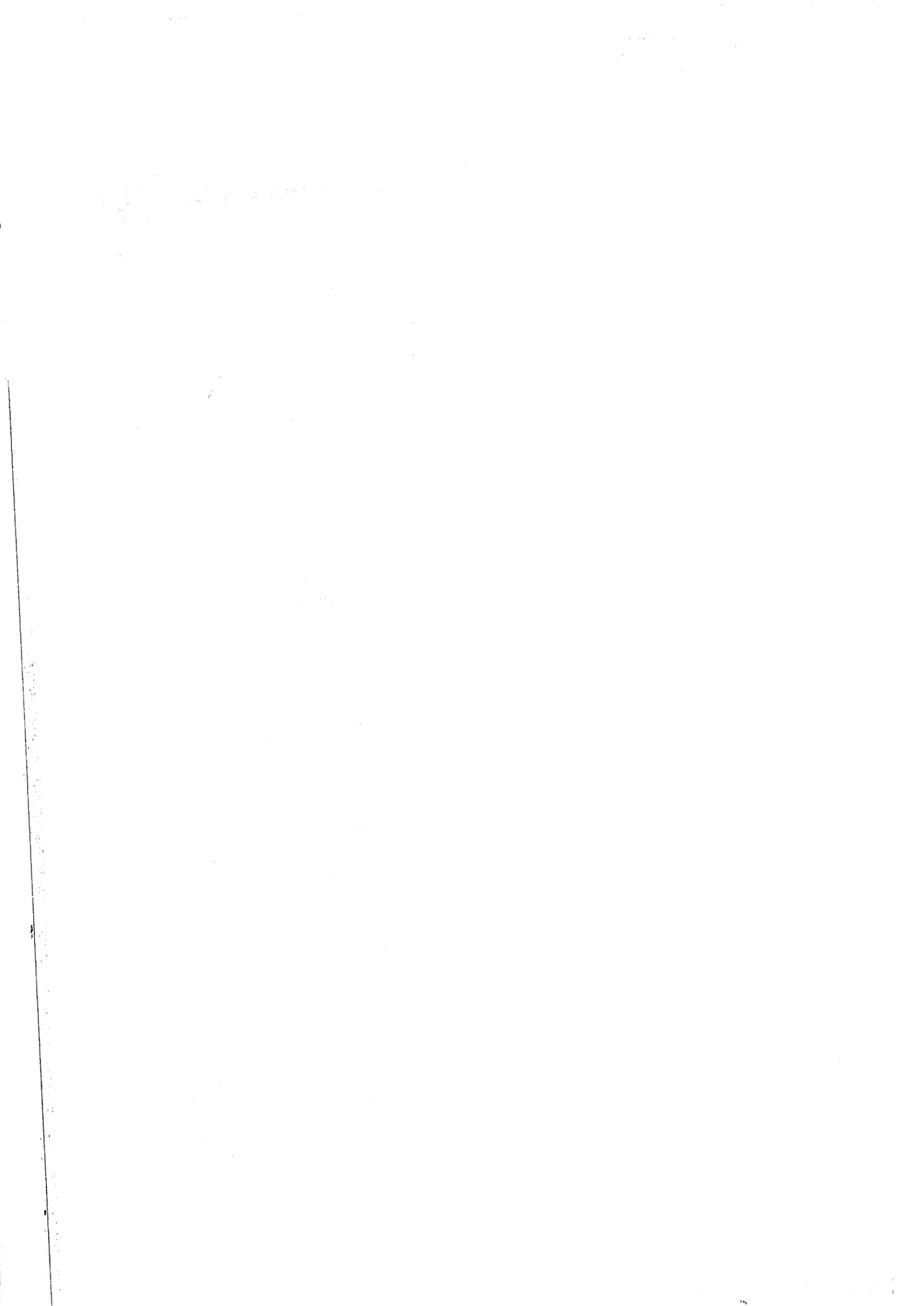
Sbornik Vysoke Skoly Zemedelske v Praze, Fakulta Agron., R.B. Zivocisna Vyroba (Czechoslovakia), 43, 145-155, 1985.

7 tables, 5 references.

Authors' summary.

In CZEC. Summary in ENGL.





REPRODUCTION OF THE RACCOON DOG.

影响貉繁殖力诸因素的分析

S.F. Hua, Y.R. Dong.

In the first year of captivity, the whelping rate and offspring survival rate were 35.4 and 70% resp., in the 2nd year, the corresponding values were 88.2 and 82.2%.

Fur Animal Farming, 3, 27-31, 1983.

12 tables.

In CHIN.

CAB-abstract.

INSEMINATION OF FOXES, 1985.

(Inseminering av rävar 1985).

Mats Forsberg.

In 1985, in Sweden, 705 fox females representing 5% of the total population, were inseminated or inseminated and mated (81 females). For 624 females which were inseminated only, 79.6% conceived. Of blue fox females inseminated with blue fox semen, blue fox females inseminated with silver fox semen, and silver fox females inseminated with silver fox semen 73.5, 86.0 and 72.5% resp. conceived. In the 3 groups resp., litter size at birth averaged 8.8, 8.3 and 4.3, litter size at weaning 6.4, 6.6 and 3.6, and the number of cubs weaned per female inseminated 4.5, 5.2 and 2.3. In 1984, the number of fox females inseminated in Norway, Finland and Denmark was 33,000, 29,000 and 3837 resp., representing 30, 7 and 11% of the total population.

Våra Pälsdjur, 56, 11, 332, 1985.

3 tables.

In SWED.

CAB-abstract.

WHELPING RESULTS AT THE EXPERIMENTAL FARMS IN 1985.

(Valpresultatet på försöksfarmerna 1985).

Jaakko Mäkelä, Fjalar Fors.

At Kyrkslätt and Maxmo experimental farms in Finland, the number of kits born per mated female in 1985 averaged 4.5 and 3.9 resp. for Dark mink, and there were 11.8 and 16.9% of infertile females. The number of polecat kits and blue fox cubs produced per mated female averaged 7.3 and 7.3 resp. at Kyrkslätt vs. 7.1 and 6.5 at Maxmo, with 15.0 and 21.0 vs. 10.9 and 23.5% of infertile females. At Kyrkslätt, the number of young born per mated female averaged 3.0 and 2.8 for Mogul mink and raccoon dogs resp., with 25.0 and 51.0% of infertile females. At Maxmo, the number of kits born per mated Pastel female averaged 4.3, with 15% of females being infertile.

Finsk Pälstidskrift, 19, 9, 452, 1985.

In SWED.

CAB-abstract.

GOOD WHELPING RESULTS IN 1985.

(Good valresultat 1985).

Kaj Lindh.

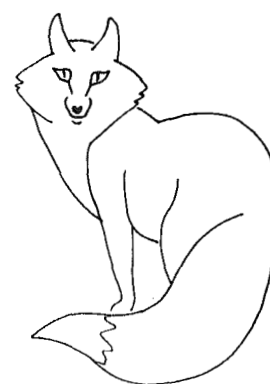
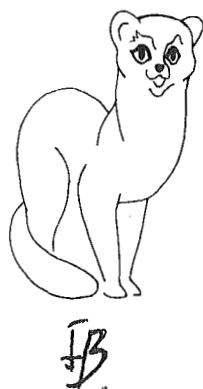
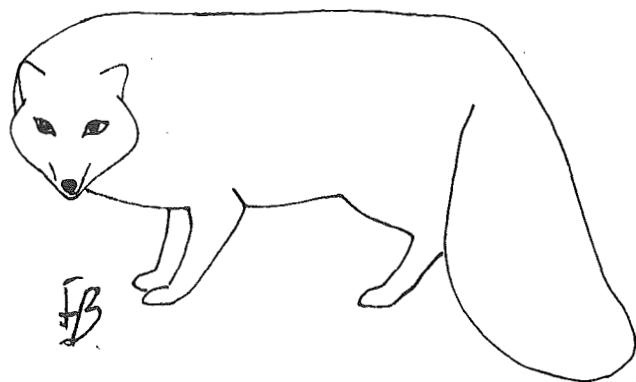
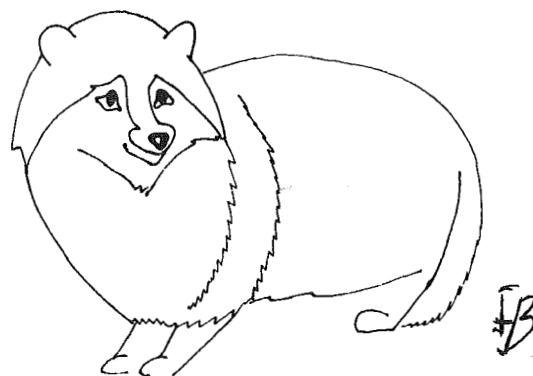
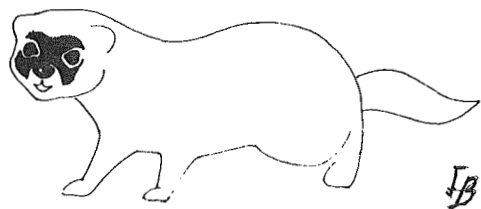
In 1985, in Finland, the number of kits produced per mated female averaged 3.82, 4.54, 4.02, 3.96 and 4.07 for Scan Black, Scan Brown, Pastel + Dawn, Sapphire + Silver Blu, and other types of mink resp., and the percentage of infertile females + females which lost their litters was 21.80, 16.76, 19.90, 20.28 and 20.76. For blue fox, silver fox, raccoon dog and polecat females, the number of offspring produced per mated female averaged 6.38, 3.01, 4.62 and 6.13 resp., and the percentage of infertile females was 25.92, 32.98, 34.13 and 13.35. The effects of winter temps. on reproductive performance are considered, and it is concluded that cold winter results in larger litters than mild winters.

Finsk Pälstidskrift, 19, 9, 450-451, 1985.

2 tables.

In SWED.

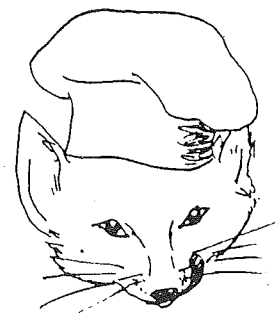
CAB-abstract.



These beautiful drawings of farmed fur animals was handed me at Leipzig by colleague, professor V.A. Berestov, USSR, from his daughter, Inna Berestova-Kaminckaja. Thank you very much, Inna, for these and earlier drawings. I will with pleasure use them in SCIENTIFUR.

Gunnar Jørgensen

NUTRITION



**WATER AND ELECTROLYTE BALANCE IN MALE MINK (*MUSTELA VISON*)
ON VARYING DIETARY NaCl INTAKE.**

L. Eriksson, M. Valtonen, J. Mäkelä.

The effect of a ten-day dietary sodium load on the fluid balance of mink was studied by adding to the food NaCl 0.5, 1 or 2% of the wet weight. The basic diet without salt addition contained sodium corresponding to 0.5% NaCl of the wet weight. The animals showed no signs of discomfort, eating well in all test groups. Adding of 0.5% salt to the food did not increase drinking of water, whereas 1 and 2% salt addition doubled and quadrupled water consumption, respectively. Urine excretion was slightly higher than consumption of drinking water, and both increased parallelly to increasing salt intake. The dietary salt excess was mainly excreted in urine, whereas the alimentary canal played only a minor role. Urine sodium concentrate rose with increasing salt intake, peak concentration 350 mM being reached in the diet with 1% salt addition.

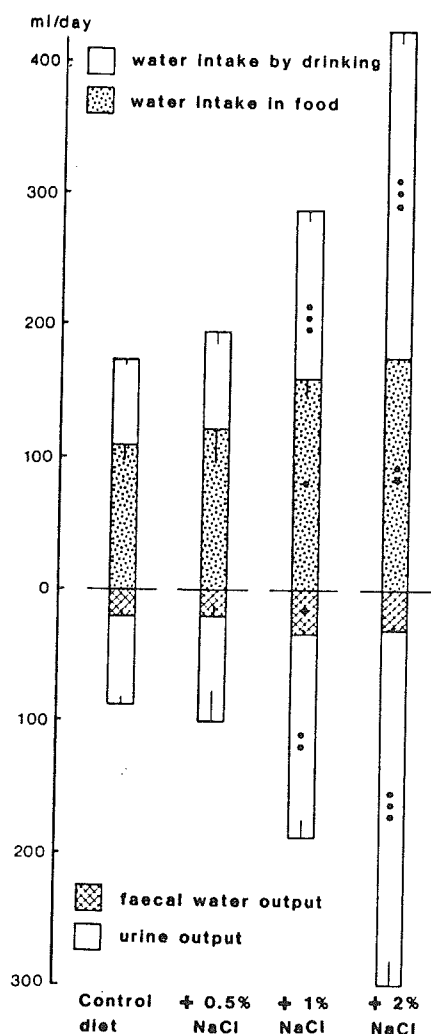


Figure 1. Water balance of minks, excluding metabolic water and evaporative water loss. NaCl, 0 to 2 % of the wet weight, was added in the food. Mean values and SE are given. The number of animals in each test group was four. Significance of differences from the control diet is shown by asterisks: * $p < 0.05$, ** $p < 0.01$ and *** $p < 0.0001$.



On higher sodium load any further increase in renal sodium excretion was achieved only by increasing the volume of urine. Urine osmolality was slightly above 2000 mOsm/kg on the control diet and on the diet with 0.5% salt addition. More diluted urine was excreted on higher salt loads, urine osmolality being 1500 mOsm/kg on the diet with 2% salt addition. Healthy minks appear to tolerate considerably high concentrations of salt in the feed. However, a sufficient supply of drinking water is of critical importance, because increased water intake and renal sodium excretion are the main means of eliminating excess salt.

Acta Physiol. Scand., Suppl. 537, 59-64, 1984.

3 tables, 4 figs., 18 references.

Authors' abstract.

SODIUM SELENITE ADDED TO THE FEEDSTUFFS IN A MINK FARM WITH CASES OF NUTRITIONAL MUSCLE DEGENERATION.

(Natrium selenit tilsat foderet på en minkfarm med tilfælde af "velfærdssyge").

Asbjørn Brandt.

The effect of a dietary supplementation of 0.3 ppm sodium selenite for a period of 17 weeks was investigated as a preventive measure against nutritional muscular degeneration syndrome (NMDS) in mink fed a conventional Danish mink feed ration. The trials was conducted on a farm with NMDS.

There were observed no difference in mortality or the activity of selenium dependent glutathione peroxidase in the supplemented group as compared to the control group. The haematological and enzymatological parameters were not influenced by the selenium supplementation either.

Statens Husdyrbrugsforsog (Denmark), Meddelelse No. 582, 1985.

1 table.

Author's abstract.

In DANH.

ESTIMATION OF THE EFFECTS OF NUTRITIONAL FACTORS ON THE QUALITY OF MINK FUR.

营养因素对水貂皮
质量影响的估计

Y.H. Liu, X.H. Zou.

From a study in Heilongjiang Province, China, in which the characteristics of more than 43,000 mink pelts were related to the diet given to the animals, it was concluded that pelt quality was very low for mink given 60-75% pork containing *Cysticercus* sp. Pelt quality was much higher for mink given diets in which small fish and offal replaced some of the pork.

Fur Animal Farming, 4, 10-13, 1983.

8 tables.

CAB-abstract.

In CHIN.



AN EXPERIMENT ON FEEDING MINK WITH EARTHWORMS.

利用蚯蚓喂水貂的探索性试验

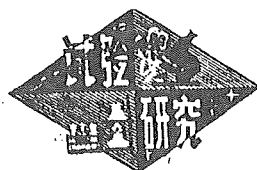
H.S. Bao.

In 2 experiments 12 mink were given earthworm meal at 1 kg daily to replace an equivalent weight of fish. Feed intake was less during the first week of the trial than for mink given fish (controls) but returned to normal subsequently. Moulting date was earlier and pelts were 1 grade higher for mink given the earthworm meal.

Fur Animal Farming, 1, 6-7, 1983.
In CHIN.

CAB-abstract.

FEEDING MINK WITH PINE NEEDLE POWDER AND ITS ACTIVE SUBSTANCES.



添加松针粉、松针活性物
试喂水貂初报

G.H. Luo, Y.S. Wei.

From 19 June until 20 September 1981, 180 mink of about the same age were given a diet without any powdered pine needles or with 0.03 or 0.05%. After this 2-month period, the increases in body weight and body length were significantly less for the mink given the powdered pine needles and the hair appeared coarser. It is suggested that these adverse effects may have been caused by a decreased feed intake related to the smell of the powder.

Fur Animal Farming, 1, 4-5, 1983.
1 table.
In CHIN.

CAB-abstract.

FISH MEAL POISONING IN MINK.

对鱼粉引起水貂中毒的调查及对中毒物的探讨

D.Q. Zhong.

In the summer of 1979, sudden deaths occurred on three mink farms in Laoshan County, Qingdao City, Shandong Province, China, and caused heavy losses. Bacteriological examination gave negative results. The high proportion (20-30%) of fish meal (imported from Peru) in the ration fed to the mink was the cause of the trouble. The histamine content of the fish meal was as high as 3.5-5.0 mg/g. The clinical signs and pathological changes in the mink are described.

2 tables.
In CHIN.

CAB-abstract.



4 groups, and 399, 431, 379 and 411 g for females. In a 2nd experiment, mink females (57-97 per group) were fed (1) a standard diet (controls), (2) and (3) a diet of offal preserved by means of lactic acid, (4) a standard diet plus 0.5% lactic acid (5) a standard diet during the autumn, followed by flushing, (6) a high-level diet, or (7) a diet low in carbohydrates. In the 7 groups resp., the number of kits per mated female on 31 May averaged 4.50, 3.35, 3.19, 4.49, 4.55, 4.43 and 3.49, the percentage of females with no litters 14, 20, 24, 19, 11, 10 and 27, and kit weight on 19 June 272, 246, 262, 275, 292, 265 and 281 g. For foxes (52-58 per group) fed (1) a standard diet, (2) offal preserved by means of lactic acid, and (3) 50% dry feed + 50% frozen feed, the number of cubs per mated female averaged 8.78, 5.84 and 6.71 resp., and the percentage of females without litters 14, 21 and 23.

Finsk Pälstidskrift, 19, 10, 552-553, 1985.

2 tables.

CAB-abstract.

In SWED.

USE OF CONCENTRATE FEEDS IN THE FEEDING OF COYPU.

(Der Einsatz von Fertigfuttermitteln in der Sumpfbiberfütterung).

Gert Schult.

A commercial mixtures for pigs, rabbits, poultry, sheep or cattle are used mainly as concentrate for coypu, formulae are indicated for conversion for nutrient contents and feeding value shown on the packaging and calculation of kcal. Examples are given. Feeding behaviour should be considered, the aim being to achieve both physiological and mechanical safety. Requirements of coypu are tabulated.

Deutsche Pelztierzüchter, 59, 2, 20-23, 1985.

3 tables.

CAB-abstract.

In GERM.

DIFFERENT FEEDING INTENSITY LEVELS TO MINK.

1. EFFECT ON MALE REPRODUCTIVE PERFORMANCE.

Anne-Helene Tauson.

Three different energy intensity levels were investigated regarding the effects on reproductive performance in male and female mink, growth performance and fur quality in mink kits. For males, the experiment lasted for 4 consecutive years (Expts. I-IV). Animals from Expt. I were kept until Expt. IV. Yearling males were entered into Expts. II and III. Reproductive performance traits were evaluated both in relation to intensity level, premating live weight and weight change during the winter. There were no significant effects of experimental treatment on reproductive performance despite significant weight differences between treatments. Males of a high feeding intensity level or in a very good condition tended to give a higher frequency of barren females than males in a low to normal condition. The total litter size and the rate of stillborn kits tended to increase with the condition of the male. Possibly there was a negative interaction between intensity level and repro-

ductive longevity. Weight reduction during the winter for males in a low to normal condition in November tended to give impaired reproductive results.

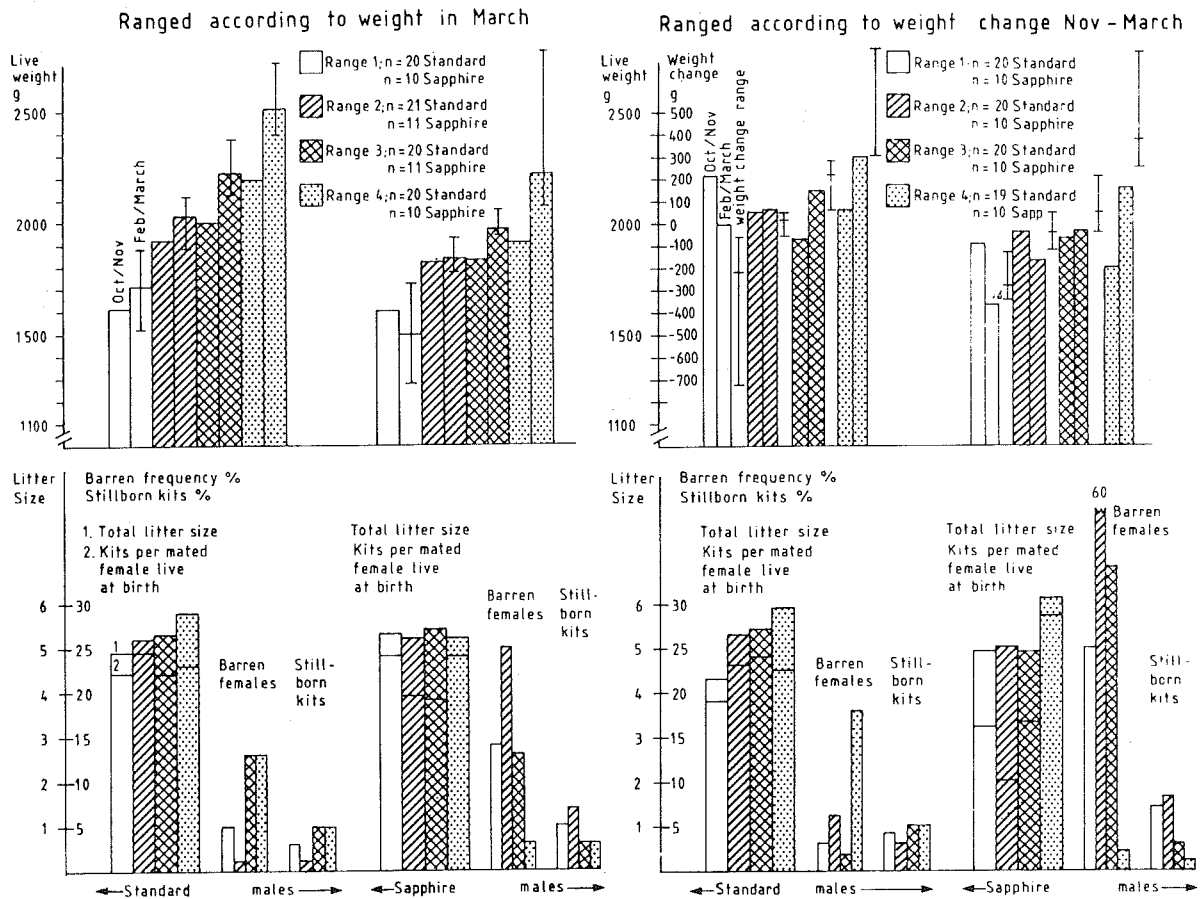
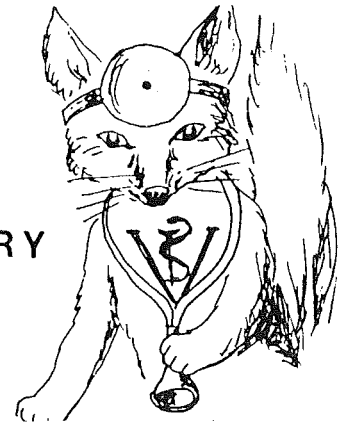


Fig. 2. Live weights (g) and reproductive results of males ranged according to weight in March or weight change November-March.

Swedish J. agric. Res. 15, 2, 77-85, 1985.
2 figs., 2 tables, 15 references.

Author's abstract.



AN AVIAN INFLUENZA A VIRUS KILLING A MAMMALIAN SPECIES - THE MINK.

B. Klingborn, L. Englund, R. Rott, N. Juntti, G. Rockborn.

During October of 1984 an outbreak of respiratory disease occurred on mink farms in the south-east region of Sweden. Six strains of an influenza A virus were isolated. All six isolates were of the H10 subtype in combination with N4. The H10 subtype in combination with various N subtypes was hitherto only known to occur in avian strains, the prototype being the A/chicken/Germany/N/49 (H10N7) virus.

Arch. of Vir. 86, 347-351, 1985.

1 fig., 9 references.

Authors' summary.

SALIVARY MUCOCELE IN 2 FERRETS.

L.B. Bauck.

Two castrated sable ferrets (*Mustela putorius furo*) developed a subcutaneous mass at the left buccal commissure. Cytologic examination of aspirated fluid indicated a diagnosis of salivary mucocele. A linear incision in the medial mucocele wall resulted in successful marsupialization of the mass in one ferret, but similar treatment in the other resulted in 2 recurrences. Use of a biopsy punch to make a circular incision in the mucocele's medial wall was finally successful.

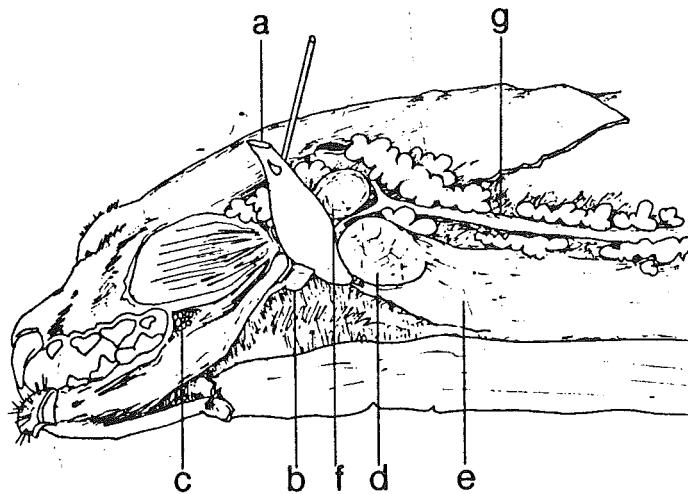


Fig 2. Superficial dissection of the neck and head of a mink. The digastric muscle (a) has been transected and reflected dorsad exposing the sublingual salivary gland (b). Salivary tissue was found in the subcutaneous tissues near the buccal commissure (c). The mandibular salivary gland (d) is pale and rounded, and lies superficial to the sternoccephalic muscle (e), with the mandibular lymph node adjacent and dorsal to it (f). The external jugular vein is located in a lateral position on the neck (g).

Modern Vet. Practice, 66, 5, 337-339, 1985.

2 figs., 4 references.

Author's summary.

Mink Vaccines

Distem-r tc[®]

Distem-r tc is an injectable distemper vaccine of tissue culture origin that has been proven effective in millions of mink over more than 20 years.

Distox[®]

A combination of three vaccines for preventing Distemper, Virus Enteritis, and Type C Botulism with a single injection.

Distox-Plus[®]

Two Components—to be mixed immediately prior to usage: (1) a lyophilized distemper vaccine grown in chick embryo tissue culture. (2) a diluent containing an inactivated mink enteritis virus grown in a feline tissue culture cell line, combined with Clostridium botulinum Type C bacterin-toxoid, and a Pseudomonas aeruginosa bacterin.

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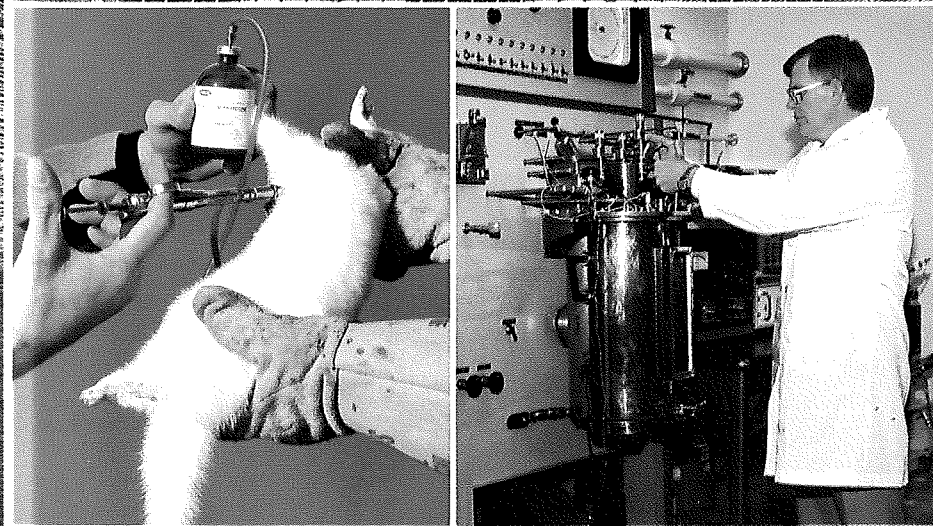
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**CAROTID BODY TUMOR:
AN INCIDENTAL FINDING IN OLDER RANCH MINK.**

W.J. Hadlow.

Carotid body tumors were found incidentally at necropsy in 15 ranch mink (*Mustela vison*), mostly royal pastels, kept for studies on slow viral diseases. The mink, five males and ten females, were 77 to 135 months old (mean age 107 months). Loosely or firmly attached at the bifurcation of the common carotid artery, the 11 larger tumors were smooth-surfaced, discrete, pale brown, globoid masses that varied from 2.5 to 16 mm in diameter. Four tumors of microscopic size occurred in otherwise normal-looking carotid bodies. All were composed of densely packed polygonal cells disposed in sheets and cords or arranged in clusters by a reticulin meshwork rich in blood vessels. Always unilateral, the tumors had not invaded locally or metastasized. As seen in the smallest tumors, the neoplastic cells usually arose centrally in the carotid body and formed an expansive growth that replaced much of the normal parenchyma without necessarily enlarging the organ beyond normal limits. The cause of the tumors was not apparent. All tumor-bearing mink had lived at an elevation of 1,100 meters, and none had suffered from any obvious chronic cardiopulmonary disease.

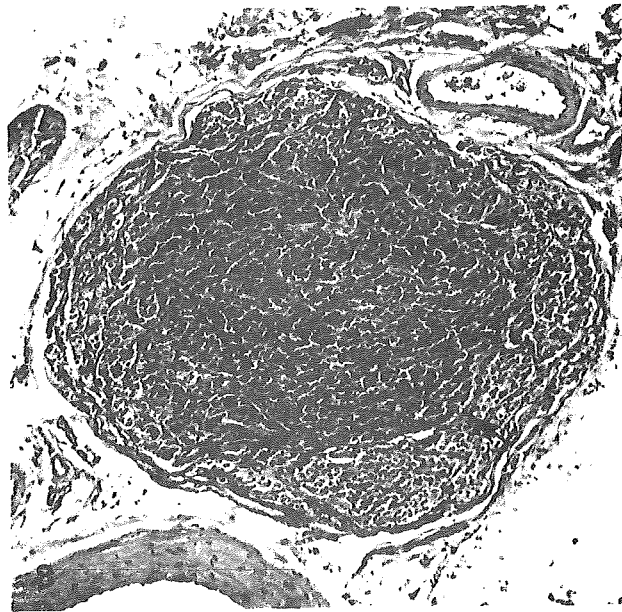


Fig. 8. Dark central mass of neoplastic tissue (arrow) in normal-sized (1.5 mm) carotid body in mink 15. HE.

Vet. Pathol., 23, 162-169, 1986.
1 table, 14 figs., 50 references.

Author's summary.

DISEASES OF FITCH.

P.J. O'Hara (director), S. Hennessy (editor).

This summary of the diseases of *M. putorius* was made by the animal Health Division as a reference guide for producers in this relatively new industry in New Zealand. It is comprehensive, but does not claim to be exhaustive. The diseases are divided into categories according to their cause: bacterial, mycotic, viral, nutritional (deficiency), toxic, managerial, and unknown. Within each category a short description of individual diseases is given under subheading's such as prevalence, cause, clinical signs, pathology, treatment. Four appendices deal with dietary recommendations and analyses, and list the 19 diseases encountered in 1983. Of the 83 cases, 17 were non-suppurative meningo-encephalitis and 17 plasmacytosis (hepatic or renal).

Surveillance, New Zealand, 11, 2, 27 pp, 1984.
ISSN 0112-4927.

CAB-abstract.

DISTEMPER IN FITCH.

B.T. Cox.

Eight-month-old ferrets on a farm near Lincoln became listless and anorexic. They developed a mucopurulent nasal and ocular discharge and a chin rash. Distemper was confirmed histopathologically. The mortality rate was 10%. The ferrets had been vaccinated with a killed distemper vaccine at 12 weeks of age. Vaccination with a modified live virus vaccine of chick embryo tissue culture origin is recommended for ferrets.

Surveillance, New Zealand, 11, 3, 12, 1984.
1 reference.

CAB-abstract.

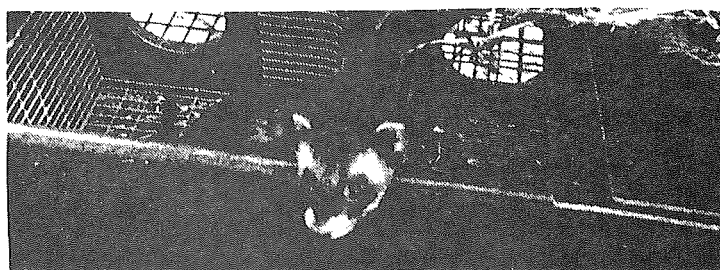
SYSTEMIC CANDIDOSIS IN A FITCH.

R.J. Dixon.

A 4-month-old fitch (*Mustela putorius furo*) was presented vomiting and with a haemorrhagic enteritis that failed to respond to antibiotic, vitamin and fluid therapy. At necropsy, apart from lesions referable to an enteritis, no other specific abnormality was observed. Histopathologically, lesions were seen in myocardium and renal medulla associated with mycelia, pseudomycelia and blastospores. Marked lymphoid depletion was noted in lymph nodes and spleen. *Candida tropicalis* was isolated from liver and spleen.

New Zealand Vet. Journ., 32, 8, 132-133, 1984.
9 references.

Author's abstract.



TOPICAL ASPECTS RELATING TO VETERINARY ATTENTION TO NUTRIA.

(Aktuelle Probleme bei der veterinärmedizinischen Betreuung von Sumpfbibern).

U. Tornow.

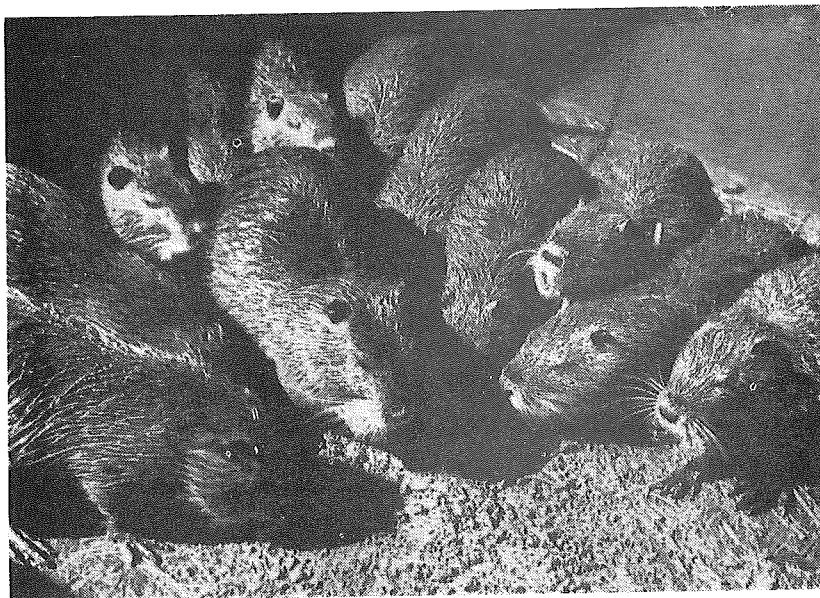
Topical aspects and problems relating to optimum veterinary care for nutria are reported on the basis of many years of experience obtained by the authors from veterinary attention to nutria stocks. Particular reference is made to a large nutria farm which has grown, in the meantime, to 15,000 animals. The present position and the prospects of nutria breeding in the GDR are likely to call for great steadiness of purpose in taking a coordinated approach to problems. General keeping and feeding hygiene should be stressed as priority tasks and adjusted to latest knowledge.

Mh. Vet.-Med., 49, 451-453, 1985.

1 reference.

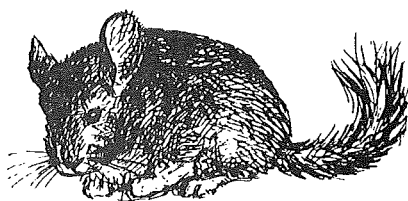
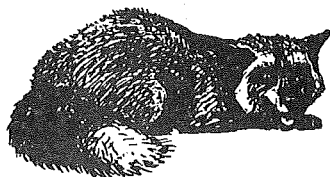
Author's summary.

In GERM. Summary in RUSS and ENGL.



2. Internationales Pelztiersymposium

Leipzig, am 8. und 9. April 1986

Sektion Tierproduktion und Veterinärmedizin
der Karl-Marx-Universität LeipzigWissenschaftliche Gesellschaft für Veterinärmedizin der DDR
Fachkommission „Kleine Haus- und Pelztiere“Prof. Dr. sc. Dr. h. c. H. J. Schwark
Direktor der Sektion
Tierproduktion
und VeterinärmedizinOVR Prof. Dr. sc. Vera Schmidt
Wissenschaftliche Gesellschaft für
Veterinärmedizin
Vorsitzende der Fachkommission
„Kleine Haus- und Pelztiere“Prof. Dr. sc. H. Pingel
Leiter des Lehrstuhls Geflügel- und
Pelztierzucht der Sektion
Tierproduktion und Veterinärmedizin

The symposium which was attended by appr. 100 persons from DDR, POLAND, RUSSIA and the Scandinavian countries was arranged by colleagues, prof. Dr. sc. H. Pingel Doz. Dr. sc. H. Hattenhauer and VR. Dr. U.D. Wenzel from the Karl-Marx-University, Leipzig.

34 scientific reports dealing with fur animal genetics, reproduction, feeding, diseases and general production were presented - all in German language.

There will be printed proceedings from the symposium including all the reports presented. When the proceedings are ready the content will be abstracted in SCIENTIFUR as well as the price and the possibilities for obtaining will be given.

It was a great experience for us Scandinavians to meet so many of our colleagues from the attended countries at the same time.

Nearly all of them have, during the years contributed SCIENTIFUR with reports or abstracts of reports published elsewhere.

Even that we, Scandinavians, had some difficulties with the German language - which was the official language at the symposium - we had many good discussions with our colleagues and established or underlined the future cooperation and friendship.

On behalf of all the foreign participants I by this want to congratulate the arrangement committee for the fine setting up of the symposium and for the extreme kind of hospitality there was given to all of the foreign participants.

If some of the readers want to obtain the proceedings from the symposium, when it is ready, we are sure that you will be able to pre-order a copy at the following address:

Karl-Marx-Universität
Lehrstuhl Geflügel- und Pelztierzucht
7010 Leipzig, Stephanstrasse 12, DDR
att. Prof. Dr. sc. H. Pingel

SCIENTIFUR will as mentioned recur to this symposium as soon as the proceedings are received.

Gunnar Jørgensen



Foto: M. VALTONEN, SF.

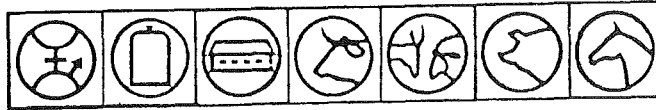
From left: Pingel, Wenzel and Hattenhauer.



Budapest, Hungary
1-4 September 1986



37th Annual Meeting
of the European Association for Animal Production
37^{ème} Réunion Annuelle
de la Fédération Européenne de Zootechnie
37. Jahrestagung
der Europäischen Vereinigung für Tierproduktion



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IV INTERNATIONAL KARAKUL SYMPOSIUM

Commission of Sheep and Goat Production of the
EAAP - Subcommission of Karakul Production

30 - 31 August 1986

Organizer: Dr. S. Kukovics
head of section

For details see chapter 7.

GENERAL INFORMATION**1.1. SECRETARIAT OF THE ORGANIZING COMMITTEE**

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and monuments of the capital.

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The official languages of the Meeting are English,
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The working languages are English, French, German
and Russian; in addition Hungarian in those sessions
where simultaneous translation is provided.

IV. INTERNATIONAL KARAKUL SYMPOSIUM
IV. SYMPOSIUM INTERNATIONAL DE CARACUL
IV. INTERNATIONALES KARAKULSYMPOSIUM



Mink Production

Editor: *Gunnar Joergensen*

LETTERS TO THE EDITOR.

Published by:
Danish Fur Breeders Association (Danish edition)
and
SCIENTIFUR (English edition)

FUR RANCHER

Suite 120, 450 North Sunny Slope Road
Brookfield, Wisconsin 53005 (414) 786-7540

January 9, 1986

Mr. Gunnar Joergensen
Scientifur
Hilleroed, Denmark

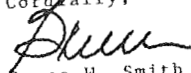
Dear Friend Gunnar,

The Danish-language edition of "Mink Production" is excellent. As a non-Dane, I managed to gain a great deal from it by reading while I ate a "Danish" (sweet pastry).

Now you have brought out the totally splendid English-language edition, which should be purchased and used by everybody with any connection whatsoever to the raising of mink and/or the marketing of mink fur.

Congratulations on a job superbly done.

Cordially,


Bruce W. Smith
Publisher



Wildlife Laboratories
INCORPORATED

Dr. Gunnar Jorgensen
SCIENTIFUR
48 H Roskildevej
DK-3400 Hilleroed, Denmark


February 25, 1986

Dear Dr. Jorgensen:

Wildlife Laboratories received its copy of Mink Production. You are to be commended on the scientific and technical excellence of this fine reference book, and its very attractive layout and production. Although written primarily for the European breeder, I am sure that Mink Production will become the standard reference for the mink industry worldwide. Wildlife Laboratories is recommending this fine publication to the North American producers that we serve.

Congratulations on a excellent piece of work.

Sincerely,


W.R. Lance, DVM PhD
President

Thank you very
much for the kind
words.

The Editor.

WRL/r1z

More Mink Production

ANIMAL BREEDING ABSTRACTS

CUTTINGS FROM THE BOOK REVIEWS SECTION

*With the Compliments of
The Director*

Commonwealth Bureau of Animal Breeding and Genetics
The King's Buildings, West Mains Road, Edinburgh, 9

ABA. SL1 (4) 1986

2598 JOERGENSEN, G. (EDITOR) **Mink production.**
Hillerød, Denmark; Scientifur (1985) 399 pp. ISBN 87-
981959-05 [En, Price \$60.00]

The fact that this is a translation of a mink breeding manual published in 1984 by the Danish Fur Breeders' Association for the benefit of their members is reflected in the scope of the book, which is based on conditions and legal requirements in Denmark, especially as regards the chapters on establishing a mink farm, feed production, feed centres, and advertising and marketing. However, mink breeders everywhere will benefit from reading the sections on machines and equipment, reproduction, anatomy and physiology of the mink pelt, genetics, selection of breeding animals, mating systems, management and husbandry, general nutritional requirements, diseases and hygiene, pelting, and treatment, storage and grading of pelts. Although some future (or existing) mink breeders are assumed to be somewhat ignorant of some facts of life ("The main difference between male and female is that the male's testes produce spermatozoa, while the female's ovaries produce ova. Both male and female are equipped with genital organs"), many chapters, such as those on reproduction, genetics, breeding methods and nutrition, give an admirably clear picture of how to achieve good results. The text is easy on the eye, with useful annotations in the margin, giving the reader quick access to the relevant sections of a chapter. There are many excellent illustrations (some in colour), a 13-page subject index, and a list of translations of some Danish mink breeding terms. All considered, this book deserves a warm welcome from all those with an interest in mink breeding, and should prove particularly useful for those embarking on mink farming.

A.A. Fowler.

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«Nauka» Publishers house,
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«Scientific fundamentals of fur-breeding»

(scientific editor Prof. V. Berestov).

Book volume—35 editor's sheets
Preliminary price 4,5 rb.

The monograph was written by the leading fur scientist of the Soviet Union. The authors are: Prof. Perel'dik, Prof. G. Kuznetsov, Prof. V. Berestov, Dr. sci. V. Kladoyshchikov, Dr. sci. V. Slugin, Dr. B. Babak, Dr. A. Berestov, Dr. L. Kozhevnikova, Dr. Y. Pavlov, Dr. A. Rodyukov, Dr. Y. Samkov, Dr. N. Tsepkov and practical fur-breeders—honoured agriculture workers of the KASSR V. Gur'yanov and honoured zootechnician of the RSFSR and KASSR S. Zaitsev.

The book provides fur-breeders as well as scientists, teachers and graduates of biology with a thorough grounding in various areas, such as: a) biological features, morphological and biochemical blood content; b) genetic fundamentals of selection as well as methods for mink, sable, ferret, polar fox, racoon, coopus, and chinchilla breeding; c) nutrient and energy requirements of fur-breeding animals of different species.

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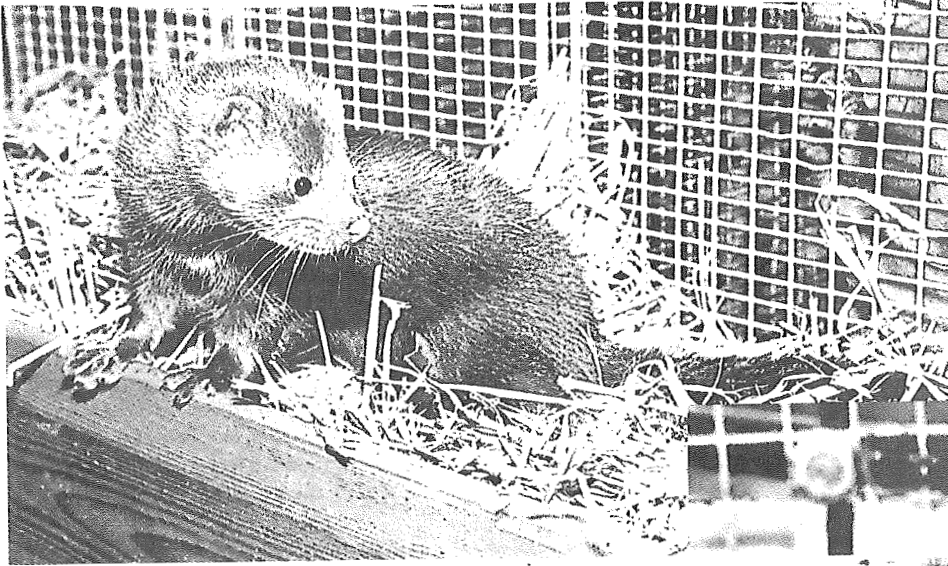
i naturen

MINK IN NATURE

Authors' preface:

The task with the book is to illustrate

- The mink as a biological being.
- The mink production as a profession.
- The mink production as an economical factor.



MINK

som husdyr

MINK AS DOMESTICATED ANIMAL

The book can be usable in connection with different kinds of biology teaching, because of the fact that it put the mink in spread biological relations.

The book can be characterized as a source book, but will be useful in connection to subject projects in education. To that "Mink in Nature - Mink as Domesticated Animal" will be an exciting supplement for all persons with general interest in biology or with particular interest for fur animals and fur animal production.



ISBN 87-982057-1-4.

71 pp, several colour pictures and figures.
6 pp as a specific dictionary.

Authors: Bent Lykke Hansen
Kaj Hardy Andersen.

Publisher: Danish Fur Breeders Association
60 Langagervej, DK 2600 Glostrup

In DANH.

АКАДЕМИЯ НАУК КАЗАХСКОЙ ССР
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И ИНФЕКЦИОННЫХ БОЛЕЗНЕЙ
МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ КАЗАХСКОЙ ССР

М. М. РЕМЕНЦОВА, О. В. ПОСТРИЧЕВА,
С. И. РЫБАЛКО

АНТРОПОЗООНОЗЫ В ЗВЕРОВОДЧЕСКИХ ХОЗЯЙСТВАХ

ZOONOSES AND THE FARMING OF FUR BEARING ANIMALS.

M.M. Rementsova, O.V. Postricheva, S. Rybalko.
Institut Epidemiologii, Ministerstva, Zdravookhraneniya, Alma-Ata,
Kazakhskaya SSR, USSR.

Abstract:

The diseases discussed are brucellosis, tuberculosis, Q fever, Chlamydia infection, toxoplasmosis and leptospirosis, with special reference to the occurrence of these diseases in Kazakhstan. Hosts include musk-rat (*Ondatra zibethica*), silver fox, arctic fox (*Alopex lagopus*), souslik (*Citellus spp*), mink and nutria (*Myocastor coypus*).

176 pp, 18 pp of references, 1983.

CAB-abstract.



Издательство «НАУКА» Казахской ССР
АЛМА-АТА · 1983

Alma-Ata, Kazakhskaya SSR, USSR; Izdatel'stvo Nauka. 1983.

БОЛЕЗНИ ПУШНЫХ ЗВЕРЕЙ

ИЗДАНИЕ ТРЕТЬЕ, ПЕРЕРАБОТАННОЕ И ДОПОЛНЕННОЕ

Под редакцией Е. П. Данилова

DISEASES OF FUR BEARING ANIMALS.

(Bolezni pushnykh zveri).

E.P. Danilov (Editor); A.I. Maigorov; V.A. Chizhov; I.I. Dakur;
A.V. Grabovskii; V.P. Akulova; O.A. Metelkin; V.P. Rytova; V.S. Slugin

Abstract:

The principal Russian textbook on diseases of fur bearing animals was last published in 1973, under the editorship of S. Ya. Lyubashenko VB 44,, abst. 3872. The host range is silver fox, arctic (or polar) fox, mink, polecat and sable. The chapter headings are much the same (with the addition of a chapter on staphylococcal infections), but there has been some revision. There is still uncertain whether the viral disease of the central nervous system called 'dikovanie' is or is not rabies (though this chapter has been reprinted largely unaltered). The chapter on rabies is also largely unaltered, with no mention of recent diagnostic techniques.

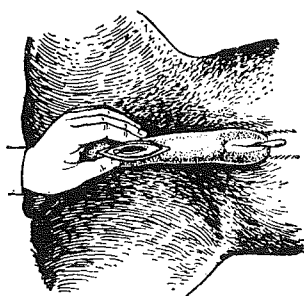


Рис. 30. Вскрытие уретры.

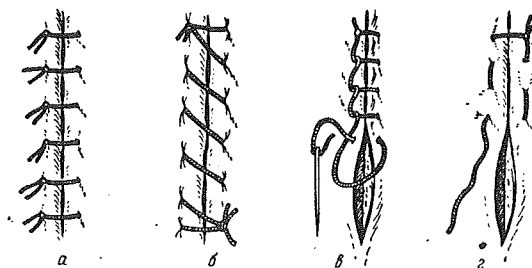


Рис. 24. Схемы швов:
а — узловатый; б — непрерывный; в — обвивной; г — матрацный.

Швы

Moscow, USSR; Kolos (Edition 3).
336 pp, 1984.

In RUSS.

CAB-abstract.



МОСКВА
«КОЛОС»

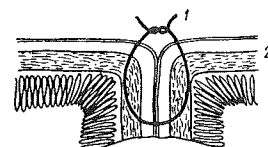


Рис. 25. Кишечный (Лимберта) шов:
1 — кишечный шов; 2 — кишечная стенка.

THE DOMESTICATED SILVER FOX

NED DEARBORN

Assistant Biologist, Bureau of Biological Survey

Rev. Ed. D. Diverse
THE

DOMESTICATED SILVER FOX

NED DEARBORN

Assistant Biologist, Bureau of Biological Survey



FARMERS' BULLETIN 795

UNITED STATES DEPARTMENT OF AGRICULTURE

Contribution from the Bureau of Biological Survey
E. W. NELSON Chief



Washington, D. C.

March, 1917

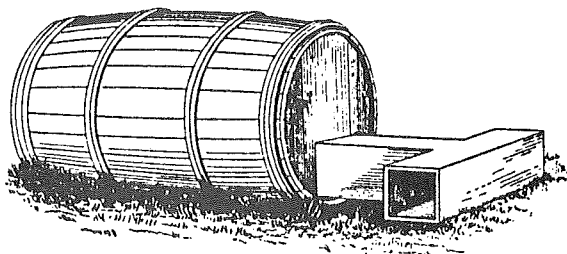


FIG. 11.—Den improvised from a barrel.

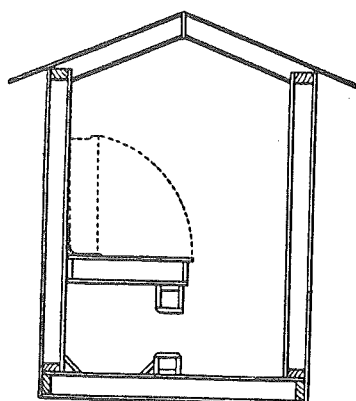


FIG. 8.—Vertical cross section of double-walled den.

— FOOD — AGRICOLA

MAY 15, 1985

30

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04785821197

Dearborn, Ned.

The domesticated silver fox. ENGLISH

Washington, D.C. U.S. Dept. of Agriculture 1917 32 p.
: ill., map --

Microfiche. Los Angeles, Calif. : Update Publications, 1980. 1 microfiche ; 11 x 15 cm. NAL document copy also located in 1 Ag84F no.795. Farmers bulletin / United States Department of Agriculture ; no. 795
MONOGRAPH

THE DOMESTICATED SILVER FOX.

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INTRODUCTION.

From time immemorial furs have been worn for protection and adornment. With the increase of population and of encroachments upon the breeding grounds of fur-bearing animals the supply of furs has steadily diminished and prices have correspondingly advanced. Trappers have been stimulated to penetrate farther and farther into the uninhabited regions of the North and to redouble their efforts to increase their catch nearer home. Many of the more valuable animals have thus become so scarce that the demand for their pelts is met by the substitution of inferior products.

The natural production of first-class furs seems to be approaching a sure end, and the demand for them requires that the present supply be supplemented through domestication of fur-bearing animals. As some of the fur bearers may be raised without much difficulty, the establishment of fur farming on a small scale may be expected in many places along our northern border, much as poultry is now raised as an additional source of income on farms. When properly conducted, fur farming may become very profitable. It will pay not only in direct returns to the producer, but, indirectly, the desire for furs can be gratified, the killing off of the most valuable and interesting of our fur bearers prevented, and an extensive branch of manufacture and trade supporting a large population continued.

NOTE.—This bulletin, based on Department Bulletin No. 301, "Silver Fox Farming in Eastern North America" (1915), has been prepared to supersede Farmers' Bulletin No. 328, "Silver Fox Farming" (1908). It is for general distribution in areas shown by shading in the map on page 8.

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