SCIENTIFUR

NO. 2, MAY 1982.

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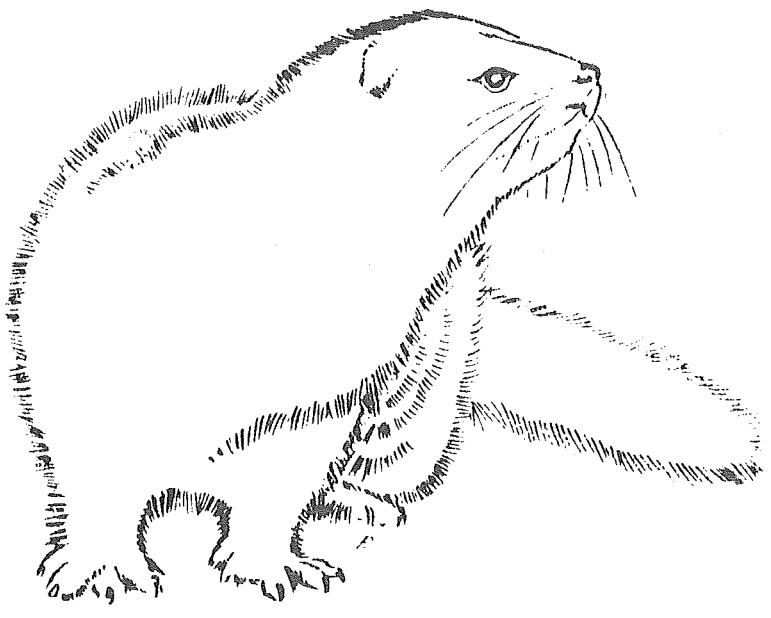

SCIENTIFUR

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N O T E S

SCIENTIFUR, VOL. 6, NO. 2, 1982.

We would like to convey our gratitude to the 85% of our subscribers who have paid for the 1982 SCIENTIFUR subscription. The last 15%, I regret, are reading their last issue.

As advertised in Volume 6, No. 1, the Seventeenth York Conference has taken place in England on 2-4th April 1982. We hope to be able to publish the proceedings from the conference in the next issue of SCIENTIFUR.

A scientific meeting on fur animal production will be held at Ålesund, Norway, from 29th September to 1st October 1982. Scandinavian languages will be used. Complete details will be given in the next issue of SCIENTIFUR, but interested people may contact the arrangement committee for further details. Adress: Gudbrand Loftsgaard, Norwegian Fur Breeders Association, Økern torgvei 13, Oslo 5, Norway. Phone 00947-2-224150.

In SCIENFUR Vol. 5, No. 4, I wrote about the difficulties in getting reports written in Russian and some other eastern European languages translated. I really feel that we will lose very important information if we do not translate these into English. At that time I asked for a solution of this problem. As I have not received any solution, I prefer to interpret this as a result of the complexity of the problem. Therefore, I for the last time have to ask you, dear readers, do you know any institutions where such translations can be done regularly ? If so - please - give me the adress, and I will take contact for getting prices etc. After such an investigation I hope, we will be able to come back with a copy price of translated reports from different countries.

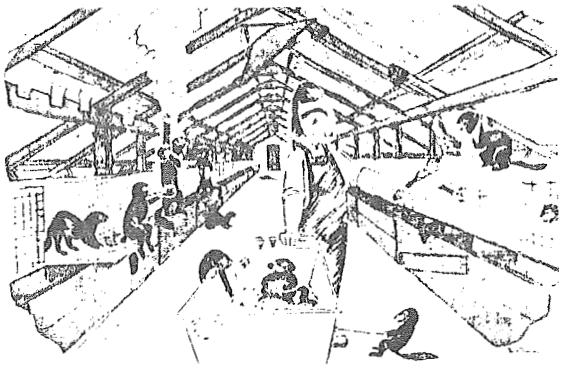
I stress this, not because we do not have other thing to do at our institute, but because we can see that the costs of experimental work are going up like a rocket. Therefore, we feel that all scientific information about fur animal production should be disposable for maximal use and benefit on a world wide basis.

Hope you will enjoy this issue of SCIENTIFUR - (still ex. index) - the wonderful summer which is going to come to the Northern Hemisphere - and your own holiday. But, do'nt forget to send your reports or abstracts to SCIENTIFUR.

The best wishes for your summer.

Gunnar Jørgensen

Editor



MULTIDISCIPLINARY

SOME MORPHOLOGICAL AND HISTOCHEMICAL CHARACTERISTICS OF STOMACH WALL IN MINKS.

К НЕКОТОРЫМ ОСОБЕННОСТЯМ МОРФОЛОГИИ И ГИСТОХИМИИ СТЕНКИ ЖЕЛУДКА НОРОК

L.S. Filonenko, A.A. Malovastaya,

Parietal glandulocytes detected in the cardial, fundal and pyloric glands in the mucous membrane of mink stormachs demonstrated large secretion of HCl. Specific structural features of the muscular layer of stomach walls were identified. It was suggested that the longitudinal and circular muscular tissue of the stomach wall of minks is of somatic origin and initiates several processes associated with temporary emptying of gastric contents into the desophagus and oral cavity, and with involuntary passage of stomach contents (into the duodenum).

SCIENTIFUR code: 2-M.
Nauchnye Trudy Omskogo Veterinarnogo Inst., 35 (2), 79-82, 1978.
Referativnyi Zhurnal, 58, 1980, 1.58.42.
1 reference.
In Russian. CAB-abstract.

ANAEMIA IN FURBEARING ANIMALS. AETIOLOGY AND PROPHYLAXIS.

(Anemi hos pelsdyr, årsaker og profylakse).

Arne Helgebostad, Norges Veterinærhøgskole, Postboks 8146, Dep., Oslo 1, Norway.

A review concerning the common types of anemia in furbearing animals is given. The mink is most exposed, and it is the iron deficiency anemia

which is predominant. The infectious anemia in connection with plasmacytosis also plays an essential part.

The fox seems better to utilize the iron in the feed. In this species moderate anemia is seen with iron deficiency, different forms of avitaminosis, the vitamin E syndrome and parasitic diseases.

Preventive treatments are referred to.

SCIENTIFUR code:3-6-M-F.
Norsk Veterinærtidsskrift, 1981, 93.6.
27 references. Author's summary.
In Norwegian with summary in English.

HAEMATOLOGICAL AND BIOCHEMICAL-CLINICAL CHARACTERISTICS IN POLECAT-FERRETS DURING DIFFERENT PHYSIOLOGICAL OR PATHOLOGICAL CIRCUMSTANCES.

I. COMPARATIVE HAEMATOGRAMS OF NON-PREGNANT, PREGNANT, AND LACTATING FEMALES.

(Häematologische und biochemisch-klinische Kennwerte beim Iltis-Frettchen under wechselnden physiologischen oder pathalogischen Bedingungen.

1. Vergleichende Verlaufsundersuchungen zu Hämogrammen gravider, laktierender und nichtträchtiger Fähen).

R. Zeissler , U.D. Wenzel, W. Schicketanz, Margit Sachse,
Rat des Kreises Auerbach (Vogtl.), Bahnhofstrasse 12, DDR--9700 Auerbach.

17 haematogram parameters were determined at intervals of 10 days over a period of three months from blood samples obtained from eleven gravid or lactating polecat ferrets and from 12 non-gravid controls through amputation of the extreme ends of nails. Results were processed statistically and represented graphically.

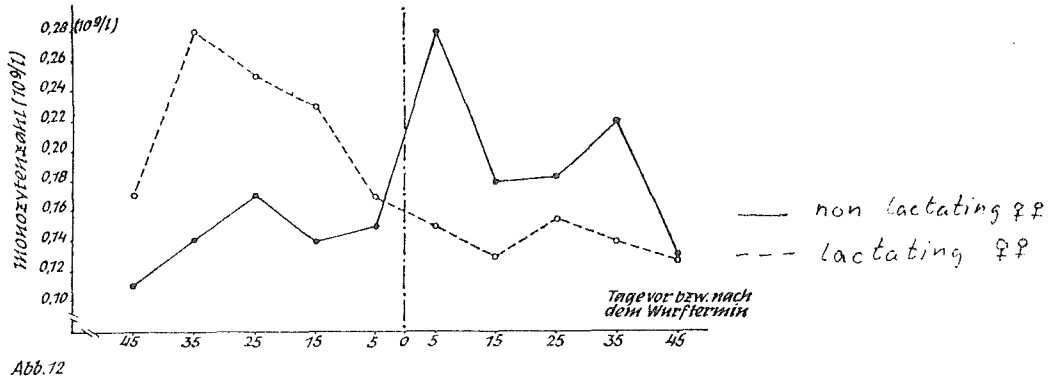


Abb. 12. Graviditäts- und laktationsbedingte mittlere Abweichungen der Monozytenzahlen.

Conclusions were drawn from the results as follows:

- Variations in the state of blood due to gravidity and lactation are, as a rule, noncharacteristic. Therefore they cannot be excepted to provide a means for early recognition of gravidity by laboratory diagnosis.
- The characteristic values checked show great individual variability due to excitation presumably resulting from the blood-sampling procedure, which makes the technique inadequate for finding answers to specific questions of breeding.
- Manner and frequency of blood sampling under the conditions of the experiment did not have any diagnostically significant influence on the health of the subjects and on the haematological components tested.

SCIENTIFUR code: 2-3-5-0.
Z. Versuchstierk. 23, 244-254, 1981.
12 figs., 16 references.

Authors' summary.

In German with summary in English.

SEASONAL VARIATIONS IN THYROXINE AND TESTOSTERONE LEVELS IN RELATION TO THE MOULT IN THE ADULT MALE MINK (MUSTELA VISON PEALE AND BEAUVOIS).

L. Boissin-Agasse, D. Maurel, J. Boissin, Ctr. d'Etudes Biologiques des Animaux-Sauvages, Ctr. Natl. de la Recherche Scientifique, Villiers-en-Bois, 79360 Beauvoir-sur-Niort, France.

Plasma thyroxine (T 4) and testosterone concentrations were measured in adult male mink maintained outdoors under natural light and fed ad libitum the whole year round. Plasma T-4 concentrations presented a biphasic seasonal change, the highest values occurring in the spring and autumn months and the lowest values in the winter months. The plasma testosterone cycle showed an annual maximum in January-February. The possibility of testis-thyroid interactions is discussed. The changes observed are correlated with environmental temperature, photoperiod, and molting cycle.

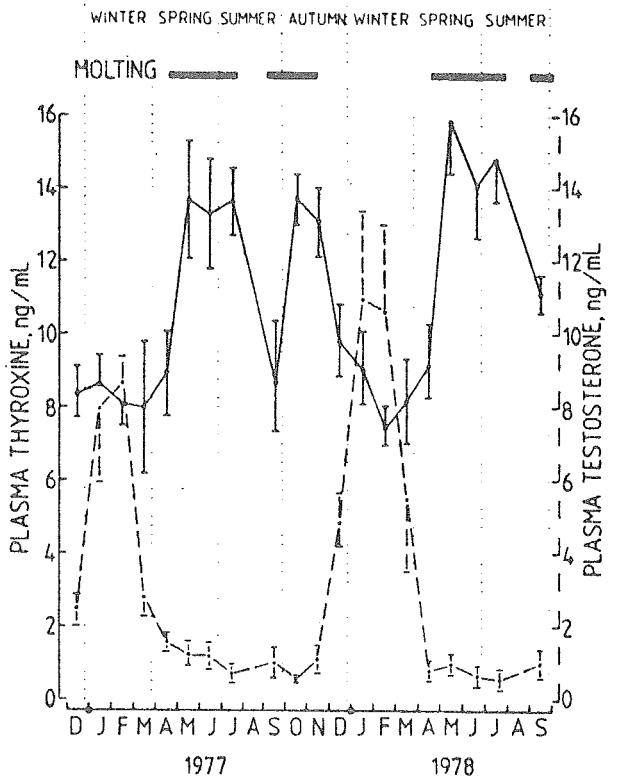
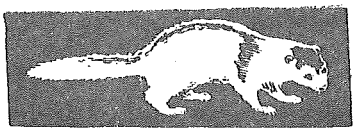


FIG. 1. Annual variations of the plasma thyroxine (solid line) and testosterone levels (broken line) in the male mink (nanograms per millilitre, mean ± SEM).

SCIENTIFUR code: 3-M.
Can. J. Zool., 59, 1062-1066, 1981.
1 table, 1 fig., 45 references. Authors' abstract.
In English with abstracts in French and English.



HISTOLOGICAL PICTURE OF THE CHANGING NERVE CELLS IN THE GANGLIA OF THE SYMPATHETIC TRUNK OF HEALTHY MATURE COYPU (MYOCASTOR COYPUS MOL.).

(Obraz histologiczny zmienionych komórek nerwowych w zwojach pnia współczulnego zdrowych i dojrzalych osobników nitrii (Myocastor coypus Mol.).

Marian Langenfeld, Instytut Zoologii Stosowanej Akademii Rolniczej w Krakowie, Al. Mickiewicza 24-25, 30-059 Kraków, Poland.

Histological investigations were carried out on the sympathetic trunks of fourteen healthy, mature male and female coypu specimens of standard race, aged 8-24 months. The histological preparations impregnated using Bielschowski and Gross's method were prepared from front cervical, mid-cervical (central cervical), and pectoral-cervical ganglia as well as from pectoral, lumbar and sacral ganglia. An entire range of nerve cells displaying a certain type and degree of change was found in the above mentioned sympathetic ganglia. These cells are classfied in the following order: cells with protoplasmic argyrophilia, cells with vacuole formations, with hyperplasia or hypertrophia of the processes, neuronophagic cells and degenerating cells.

SCIENTIFUR code: 2-0.
6 figs., 26 references. Authors' summary.
In Polish with summaries in Russian and English.

RESULTS OF UROLITH ANALYSIS OF SMALL ANIMALS.

(Ergebnisse von Harnsteinanalysen beim Kleintier).

E. Schneider, E. Schimke, H.-J. Schneider, 6900 Jena, Dornburger Strasse 25 a.

X-ray fine-structure analysis and infrared spectrography were used, between 1971 and 1978, to examine 58 uroliths of dogs, minks, and cats. Urolith carriers in the area catered for by the Small Animal Hospital of Jena accounted for something between 0.32 and 2.47 per thousand of all

patients, depending on age groups. Struvite, whewellite, weddelite, cystine, brushite, ammonium muriate, carbonate apatite, and apatite were safely established. Struvite calcule only were detected in minks and cats. In dogs, 43 per cent of all calculi were struvite and 32 per cent oxalates. Vulnerability to urolithiasis of smaller breeds, such as poodle, fox terrier, and Dachshund, seemed to be higher than that of bigger dogs. Since almost 50 per cent of all uroliths in dogs were struvite, the typical calculus of infection, systematic antibiosis for all urolith patients should be achieved on the basis of bacteriological urine tests with resistogram, and more attention also should be given to urine pH.

SCIENTIFUR code: 3-9-M.
Mh. Vet.-Med. 35, 1980) 744-747.
2 tables, 4 figs., 24 references. Authors' summary.
In German with summaries in English and Russian.

KETAMINE ALONE AND COMBINED WITH DIAZEPAM OR XYLAZINE IN LABORATORY ANIMALS: A 10 YEAR EXPERIENCE.

C.J. Green, J. Knight, S. Precious, S. Simpkin, Div. of Comparative Med., Medical Res. Council Clinical Research Centre, Northwich Park, Watford Road, Harrow, Middlesex, HA1 3UJ, United Kingdom.

Ketamine alone or supplemented by diazepam or xylazine has been used and evaluated as an anaesthetic in a range of animals including snakes, tortoises, lizards, birds, ferrets, dogs, cats, pigs, sheep, goats, non-human primates, rabbits, guineapigs, rats, mice and hamsters. Ketamine alone has severe limitations in most species, but in combination has proved valuable.

SCIENTIFUR code: 14-0.
3 tables, 41 references. Authors' summary.
In English with summaries in English and German.

ANAESTHESIA OF THE EUROPEAN OTTER (LUTRA LUTRA) USING KETAMINE HYDROCHLORIDE.

David Jenkins, Martin L. Gorman, Inst. of Terrestrial Ecology, Hill of Brathens, Banchory, Scotland.

Ketamine hydrochloride was originally developed as a feline anaesthetic, but has been used with some success on other carnivores.

We have used the drug to immobilise captive and wild European otters with complete success.

The doses we have used are much lower than the 22 mg/kg recommended for domestic cats. However they produced a deep anaesthesia of sufficient duration to allow us to weight and measure the otters as well as to fit radio harnesses and to expel samples from the paired anal scent sacs.

During anaesthesia, the eyes remained open and it would be advisable to apply a preparation such as Golden eye ointment to prevent the drying of the cornea. Brathing was slow and regular although a little shallow. The heart rate was accelerated some 25-50% above the normal resting level. Muscle tone is maintained during ketamine anaesthesia, but we have experienced no real difficulty as a result of this. Problems with muscle tension could probably be minimized by giving xylazine as a pre-anaesthetic, althoug we have no experience of the reactions of the otter to this drug.

Following anaesthesia, it was essential that the otters were not released until they had fully recovered from the drug. Animals released prematurely will stagger about in an uncoordinated manner and are in grave danger of drowning.

SCIENTIFUR code: 14-0.
Journ. of Zoology, 194 (2), 265-267, 1981.
1 table, 5 references. Abstract: G. Jørgensen.

KETAMINE-ACEPROMAZINE AS AN ANAESTHETIC AGENT FOR CHINCHILLAS (CHINCHILLA LANIGER).

R.J. Morgan, L.B. Eddy, T.N. Solie, C.C. Turbes, Dept. of Physiology and Biophysics, Colorado State University, Fort Collins, Colorado 80523, USA.

Intramuscular injections of ketamine-acepromazine provided satisfactory surgical levels of anaesthesia. Induction was smooth. There was a wide margin of safety with no significant side effects, and there were no deaths attributable to anaesthesia. Induction time was 4-6 min, duration of surgical anaesthesia was 40-60 min, with complete recovery in 2-5 h. 80 chinchillas were used for this study.

SCIENTIFUR code: 14-0.
Laboratory Animals, 15, 281-283, 1981.
1 fig., 8 references, Authors' summary.

SEXUAL DIMORPHISM IN THE BODY SIZE OF MUSTELIDS (CARNIVORE): THE ROLES OF FOOD HABITS AND BREEDING SYSTEMS.

Philip J. Moors, Wildlife Service, Dept. of Internal Affairs, Private Bag, Wellington, New Zealand.

In mustelids males are always the larger sex. In 24 samples from 15 species there is a significant inverse correlation between the extent of sexual dimorphism (measured as the ratio of male to female weight) and male weight.

Two explanations for the selective advantages of dimorphism are discussed. The first hypothesis proposes that it reduces intersexual competition for food by enabling each sex to exploit different prey. Available data on food habits are insufficient to test the theory directly. Other objections, however, lead to the conclusion that avoidance of competition is not the primary advantage of dimorphism.

The second hypothesis takes into account the polygynous breeding systems of mustelids and the fact that females alone raise their litters. It proposes that small females are favoured because they need less energy for daily maintenance and are probably more efficient in hunting small prey. Because of this they can channel more energy into reproduction than larger females. Large males are favoured by sexual selection and the ability to exploit a wider range of prey. Data are presented for weasels Mustela nivalis showing that towards the end of lactation an average female requires daily about 20% less energy than a hypothetical male-sized female. The optimum sized of each sex result from different selective pressures, and probably vary independently. Relationships between reproductive strategy, diet and dimorphism are discussed.

SCIENTIFUR code: 1-0.
OIKOS, 34, 147-157, 1980.
2 tables, 2 figs., 96 references. Author's summary.

Tab. 2. The daily energy requirement on day 21 of lactation (just prior to weaning) of an average female weasel in northeast Scotland compared with that of a hypothetical female the same size as an average male. Data on caloric equivalents and average daily metabolic rates (ADMR) from Moors (1974) and (1977), respectively.

Average litter size of Scottish weasels	=	6, with equal sex ratio (see King 1975).
Weight of each male nestling at day 21	=	approx. 30 g
Weight of each female nestling at day 21	=	approx. 20 g
(Based on average weights at first capture; and growth rates from Hartman (1964), and East and Lockie (1965).)		
Energy equivalent of daily weight increase of whole litter	=	10 kcal d^{-1}.
(From estimated weights at days 20, 21).		
Metabolic energy expenditure of litter at nest temperature of 25°C (assuming adult ADMR):		
3 males	=	22 kcal d^{-1}
3 females	=	15 kcal d^{-1}
Total energy assimilated on day 21 by litter	=	10 + 22 + 15 kcal = 47 kcal
If mother is 90% efficient at producing milk (Brody 1945), and 95% of milk is assimilated by nestlings, then energy cost to mother	=	47/(0.95 × 0.90) kcal = 55 kcal
Energy required by a 64 g female for maintenance and activity on a June day with mean ambient temperature of 11.0°C	=	29 kcal
Same energy requirements for hypothetical 134 g female (assuming male ADMR)	=	51 kcal
Total energy requirement of small female	=	84 kcal
Total energy requirement of large female	=	106 kcal
Difference	=	22 kcal

GENETICS

RELATIONSHIP BETWEEN THE CYTOLOGICAL INDICES OF A MINK MUSCLE-TISSUE-CELL CULTURE AND CERTAIN TRAITS AMENABLE TO SELECTION.

A.P. Pyzhov, N.A.Efremova, USSR.

The present investigation was conducted to study the relationship between the mitotic index and nuclear area in a mink cell culture and certain traits amenable to selection.

The experiments were performed on iris-blue mink at the Roshchinskii Sovkhoz (Leningrad Region). The cultures were prepared with muscle tissue from culled pups. The samples were cut into fragments 1 mm in size and several fragments were then placed between two cover slips, which were places in a penicillin flask containing the nutrient medium. The flasks were inclined at an angle of 15° to the horizontal and incubated af 37° C. Culturing was in Eagle's medium, to which 20% bovine serum and the following antibiotics were added: 100 units/ml monomycin, 100 units/ml penicilling, and 50 units/ml streptomycin. the slides were fixed with a mixture of ethanol and glacial acetic acid (3:1) after about 7-10 days and stained with azure-eosin by romanowskii's method. The resultant specimens were embedded in balsam.

The mitotic index (i.e., the proportion of dividing cells) was converted to «φ» values by Fisher's method, using the formula $\varphi = 2 \arcsin \sqrt{p}$ [3].

	Nuclear area	Litter size	Pup weight	Litter weight	Maternal weight before estrus
Mitotic index	−0.58 n=21	−0.35 n=21	0.55 n=21	0.05 n=10	0.66 n=21
Nuclear area		0.31 n=25	−0.53 n=25	−0.12 n=10	−0.13 n=25
Litter size			−0.41 n=19	0.79 n=15	−0.47 n=19
Pup weight				0.27 n=15	0.36 n=19
Litter weight					−0.54 n=15

Note: n) number of paired observations.

Table 1

Correlation Between Cytological Indices of Mink Muscle-Cell Cultures and Zootechnical Traits

It has been established that nuclear size is an index of cell functional activity.

None of the correlation coefficients given above for traits amenable to breeding contradict current theories. The relationship observed between the cytological indices in cell cultures and certain economically valuable traits is therefore not fortuitous.

SCIENTIFUR code: 3-4-M.
Soviet Agric. Sciences (New York; Allerton Press) 1980, 5, 48-50.
Translated from: Vsesoiuznaia Akademiia Sel'skokhoziaistvennykh Nauk, Doklady, P. 33-34.
1 table, 5 references. Abstract: G. Jørgensen.
In English.

SUPERNUMERARY CHROMOSOME IN THE CHROMOSOMALLY POLYMORPHIC BLUE FOX, ALOPEX LAGOPUS.

Auli Mäkinen, Outi Lohi, Marja Juvonen, Dept. of Genetics, University of Helsinki, P. Rautatiekatu 13, SF-00100 Helsinki 10, Finland.

The Blue fox, Alopex lagopus, is an interesting species in the family Canidae, because of the chromosome polymorphism caused by centric fusion between two pairs of acrocentric autosomes, by polymorphism in the amount of heterochromatin and, in addition, by the presence of a supernumerary chromosome.

At one commercial fur farm in Kimo, in central Finland, we have investigated 95 specimens of blue fox, 55 males and 40 females. The chromosome analyses were done from lymphocyte cultures.

The blue foxes investigated showed a frequently occurring chromosome polymorphism caused by a balanced centric fusion translocation between two acrocentric autosome pairs. In consequence, the stock of a single farm comprised individuals with af diploid number of 50, which were normals, others with 2n=49, which were heterozygous for the translocation, and still

Table 1. The variability in the chromosome number of blue foxes, *Alopex lagopus*, on one farm, according to sex

2n	Number of acrocentric autosomes	Number of animals examined			Frequency in percent
		Males	Females	Total	
48	0	17	8	25	26.3
49	2	30	22	52	54.7
50	4	8	10	18	19.0
Total		55	40	95	

others with 2n=48, in which the translocation was homozygous.

In the blue fox, chromosomal instability and tolerance to chromosomal imbalance seem to be common characteristics. A more detailed investigation of the karyotype will be published elsewhere, and further studies are going on to throw light on the unique pattern of chromosome variation in the blue fox.

SCIENTIFUR code: 4-F.
1 table, 2 figs., 11 references. Abstract: G. Jørgensen.
Hereditas 94, 1981, 277-279.

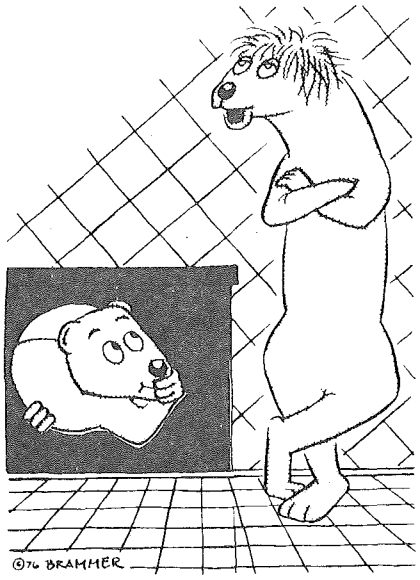
CHROMOSOME ABERRATIONS AND THEIR INFLUENCE ON THE REPRODUCTIVE PERFORMANCE OF DOMESTIC ANIMALS - A REVIEW.

I. Gustavsson, Dept. of Animal Breeding and Genetics, Swedish Univ. of Agricultural Sciences, S-750 07 Uppsala 7, Sweden.

Chromosome aberrations are classified and their nature and occurrence in domestic animals considered in relation to reproductive capacity. Since most populations have been very little studied from the cytogenetic point of view, it is still difficult to assess the importance of chromosome aberrations, but some conclusions can be drawn. There appears to be great variability between species, breeds, strains and families as regards incidence and types of aberration causing embryonic mortality, which indicates that the occurrence of chromosome aberrations is influenced to a large extent by genetic factors. Compared to conditions in man, very few chromosome aberrations have been reported in the adult population

of domestic animals and certain types are still totally lacking. Since there are no indications that chromosome mutations occur less often than in man and other mammals, other factors probably influence the number of positive findings. Selection pressure is of greatest importance. Natural selection in all populations acts through reduced fertility or sterility. Moreover, aberrations with adverse effects on sexual development and/or fertility are in most populations very quickly eliminated by artificial selection. It should be emphasized, however, that classification of the aberration, as well as knowledge of its morphological features, cytological origin, and meiotic behaviour is important for understanding the phenotypic effects and for knowing how to carry out successful eradication procedures. Aberrations such as centric fusion translocations with more subtile phenotypic effects can survive selection and may even become dissiminated in the population at large. In those cases it is recommed that eradication based on cytogenetic analysis is instituted. Cytogenetics is to-day established in several countries and is often used to increase the efficiency of artificial selection. It is to be expected that future studies of domestic animals, employing new techniques for detailed chromosome studies and extending the studies to animals from populations not yet investigated, will considerably increase our knowledge of chromosome aberrations. Such information should as far as possible be utilized to further increase the efficiency of artificial selection.

SCIENTIFUR code: 4-M-O.
Zeitsch.für Tierzuchtung und Zuchtungsbiologie, 97 (3), 176-195, 1980.
2 tables, 1 fig., 131 references. Author's summary.
In English with summaries in English, German, French and Spanish.



I wonder how far aberrations such as centric fusion translocations can affect the individual sex life ?

THE USE OF SELECTION INDEX THEORY TO SELECT BREEDING FEMALES IN MINK. A PRELIMINARY STUDY.

K. Rönningen, A. Olausson, S.-O. Rosberg, Dept. of Animal Breeding and Genetics, Swedish University of Agricultural Sciences, S-750 07 Uppsala, Sweden.

A theoretical study was carried out, using genetic parameters from the literature. Tabulated data are given on the number of standard discounted expressions of a female's genotype for various traits, on 3 selection alternatives based on 5 selections indices, and on expected genetic change. It was concluded that the use of selection indices in mink breeding would result in the improvement of current genetic and economic gains.

SCIENTIFUR code: 4-M.
Z. Tierzüchtg. Züchtgsbiol. 97, 1980, 166-175. CAB-Abstract.
In English with summaries in English, German, French and Spanish.
5 tables, 1 fig., 23 references.

THE POSSIBILITY OF SELECTING ARCTIC FOXES FOR FUR CHARACTERS.

ВОЗМОЖНОСТЬ СЕЛЕКЦИИ ВУАЛЕВЫХ ПЕСЦОВ ПО ПРИЗНАКАМ ОПУШЕНИЯ

G.M. Diveeva, T.G. Novikova, N.P. Shelina, USSR.

Data were obtained at 2 large farms, involving large numbers of animals. The H2S of various traits at one of the farms were as follows: General colour, 0.26;, colour purity of the whole coat, 0.41; undercoat fibre terminal band, 0.18; veiling, 0.42; banding of uncercoat fibres, 0.32; fur quality, 0.03; guard hair density, 0.53; guard hair length, 0.23; felting defect, 0.21; fibre breakage, 0.18; silver defect, 0.37. Similar data are given for the other farm. The following significant correlations were obtained: Fur density with guard hair fineness in male male (-0.41); guard hair length with undercoat length in male male (0.28), vidth of guard hair coloured tip (0.21 in male male and 0.23 in female female), silver

band width (0.24 in male male and 0.19 in female female), guard hair fineness (0.17 in male male and 0.28 in female female), and guard hair length uniformity in female female (0.21). For the offspring of parents mated assortatively or disassortatively for hair length (98 and 122 animals resp.), the percentage of animals awarded the highest class for fur quality was 36 and 18, and the percentage awarded the highest class for colour was 29 and 11. For the offspring of short-haired female female mated with short-haired male male or with short-haired F1 male male from matings of short-haired with medium-haired parents (27 and 35 animals resp.), guard hair length averaged 4.56 and 5.22 cm resp., and undercoat length 3.53 and 3.52 cm. for the offspring of F1 female female and medium-haired female female mated with F1 male male (27 and 19 animals resp.), guard hair length averaged 5.56 and 5.76 cm resp., and undercoat length 3.50 and 3.62 cm.

SCIENTIFUR code: 2-4-12-F.
Nauchnye trudy. Nauchno-Issledovatel'skii Institut Pushnogo Zverovodstva i Krolikovodstva: 17, 49-56, 1978.
5 tables, 4 references. CAB-abstract.
In Russian.

DEVELOPMENT OF HEARING IN HEREDITARY DEAF WHITE MINK (HEDLUND) AND NORMAL MINK (STANDARD) AND THE SUBSEQUENT DETERIORATION OF THE AUDITORY RESPONSE IN HEDLUND MINK.

G. Flottorp, I. Foss, The Institute of Audiology, ENT-Dept., University Hospital, Rikshospitalet, Oslo 1, Norway.

Behavioural responses have been elicited to acoustic stimuli in hereditarily deaf white mink (Hedlund). This revealed onset of auditory function at an average age of 31 days. The period of hearing lasted on the average only of 7 days. Similar observations have been reported in other hereditarily deaf animals (cat, mouse, guinea pig). It is suggested that the onset of auditory function follows a progressive pattern which corresponds to the circulation of blood in the cochlea. Moreover, it is suggested that the subsequent deterioration of hearing follows a regression of

this vascular pattern and thus a vascular pathogenesis may be responsible for this type of genetic deafness.

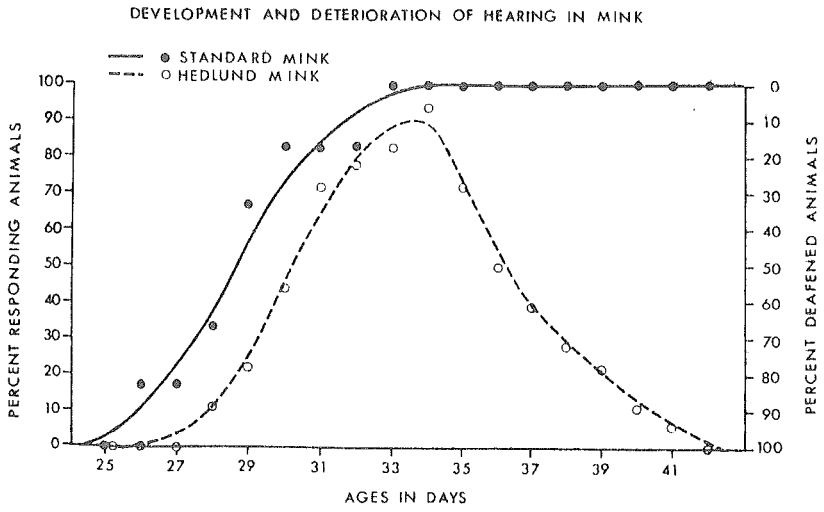
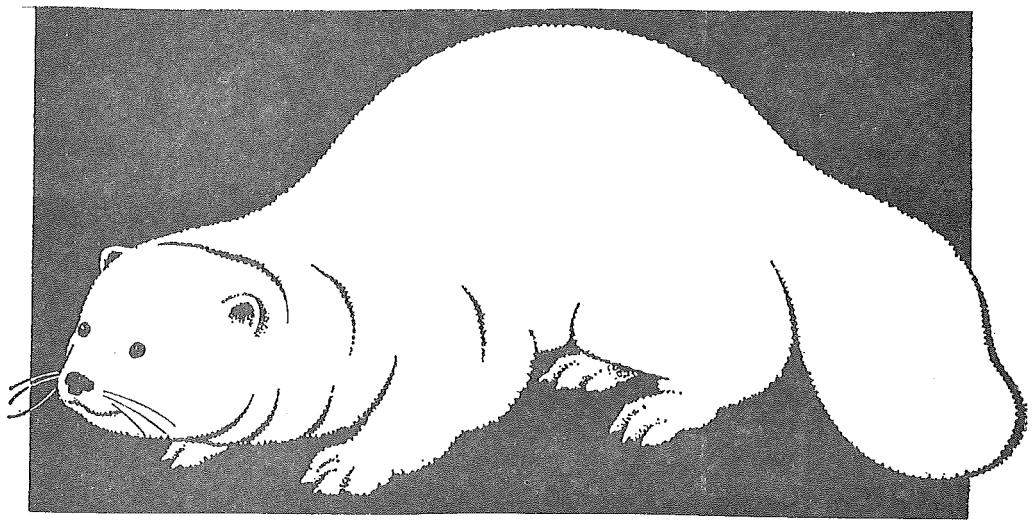


Fig. 3. Percent of animals responding to sound (irrespective of type of sound) as a function of age.

SCIENTIFUR code: 4-M.
Acta Otolaryngol 87, 16-27, 1979.
3 tables, 7 figs., 28 references.

Authors' abstract.



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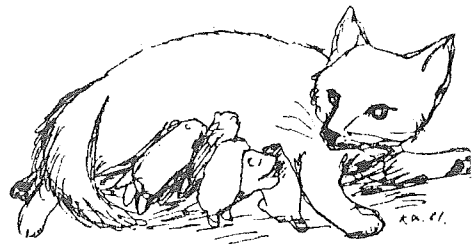


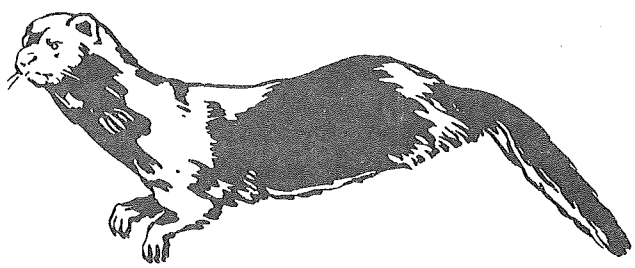
MORPHOLOGICAL AND HISTOLOGICAL CHANGES OF OVARIES, UTERUS AND THYROID GLAND IN MINK GIVEN MEGESTROL ACETATE.

МОРФОГИСТОЛОГИЧЕСКИЕ ИЗМЕНЕНИЯ
В ЯИЧНИКАХ, МАТКЕ И ЩИТОВИДНОЙ ЖЕЛЕЗЕ
НОРОК ПРИ ПРИМЕНЕНИИ АЦЕТАТА МЕГЕСТРОЛА

Nosova, N.G., USSR.

In Nov., 40 anoestrous female female were each given 200-500 MU g MA daily for 7 days, and 10 control female female received the sunflower oil vehicle only. The animals were slaughtered 1-9 days after treatment, and their organs were examined histologically. The administration of MA induced changes in the ovarian follicles and uterus similar to those occurring in non-induced oestrus. Similar groups of animals were used during the breeding season, in Feb. compared with the controls, the administration of MA increased ovarian weight and lowered ovulation rate in female female that had been mated; in female female that had not been mated, there was an increase in ovarian weight and in the number of active follicles, an increase in uterine weight, proliferative changes in the uterine mucosa, and an increase in the diameter of the uterine glands. Data are given in tables and microphotographs.

SCIENTIFUR code: 2-3-5-M.
Nauchnye Trudy. Nauchno-Issledovatel'skii Institut Pushnogo Zverovodstva I Krolikovodstva, 17, 61-75, 1978.
7 tables, 12 figs., 5 references. CAB-abstract.
In Russian.



COMPARATIVE STUDY OF OVARIAN MORPHOLOGY IN THE SILVER FOX (VULPES ARGENTATA) AND MINK (MUSTELA VISON) DURING ANOESTRUS.

(Studiul comparativ al structurii ovarului la vulpea argintie (vulpess argentata) si la nurca (mustela vison), in perioada repaosului reproductiv).

I. Pamfilie, A. Negrea, Lucia Cocos, Romania.

The performed investigations have brought to evidence that in silver fox the ovary is showing no albuginea. It was also observed that ovocytary division may occur within the cavitary follicles thus rendering to evidence such cavitary follicles having 2-4 ovocytes. In mink, the ovigerous zone is located at the level of the ovarian hilum. The internal theca of the cavitary follicles within mink ovary is represented by astrong capillary network.

SCIENTIFUR code: 2-5-M-F.
Seria Zootechnie-Medicina Veterinara, 23, 89-90, 1979.
2 figs., 3 references. Authors' abstract.
In Rumanian with abstract in English.

POLYPLOIDY IN THE BONE MARROW AND SPERMATOGENIC EPITHELIUM OF MALE MINK OF DIFFERING FERTILITY.

ПОЛИПЛОИДИЯ В КОСТНОМ МОЗГЕ И СПЕРМАТОГЕННОМ ЭПИТЕЛИИ САМЦОВ НОРОК РАЗНОЙ ПЛОДОВИТОСТИ

G.K. Isakova, Institute of Cytology and Genetics, Novosibirsk, USSR. Academy of Sciences of the USSR, Siberian Division.

The frequency of polyploid cells both in bone marrow and spermatogenic epithelium was analysed in 2-year-old mink males having a high and low level of embryonic and early postnatal mortality of their progeny. The decrease in fertility is associated with the increase in frequency of polyploidy in bone marrow and that of polyploid spermatogonial metaphases and metaphases II of meiosis. Correlation between the frequencies of

polyploidy in bone marrow and spermatogenic epithelium has been found. The disturbance of hormonal regulation may be regarded as one of possible causes for the increase in polyploidy frequency in minks with reduced fertility.

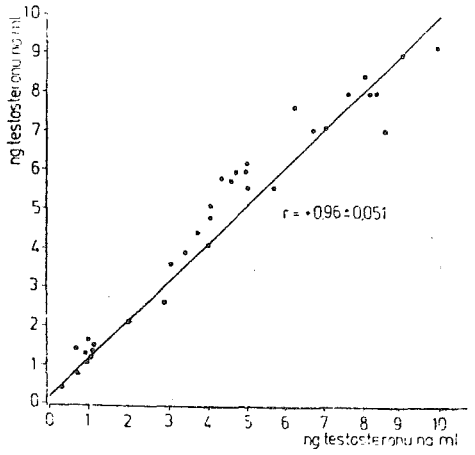
SCIENTIFUR code: 2-5-M.
Genetika, USSR, 17, 5, 858-582, 1981.
6 tables, 5 figs., 37 references. Author's summary.
In Russian with summary in English.

THE LEVEL OF PLASMA TESTOSTERONE IN COYPUS DURING POST-NATAL DEVELOPMENT.

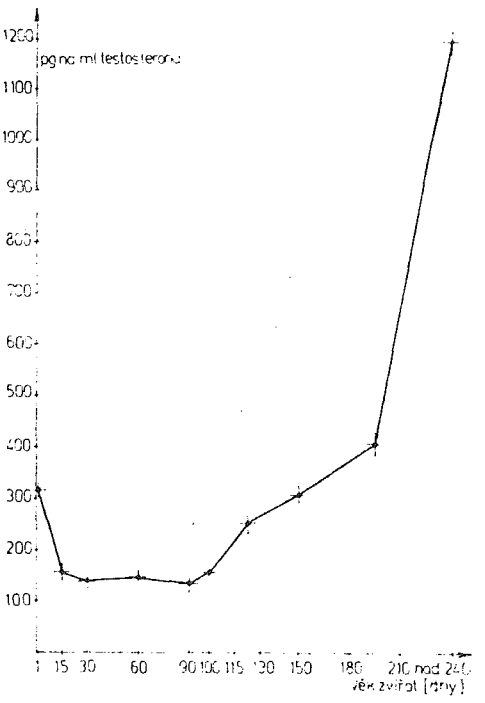
(Hladiny Plazmatického Testosteronu u Nutrii v Prubehu postnatálního vývoje).

P. Jelínek, D. Píchová, J. Pícha, University of Agriculture, Brno, Zemédélska 1, 662 65 Brno, Czechoslovakia.

Male coypus aged 1 to 300 days were studied for the concentration of plasma testosterone by radioimmunoassay (RIA). High levels of testosterone in blood plasma were found after birth (317.44 pg. ml^{-1}); then the rise in the level of plasma testosterone continued in the males with age, the oldest group (240 to 300 days of age) showing a testosterone level of 1200.33 pg. ml^{-1} of blood plasma. The concentration of plasma testosterone showed a high individual variability: the values of variation coefficients in the age groups ranged from 30 to 118%. After intramuscular administration of RH-LH in the Lutal preparation at a dose of µg l^{-1} per kg og live weight, the plasma testosterone levels of immature 90-day-old males considerably increased, thus demonstrating the functional activity of hypophysis and of the incretion component of testes already at this stage of development. The intramuscular implantation of RH-LH to males at reproductive maturity induced an evident increase in the levels of plasma testosterone, the observed rise in the levels being dependent on the time interval from the application of RH-LH with a testosterone concentration peak 1.5 hours from treatment. After previous determination



3. Závislost mezi koncentrací testosteronu přímo a po extrakci — The dependence between testosterone concentration measured directly and after extraction



4. Koncentrace plazmatického testosteronu v průběhu postnatálního období — věk 1 až 300 dnů (pg . ml^{-1}) — The concentration of plasma testosterone during the post-natal period — age 1 to 300 days (pg . ml^{-1})

of the basal levels of plasma testosterone, RH-LH can be recommended as a suitable method of testing the internal secretory level of the involved part of hypophysis and testes at the same time, even at the pre-pubertal stage of the development of male coypu.

SCIENTIFUR code: 2-14.
Zivočisná Výroba, 26, 3, 225-234, 1981.
3 tables, 4 figs., 20 references. Authors' summary.
In Czechoslovakian with summaries in Russian, English, and Germany. Subtitles in English.

COMPARATIVE TESTIS MEASUREMENTS IN THE NUTRIA.

(Srovnávaci Testimetrie u Nutrii).

Pavel Jelinek, A. Zdenék Veźnik, Katedra chovu ovcí, kozesinových zvirat a vcelarství Vysoké skoly zemedelské,Brno, Zemedelska 1, 662 65 Brno, CSSR.

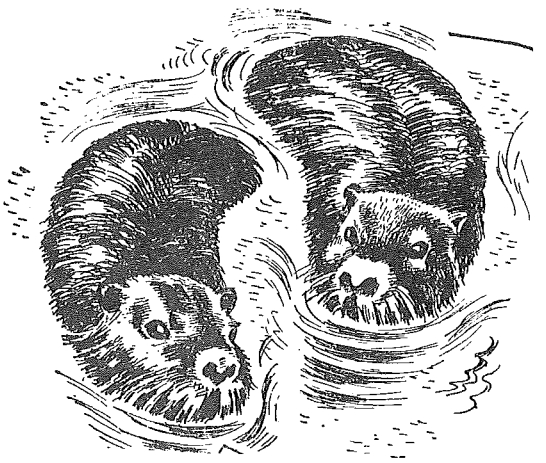
In the course of one year, at two-month intervals, certain bio- and testimetrical values were observed in the coypu, Standard breed, kept on a farm. Using the testimetrical method we calculated general mathematical-statistical characteristics for fundamental testimetrical indicators with a total of 56 coypu males at breeding age.

The measurements showed the average length of the left testis to be 31.8 mm (the limits of average values during observation being 29.4 mm and 33.9 mm); the average width 18.8 mm (18. mm and 20.6 mm as limits); the average height 20.0 mm (19.1 mm and 21.0 mm as limits); and the average weight 5.8 g (4.9 g and 7.2 g as limits). The average values obtained for the right testis were as follows: length 31.9 mm (widt 29.7 mm and 34.3 mm as limiting values); width 18.9 mm (with 18.4 mm and 21.0 mm as limits); height 19.9 mm (widt 18.7 mm and 21.4 mm as limits); and weight 5.8 g (widt 5.0 g and 7.4 g as limits). In the body weight of individuals the average proportion of weight falling to the testes was 0.22 per cent (the limiting values being 0.18 and 0.27 per cent).

Despite the fact that, in some of the criteria considered, slightly larger intervals were recorded for the excess values, the differences calculated between the testimetrical values obtained from individual time periods under testing were not at a level of statistical significance, when the results were tested by the analysis of variance. Thus, on the basis of the gonadal measurements made during one year, the following conclusion could be drawn: the testimetric values in coypu males were not influenced by the season at a level of significance.

The coefficient of correlation between the weight of testes and the live weight of an individual was found at a level of high significance when calculated for entire set of individuals irrespective of the time intervals considered.

SCIENTIFUR code: 2-14.
Acta Universitatis Agriculture, Facultas Agronomica, Brno, 27, 3-4, 1979. 181-188.
3 tables, 1 fig. 15 references. Authors' summary
In Czechoslovakian with summaries in Russian, English and German.



ONTOGENY OF ENDOCRINE FUNCTION OF THE REPRODUCTIVE SYSTEM IN SILVER-BLACK FOXES WITH DIFFERENT TYPES OF DEFENSIVE BEHAVIOUR.

ОСОБЕННОСТИ ОНТОГЕНЕЗА ЭНДОКРИННОЙ ФУНКЦИИ ПОЛОВОЙ СИСТЕМЫ У СЕРЕБРИСТО-ЧЕРНЫХ ЛИСИЦ С РАЗНЫМИ ТИПАМИ ОБОРОНИТЕЛЬНОГО ПОВЕДЕНИЯ

P.M. Krass, Logvinenko, N.S., Trut, L.N., USSR.

Postnatal development of the reproductive endocrine system occurred more rapidly in foxes that exhibited tameness toward man than in aggressive foxes.

SCIENTIFUR code: 3-5-F.

Ynutrivid. Izmenchivost. V Ontogenese Zhivotnykh.
Part of a collective document. In this document it is page 196-205, 1980.
Referativnyi Zhurnal 1981, 4.58.307.

4 tables, 13 references. CAB-abstract.

In Russian.

THE STUDY OF MECHANISMS REGULATING OVULATION IN SABLES.

ИЗУЧЕНИЕ ХАРАКТЕРА И ЗАКОНОМЕРНОСТЕЙ ОВУЛЯЦИИ У СОБОЛЕЙ

E.G. Snytko, Bernatskii, V.G., N.G. Nosova, USSR.

22 female female were laparotomised after a single mating, 41 female female after repeated matings, and 22 female female that had not been mated were laparotomised at the end of the breeding season. No signs of ovulation were found in unmated female female or in female female mated once or repeatedly and laparotomised within 24-72 h after mating. Ovulation had occurred in female female examined 84 h after mating. It was concluded that ovulation in sables is induced by mating, and occurs between 72 and 84 h after mating.

SCIENTIFUR code: 3-5-O.
Nauchnye Trudy. Nauchno-Issledovatel'skii Institut Pushnogo Zverovodstva i Krolikovodstva, 17, 76-78, 1978.

7 references. CAB-abstract.

In Russian.

THE FERTILITY OF BLUE FOX FEMALES OF DIFFERENT AGES.

(Plonost rùzne starých samic modrých pescú).

L. Stolc, M. Skrivan, F. Louda, Dept. of cattle breeding and dairying, University of Agriculture, Prague - Suchdol. Czechoslovakia.

The following features were followed in 2 820 blue fox females in 1971 to 1977: size of litter from delivery to weaning, offspring mortality; length of pregnancy and sterility. The highest number of live born weaned offspring was among the two-year-olds/10,08$\pm$0,133; 7,88$\pm$0,169/ and three-year-old females/ 10,34$\pm$0,182; 8,47$\pm$0,205. Fertility thereafter diminishes and reaches its lowest point in five-year-old and older females/ 9,10$\pm$0,307; 7,39$\pm$0,330/. The total sterility percentage/ 26,63% / in the followed group is very high/ highest among the one-year-old females/ and therefore it is important to introduce into the breeding process only well built and developed young animals from the early litters delivered in April and possibly up to mid-May.

SCIENTIFUR code: 5-F.
Sbornik Vysoke Skoly Zemedelske v Praze, Fakulta Agronomicka. Rada B. Zivocisna Vyroba. (V. Praha; Vysoka Skola) 1980, 31, 191-203.
5 tables, 9 references. Authors' summary.
In Czechoslovakian with summaries in Russian and English.

THE EFFECT OF EARLY WEANING ON THE SEXUAL BEHAVIOUR AND REPRODUCTIVE SUCCESS OF RANCH MINK.

F.F. Gilbert, E.D. Bailey, Washington State University, Wildlife Biology, Dept. of Zoology, Pullman, Washington 99164, USA.

The effects of early weaning on the sexual behavior and reproductive success of ranch mink (Mustela vison) were tested. Male and female mink were weaned at various ages from 5 to more than 10 weeks after birth. The behavior associated with reproduction during their first breeding season was analyzed and a critical socialization period for exhibition of

this behavior delimited. Females weaned prior to 8 weeks post-partum were significantly easier to breed than females weaned at 8 weeks of age or older. Successful breeding performances by the males apparently depended on a critical period of socialization in the litter environment occurring within 5 to 8 weeks after birth. Visual isolation appeared to inhibit reproductive behavior somewhat. possibly due to an asynchrony in physiological development.

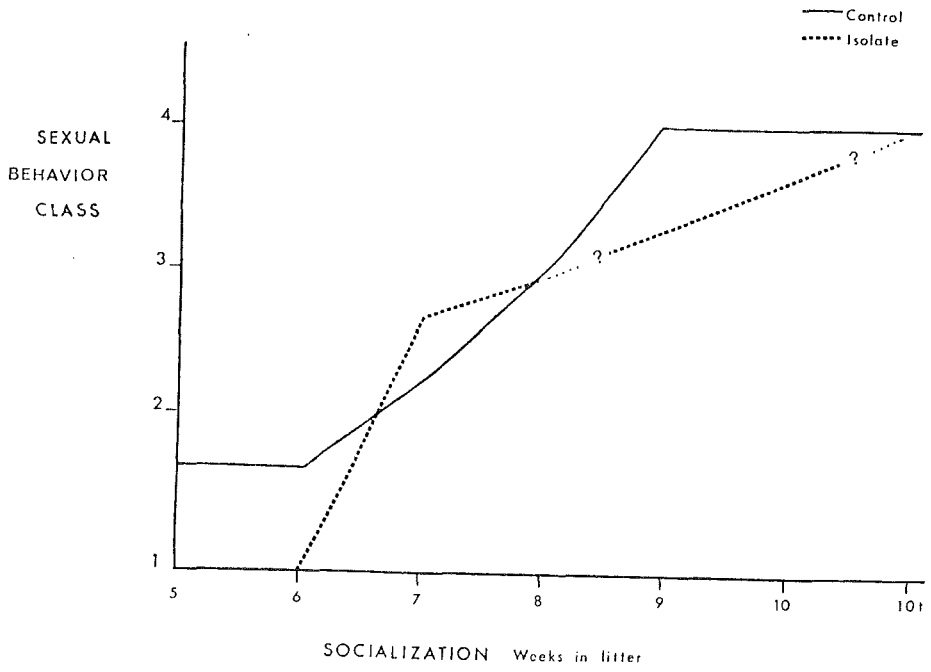


FIG. 1.—Average sexual behavior classification for each weaning-age group of the experimental male mink.

SCIENTIFUR code: 5-10-11-12-M.
Journal of Mammalogy, Vol. 50, no.4, 742-747, 1969.
1 table, 1 fig., 13 references. Authors' abstract.

REPRODUCTIVE PERFORMANCE OF THREE GENETIC STRAINS OF FEMALE MINK VISUALLY ISOLATED AFTER BREEDING.

F.F. Gilbert, E.D. Bailey, Washington State University, Wildlife Biology, Dept. of Zoology, Pullman, Washington 99164, USA.

One hundred and two female mink of the pastel, dark, and Aleutian varieties were divided into equal numbers of "control" and visually-isolated animals. The "control" cages with partitions on one side of the cage were

considered as semiisolation units.

Little difference existed in breeding success between control and isolated females. Visual isolation increased litter production significantly in the dark females but also raised the number of kits born to Aleutian and pastel females in the semi-isolated or isolated cages. The differences in the results of visual isolation were attributed to the variable nervousness of the three strains of mink and the effect this characteristic would have on agonistic interactions between adjacent females.

SCIENTIFUR code: 5-10-11-12-M.
The Cornell Veterinarian, Vol. LX, No. 1, January 1970.
2 tables, 4 references. Authors' summary.

INFERTILE MALE MINK: A NATURALLY-OCCURRING MODEL OF AUTO-IMMUNE INFERTILITY.

K.S.K. Tung, L. Ellis, C. Teuscher, S. Kohno, R. Howell, Dept. of Pathol., Univ. of New Mexico, Albuquerque, NM 87131.

Breeding minks for fine black fur has generated a "strain" of which 30% of the male animals are infertile. Two clinical groups are distinguishable: one is infertile from the start (primary infertility) and one is infertil after 1 or more years of fertility (secondary infertility). While the etiology of primary infertility is unknown at present, available data from 145 minks indicates that secondary infertility is associated with immunologic disease of the testis. Thus, male minks with secondary infertility have (1) higher prevalence and levels of antisperm antibody when compared with animals with primary infertility ($p < .001$); and the antibody prevalence varies with fur color, (2) severe monocytic orchitis (47%) (culture negative for bacterial, fungal, mumps or coxackie B viral organisms) and/or aspermatogenesis (75%), (3) massive and extensive granular deposits of mink IgG and/or C3 (63%), typical of immune complexes, along the basal lamina of seminiferous tubules, and (4) no immunopathologic evidence of Aleutian mink disease. This model of male mink infertility provides the first example of a naturally-occurring autoimmune disease of

the testis associated with clinical infertility. (Supported by NIH grant HD-12247 and a grant from the Mink Farmers Research Foundation).

SCIENTIFUR code: 4-3-M.

Autoimmunity and Immunochemistry, Abstract no. 5153.
Federation Proceedings, 40 (3, II), 1137, 1981.

ACID AND ALKALINE PHOSPHATASE ACTIVITY IN TESTES AND ACCESSORY GLANDS OF THE NUTRIA.

(Aktivita Kyselé a Alkalickê fosfatázy varlat a Prídatných pohlavních Zláz Nutrie).

Pavel Jelinek, Gabriela Vlkova, Miroslava Doćekalova, Ludmila Tesarova,
Katedra chovu ovcí, kozesinovych zvirat, vcelarstvi a hedvábnictvi
Vysoke skoly zemedelské v Brne, Zemedelská 1, 662 65 Brno, CSSR.

Activities of acid and alkaline phosphatases were studied in coypu males, Standard breed, during their breeding age. The tissues included in the observations were those of testes, prostate, seminal vessicles, and Cowper's glands.

The following conclusions were drawn from experimental results:
1. The highest activity of acid phosphatase was found in testes (67.03 nkat), followed by those in prostate 25.91 nkat), seminal vessicles (19.01 nkat), and Cowper's glands (7.80 nkat). The same, descending trend was established for the alkaline phosphatase activity, too, as follows: testes 104.72 nkat, prostate 15.91 nkat, seminal vessicles 8.14 nkat, and Cowper's glands 5.27 nkat.

2. In all of the studied accessory glands the activities of acid phosphatase were superior to those of alkaline phosphatase, as follows: prostate - acid phosphatase 25.91 nkat, alkaline phosphatase 15.91 nkat; seminal vessicles - acid phosphatse 19.01 nkat, alkaline phosphatase 8.14 nkat; Cowper's glands - acid phosphatase 7.80 nkat, alkaline phosphatase 5.27 nkat. While in the testical tissue the activity of alkaline

phosphatase exceeded that of acid phosphatase, the respective values being 104.72 nkat and 67.03 nkat.

3. In all instances the coefficients of variance were at a high level ranging from 36 to 109 per cent, which pointed to large differences between individuals.

SCIENTIFUR code: 3-5-0.
Acta Universitatis Agriculturae, Facultas Agronomica, Brno, 27, 3-4, 173-180, 1979.
2 tables, 2 figs., 24 references. Authors' summary.
In Czechoslovakian with summaries in Russian, English and German.

CIRCADIAN PHOTOSENSITIVE PHASE AND PHOTOPERIODIC REGULATION OF TESTICULAR ACTIVITY IN LONG-DAY (FERRET) AND SHORT-DAY (MINK) BREEDING MAMMALS.

L. Boissin-Agasse, J. Boissin, R. Ortavant, Laboratorie de Pelages, Toisons et Fourrures, 78350 Jouy-en-Josas, France.

Evidence of a circadian photosensitive phase in male ferret and male mink were based on the study of testicular response after interrupting the dark phase by light breaks (0.5 h) offered at various times.

There exists, in the ferret, a special phase in the day cycle during which a light break of 0.5 h leads to the onset of testicular activity in animals previously sexually inactive. In our experimental conditions this special phase would seem to occur 12 hours after dawn.

On the contrary our results would seem to prove the existence of a special phase in the day cycle during which a light break of 0.5 h inhibits testicular activity in the mink which appears to be a short-day animal.

One explanation of the differences in response between long-day and short-day animals would be the following: whereas for long-day mammals exposure to light during the photosensitive phase would seem to stimulate te-

sticular activity, for short-day mammals, it would seem to have an inhibiting effect.

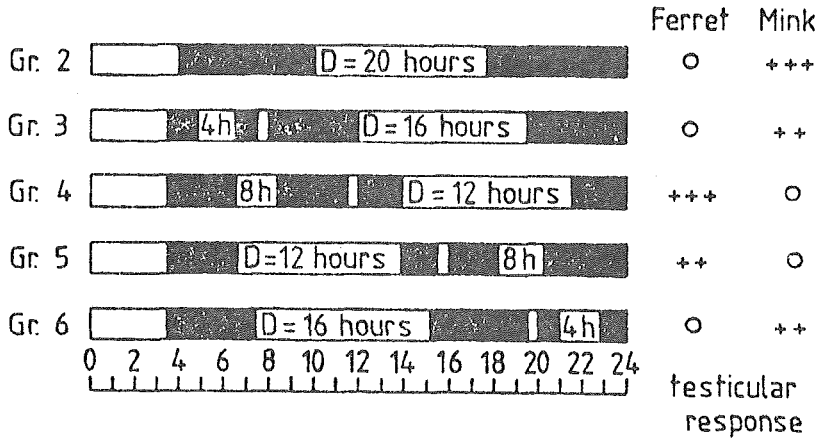


Fig. 6. - Summary diagram to show photoperiodic testicular responses of ferret and mink in night-interruption experiment.

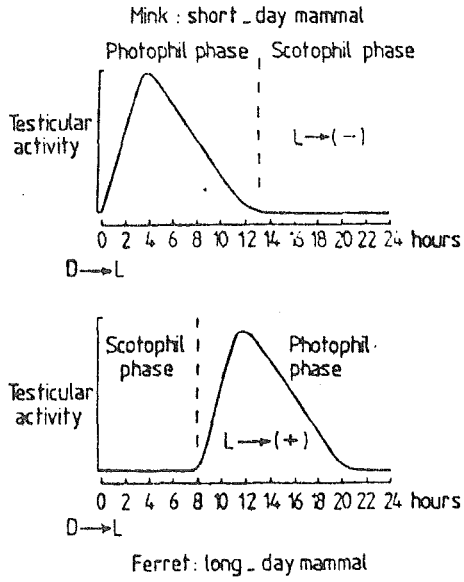


Fig. 7. - Possible hypothesis to explain photogonadal response of long-day (ferret) or short-day (mink) breeder mammals.

SCIENTIFUR code: 3-5-10-M.

Photoperiodism and Reproduction in Vertebrates.
Colloques de l'I.N.R.A., 6, 51-66, 1981.

7 figs., 9 references. Authors' summary.

In English with summary in French.

CONTROL OF DELAYED IMPLANTATION AND ONSET OF SPRING MOULT IN THE MINK (MUSTELA VISON) BY DAYLIGHT RATIO, PROLACTIN AND MELATONIN.

L. Martinet, M. Meunier, D. Allain, Dept. de Physiologie animale, Ctr. Natl. de Recherches Zootechniques, I.N.R.A. 78350 Jouy-en-Josas, France.

In the first part of the experiment the effect of two daily injections of

of 0.5 mg bovine prolactin, from day 7 after mating to April 7, was observed by estimating progesterone and prolactin concentrations in plasma using radioimmunoassay, in blood samples collected from one-year old females of the pastel colour. Besides, onset and progress of moulting was followed, observing the appearcance and extension of the blue pigmentation of the skin.

In the treated females plasma progesterone reached the peak values about two weeks earlier than in untreated control females. Progesterone injection also advanced the onset of moulting one-two weeks.

The other part of the experiment concerned the role of 100 µg exogenous melatonin given as a daily afternoon injection to females kept under either long days (15L:9D) or short days (11L:13D) after they were mated.

The increase of plasma progesterone was delayed 8 days in 2 out of 6 long-day females treated with melatonin, while it never increased in the remaining 4, or in any of 6 short-day females also treated. In all females the onset of moulting was delayed.

Females kept under long days, but not treated with melatonin showed an increase in progesterone level some days earlier than outside housed control females, but moulting was equal in the two groups.

Short-day females not injected with melatonin showed dalayed or inhibited progesterone secretion, and onset of the moult began 20 days later than in outdoor controls.

These results suggest that melatonine might be involved in the regulation of prolactin secretion in mink. Melatonin appears to mimic the action of short days on prolactin secretion, corpus luteum activity and on hair follicles.

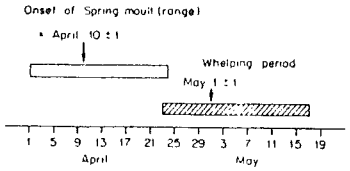


FIG. 2.- Onset of spring moult and whelping time in females.
Values are the mean ± SEM.

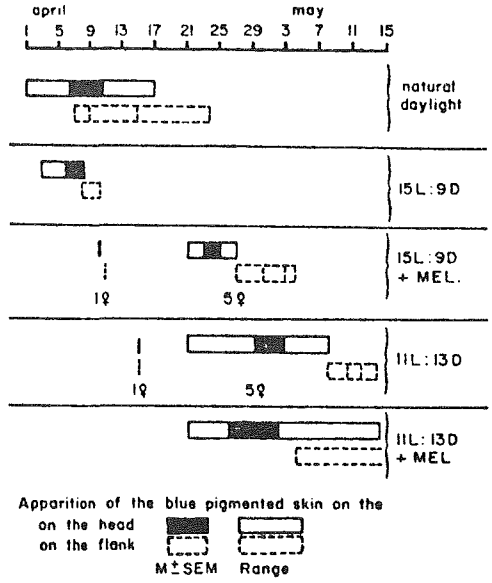


FIG 6.- *Date of spring moulting onset (mean ±SEM) according to daylight ratio and melatonin treatment.*

SCIENTIFUR code: 3-5-10-M-O.

Photoperiodism and Reproduction in Vertebrates.
Collogques de l'I.N.R.A., 6, 253-261, 1981.

6 figs., 28 references. Abstract: Heddie Mejborn.

In English.

EFFECT OF MELATONIN IMPLANTS ON CHANGES IN THE COAT, PLASMA PROLACTIN LEVEL AND TESTIS CYCLE IN THE MINK (MUSTELA VISON).

D.Allain, L. Martinet, J. Rougeot, Dept. de Physiologie Animale,
Inst.Natl. de la. Recherche Agronomique, 78350 Jouy-en-Josas, France.

Males of the pastel colour was used in this experiment concerning the effect of implantation of silastic capsules filled with melatonin on testis cycle and regulation of moulting periods. 7 males served as controls, while 19 males were implanted on the following dates: January 25 (3), March 14 (3), April 25 (2), July 2 (4), October 2 (4), and November 27 (3).

Following details were registrated: Testis volume, stage of fur development measured by extension of blue pigmentation of the skin, hair density - determined by counting the number of hair follicles in each follicular bundle, and plasma prolactin level determined by radioimmunoassay.

When melanin was implanted in sexually active males, it delayed testis regression. When implanted in sexually inactive males, melatonin advanced testicular recrudescence. Therefore, a progonadal effect was observed whatever the time of the treatment, i.e. the length of the daily photoperiod.

Melatonin is also involved in the neuroendocrine mechanism controlling photoperiod-dependent moult. Spring moult can be delayed for 3 months by melatonin implant in January, but if the implant takes place in April or July, it progresses the development of the winter coat 3 and 2 months, respectively.

The onset of autumn moult was always observed when prolactin were decreasing in late summer in the control males or after artificial melatonin implants induced increase.

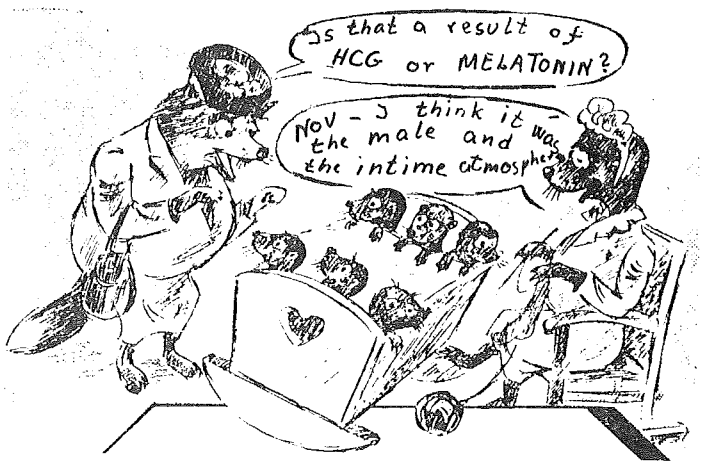
A spring moult was always associated with plasma prolaction increase, prolaction also seems involved in this control.

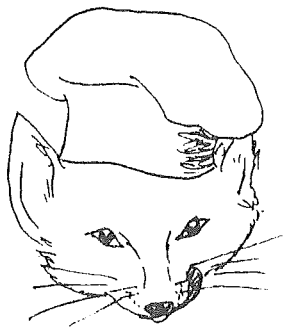
SCIENTIFUR code: 3-5-10-M.

Photoperiodism and Reproduction in Vertebrates.
Colloques de l'I.N.R.A., 6, 263-271, 1981.

4 figs., 22 references. Abstract: Heddie Mejborn.

In English.





NUTRITION

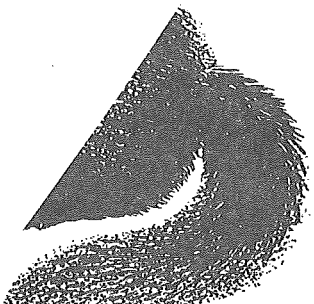
REPRODUCTION OF YOUNG FEMALE SABLES GIVEN DIFFERENT LEVELS OF PROTEIN IN FOOD.

РАЗМНОЖЕНИЕ МОЛОДЫХ САМОК СОБОЛЕЙ ПРИ РАЗЛИЧНЫХ УРОВНЯХ ПРОТЕИНОВОГО ПИТАНИЯ

V.F. Kaldovshchikov, B.A. Kulichkov, I.M. Mironova, USSR.

Data were obtained over a 2-yr period on female female (45 per group) aged 1 yr at the beginning of the experiment, and given (per 100 kcal metabolizable energy) diets containing (1) 10 g digestible protein, 3.6 g fat and 5 g carbohydrate; (2) 11.3 g digestible protein, 3.7 g fat and 3.5 g carbohydrate; (3) 8.4 g digestible protein, 3.8 g fat and 6.8 g carbohydrate. The daily energy supply per female averaged 404 kcal. In the 3 groups resp., the percentage of female female mated in their 1st breeding season was 77.4, 71.1 and 71.1, the percentage whelping was 15.7, 13.3 and 23.3, litter size averaged 2.4, 2.7 and 2.6, and preweaning mortality was 0, 27 and 11 percent. Corresponding figures for the 4 traits in all female female on the farm were 56.7 percent, 31.7 percent, 2.6 and 3 percent. For the 3 experimental groups, the percentage of female female mated in their 2nd breeding season was 59.0, 53.2 and 75.5, the percentage of female female whelping was 24.7, 36.0 and 21.6, litter size averaged 2.5, 2.3 and 2.3, and preweaning mortality was, 8, 5 and 12 percent. Pup production per housed female averaged 0.22, 0.18 and 0.36 in the 1st yr, and 0.25, 0.43 and 0.28 in the 2nd.

SCIENTIFUR code: 5-6-0.
Nauchnye Trudy, Nauchno-Issledovatel'skii Institut Pushnogo Zverovodstva i Krolikovodstva, 17, 93-99, 1978.
4 tables, 4 references. CAB-abstract.
In Russian.



= AVERAGE LITTER OF SABLE.

THE EFFECT OF NUTRITION DURING PREGNANCY ON THE RESULTS OF WHELPING IN THREE-YEAR-OLD FEMALE SABLES.

ВЛИЯНИЕ УРОВНЯ КОРМЛЕНИЯ В ПЕРИОД БЕРЕМЕННОСТИ НА РЕЗУЛЬТАТЫ ЩЕНЕНИЯ ТРЕХЛЕТНИХ СОБОЛЕЙ

V.F. Kladovshchikov, B.A. Kulichkov, USSR.

Data were obtained on pregnant female female (27-34 per group) mated in mid-Oct. and whelping in April, given differents diets as follows: (1) rations reduced by 15 percent during early pregnancy (mid-Oct.-mid. Feb.) and ad lib. food afterwards; (2) rations reduced by 20-25 percent during the early stage and ad lib. food afterwards; (3) ad lib. food throughout; (4) rations reduced by 15-18 percent throughout. For the 4 groups resp., the percentage of female female whelping was 48.3, 51.7, 26.5 and 40.7, litter size averaged 2.8, 2.8, 3.3 and 3.3, preweaning mortality was 28.7, 10.0, 13.3 and 19.5 percent, pup production per whelping female 1.67, 2.40, 2.88 and 2.63, and pup production per housed female 0.80, 1.24, 0.76 and 1.07.

Corresponding figures for the 5 traits in all female female on the farm were 55.8 percent, 3.1, 11.3 percent, 2.73 and 1.37.

SCIENTIFUR code: 5-6-0.
NauchnyeTrudy. Nauchno-Issledovatel'skii Institut Pushnogo Zverovodstva i Krolikovodstva, 17, 100-104, 1978.
4 tables, 3 references. CAB-abstract.
In Russian.

DYNAMICS OF NUTRITIONAL CONDITION OF FEMALE ARCTIC FOXES BEFORE THE MATING SEASON, AND THEIR REPRODUCTIVE CAPACITY.

ДИНАМИКА УПИТАННОСТИ САМОК ПЕСЦОВ ПЕРЕД ГОНОМ И ИХ СПОСОБНОСТИ К РАЗМНОЖЕНИЮ

N.I. Syrnikov, N.A. Petrova, E.M. Val'Tman, USSR.

For 113, 194 and 174 old female female in below-average, average and above-average condition before the onset of the breeding season, and for

72, 60 and 55 similarly grouped young female female, the whelping rate was 91.2, 85.1, 83.2, 75.0, 74.0 and 68.8 percent resp., litter size at birth averaged 11.3, 10.6, 10.5, 10.4 and 8.8, and the number of weaned young averaged 7.8, 6.9, 6.6, 5.8, 6.1 and 4.7. Changes in body weight during the breeding season had no consistent effect on reproduction.

SCIENTIFUR code: 5-6-F.
Nauchnye Trudy. Nauchno-Issledovatel'skii Institut Pushnogo Zverovodstva i Krolikovodstva, 17, 5-10, 1978.
4 tables, 7 references. CAB-abstract.
In Russian.

PECULIARITIES OF METABOLISM IN MINK OF DIFFERENT COLOURS. 4. NUTRIENT AND ENERGY CONVERSION INTO NEW TISSUE IN ADULT FEMALES.

ОСОБЕННОСТИ ЭНЕРГЕТИЧЕСКОГО ОБМЕНА
У НОРОК РАЗЛИЧНЫХ ОКРАСОК

Сообщение IV

Использование взрослыми самками норок
питательных веществ и энергии на отложение их в организме

Yu. A. Samkov, USSR.

Apparent digestibility of protein, dry matter and fat, nitrogen balance, energy intake and storage, and daily gains were estimated for small numbers of standard, pastel and sapphire female female. In the summer months, voluntary food intake was only at the maintenance level, and no changes in body weight were recorded. In Oct., the daily energy intake increased, and over the 30-day period, the daily body weight gain averaged 15.1, 16.6 and 17.5 g in the 3 types resp. energy consumption per 1 g weight gain averaged 5.72 kcal in pastels, 5.76 kcal in standards and 5.99 kcal in sapphires, the differences being non-significant.

SCIENTIFUR code: 4-6-M.
Nauchnye Trudy. Nauchno-Issledovatel'skii Institut Pushnogo Zverovodstva o Krolikovodstva, 17, 81-86, 1978.
6 tables, 3 references. CAB-abstract.
In Russian.

RATE OF PASSAGE OF FEED THROUGH THE DIGESTIVE TRACT OF MINK ACCORDING TO THE TYPE OF DIET (WET FORM OR PELLETS).

(Influence des modalités de Présentation de l'aliment sur la vitesse de transit digestif chez le vison).

Geneviéve Charlet-Lery, Michéle Fiszlewicz, Marie-Thérèse Morel,
J.P. Richard, I.N.R.A., Lab. de Physiologie de la Nutrition,
Centre de Recherches zootechniques, F 78350 Jouy-en-Josas, France.

The rate of passage of food through the digestive tract of Dark male minks was studied by means of two methods using glass beads as markers: 1. collection of faeces with a special apparatus, the absolute error of the moment of defecation was 18 min. 2. Removal of contents from the stomach and from three intestinal segments. The food transit rate was measured in animals fed the same diet either wet (45 p. 100 DM) or as pellets (90 p. 100 DM).

The daily number of defecations was significantly higher with the pellets than with the wet diet (8.83 and 7.83, $P < 0.001$) but the transit rate was not modified by the physical form of the feed, the first defecation containing the marker appeared 191 ± 12 min. after the test meal for the wet diet and 177 ± 13 min for the pellets (average time 184 ± 7 min). The excretion curves are not different.

After this average time of 3 hours, 54 p. 100 of recovered beads had already left the stomach and the stay of the glass beads in this organ varied according to the amount of food ingested after intake of this material: if the amount was small or naught, 72.3 p. 100 of them still remained in the stomach, if the amount was large (between 9 and 25 g in 3 hours), we only found 13.6 p. 100.

In these ad libitum fed animals, the variation in the level and in the moment of feed intake during the day could explain that it was possible to characterize 3 different excretion curves: fast, medium and low.

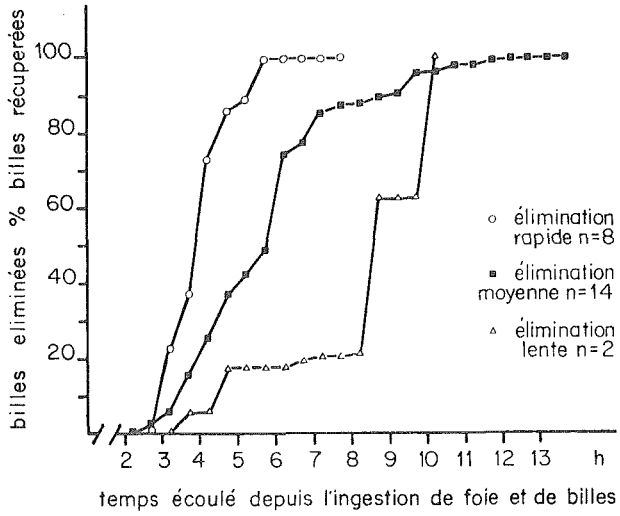


FIG. 4

Différentes courbes d'excrétion des microbilles depuis leur ingestion
Different excretion curves of glass beads

△——△ lente : *slow.*
■——■ moyenne : *medium.*
○——○ rapide : *fast.*

Elimination rapide : *Fast excretion.*
Elimination moyenne : *Moderate excretion.*
Elimination lente : *Slow excretion.*

Billes éliminées p. 100 billes récupérées.
Excreted glass beads p. 100 recovered glass beads.

Temps écoulé depuis l'ingestion de foie et de billes.
Time elapsed since intake of liver + glass beads.

SCIENTIFUR code: 6-M.
Ann. Zootechn., 1981, 30,3, 347-360.
5 tables, 3 figs., 11 references. Authors' summary.
In French with subtitles and summary in English.

STANDARDISING PROTEIN NUTRITION - AN IMPORTANT RESOURCE FOR LOWERING THE CONSUMPTION OF FEED OF ANIMAL ORIGIN.

НОРМИРОВАНИЕ ПРОТЕИНОВОГО ПИТАНИЯ -ВАЖНЫЙ РЕЗЕРВ СНИЖЕНИЯ РАСХОДА КОРМОВ ЖИВОТНОГО ПРОИСХОЖДЕНИЯ

Yu. A. Samkov, USSR.

For 48 and 47 standard female female allowed 11 or 8.5 g digestible protein per 100 kcal food from July to Nov., and for 50 and 50 silverblu and 50 and 46 pastel female female allowed the 2 protein rations resp., the

percentage whelping was 85.4, 74.4, 78.0, 92.0, 78.0 and 84.8, litter size averaged 6.18, 6.78, 6.37, 6.90, 6.07 and 6.35, preweaning pup mortality was 16.2, 15.3, 13.7, 9.0, 18.4 and 13.8 percent, the number of pups registered per whelping female averaged 5.29, 6.31, 5.79, 6.06, 5.33 and 5.61, and the number of pups registered per housed female averaged 4.52, 4.71, 4.52, 5.46, 4.16 and 4.77. corresponding figures for similar groups of female female allowed the 2 types of diet from July to May were: 85.4, 81.6, 83.3, 100, 88.9 and 97.5 percent; 6.07, 6.17, 6.43, 5.97, 5.65 and 5.82; 7.9, 8.6, 5.6, 4.2, 12.0 and 13.8 percent; 5.09, 5.27, 5.60, 5.72, 4.81 and 4.82; and 4.45, 4.31, 4.67, 5.72, 4.28 and 4.70.

SCIENTIFUR code: 6-M.
Nauchnye Trudy. Nauchno-Issledovatel'skii Institut Pushnogo Zverovodstva i Krolikovodstva, 18, 47-63, 1978.
4 tables. CAB-abstract.
In Russian.

USING FISH MEAT, SILKWORM PUPAE, BY-PRODUCTS FROM FUR FARMS AND GRAIN FOR FEEDING FOXES AND ARCTIC FOXES.

ИСПОЛЬЗОВАНИЕ РЫБНОЙ МУКИ, КУКОЛКИ ТУТОВОГО ШЕЛКОПРЯДА, ОТХОДОВ ЗВЕРОВОДСТВА И ЗЕРНА ДЛЯ КОРМЛЕНИЯ ЛИСИЦ И ПЕСЦОВ

P.T. Kletskin, V.S. Snytko, E.M. Glazov, USSR.

For 67 silver fox and 225 arctic fox female female given a dry compounded feed and for 100 silver fox and 258 arctic fox female female given a diet based on raw meat, the percentage whelping was 83.6, 83.6, 80.0 and 77.1 resp., litter size averaged 5.4, 10.3, 5.5 and 10.3, preweaning mortality was 9.8, 10.3, 7.4 and 9.3 percent, and the number of pups registered per housed female averaged 3.99, 6.84, 4.02 and 6.63.

SCIENTIFUR code: 6-F.
Nauchnye Trudy. Nauchno-Issledovatel'skii Institut Puchnogo Zverovodstva i Krolikovodstva, 18, 125-136, 1978.
6 tables. CAB-abstract.
In Russian.

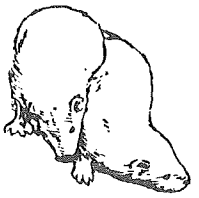
FISH FEEDS IN DIETS FOR PEDIGREE SABLE.

Рыбные корма в рационах племенных соболей

I.M. Mironova, V.F. Kladovshchikov, USSR.

In the first of 2 feeding trials, female sable (Martes Zibellina) 5 to 6 years old were fed in 5 groups for 2 years on a normal diet with Korean cod and horse flesh providing 10 to 12 and 48 percent, respectively, of total animal protein (control diet); a diet with 35 and 12 percent of total protein from Korean cod with other (unspecified) fish and horse flesh, plus an iron supplement; or Korean cod 33 percent and horse flesh 18 percent; non-edible horse mackerel (caranx trachurus) 48 percent and horse flesh 12 percent, or mackerel (scomber scomber L.) 42 percent and horse flesh 8 percent. Taken in the above group order, average daily intake of metabolizable energy was 358, 346, 368, 387 and 387 kcal. Whelping occurred in 97.5, 81.5, 77.4, 87.5 and 92.2 percent of the sable. Average litter size was 3.26, 2.80, 2.42, 2.92 and 3.28. At 20 days of age, there was no significant difference in body weight among the young in the various groups. In a second trial, similar to the first, female sable 6 to 8 year old fed for 1 year on a diet with sea products (fish?) 16 percent and Korean cod 17 percent of total animal protein, produced about the same number of young, and with similar body weights at 20 days old as sable on the control diet. Feeding adult female sable throughout the year on a diet with Korean cod to provide 30 to 35 percent of animal protein decreased litter size; the reduction in litter size was less with a supplement of iron.

SCIENTIFUR code: 6-0.
Krolikovodstvo i Zverovodstvo, No. 1, 11, 1981.
1 table. CAB-abstract.
In Russian.



VARYING FAT: CARBOHYDRATE RATIOS IN MINK DIETS. I. EFFECTS ON REPRODUCTION, EARLY KIT GROWTH, VIABILITY AND BODY COMPOSITION.

(Varierande feitt: Karbohydrat-tilhøve i for til mink. I. Verknad på reproduksjon, vekst, leveevne og kjemisk innhald i kroppen hjå kvelpar).

Anders Skrede, Agricultural University of Norway, Dept. of Poultry and Fur Animal Science, N-1432 Ås-NLH, Norway.

Feeding experiments were conducted in two consecutive years (1978 and 1979) to study the effects of varying fat: carbohydrate ratios in mink diets from early January to late June. Expt. 1 constituted 4 treatment groups, eacn with 36 breeding females, and the fat:carbohydrate ratios (% of metabolizable energy) 32:24, 38:18, 44:12 and 50:6. Expt. 2 comprised 4 treatment groups of 24 breeding females, each, and the fat:carbohydrate ratios 32:24 and 50:6. Additionally in Expt. 2 were parallel groups with lard or tallow as supplementary fat sources. The fat: carbohydrate ratios were varied by changing the dietary proportions of supplementary fat and precooked cereals. fish meal was used for adjustment of protein to a constant level of 44% of metabolizable energy.

The parameters measured included female body weights and reproduction, kit birth weights, growth and viability before weaning (42 days), and kit body weights and bcdy composition at 56 days of age.

High fat:carbohydrate ratios were in no case found to exert negative effects on female body weight development or reproduction. In Expt. 1 the two highest fat:carbohydrate ratios promoted better reproduction and lower kit mortality than the lowest ratios. The numbers of living kits per mated female at weaning were (from lowest to highest fat:carbohydrate ratio) 4.0, 3.7, 5.0 and 5.1. Expt. 2 revealed no effect of treatment on reproduction or weanling mortality.

The high fat:carbohdrate ratios supported the best preweaning growth of kits. In Expt. 1 this effect was apparent at 21 days of age, indicating improved lactation performance by the mother female at high fat:carbohydrate ratios. In Expt. 2 the positive effect of a high fat: carbohy-

drate ratio on kit growth emerged from 3 to 6 weeks post partum. Supplementation with lard and tallow was equally beneficial to kit growth before weaning. From 6 to 8 weeks after birth, lard gave slightly better growth than tallow.

The body composition of 56-day-old mink kits showed negative correlation between water content and the levels of fat and gross energy. No relationship was found between water content and contents of protein and ash. Increasing dietary fat:carbohydrate ratios caused decreasing body water content and increasing levels of fat and gross energy, whereas the amounts of protein and ash were unchanged. Body composition on a percentage of dry matter basis showed increasing fat and gross energy levels and slightly reduced protein content by increasing the fat:carbohydrate ratios. The amino acid composition of body protein was not influenced by varying fat:carbohydrate ratios.

SCIENTIFUR code: 6-M.
Scientific Reports of The Agricultural University of Norway, No. 71,
Vol. 60, 1981, no. 16. ISSN 0025-8946.
12 tables, 30 references. Author's summary.
In Norwegian with subtitles and summary in English.

NITROGEN AND ENERGY METABOLISM IN GROWING MINK FED TWO LEVELS OF PROTEIN.

A. Chwalibog, Grete Thorbek, Natl. Institute of Animal Science,
25 Rolighedsvej, DK 1958 Copenhagen V, Denmark.

For 6 consecutive periods of 14 days, 8 growing male mink initially 85 days old and 1000 g body weight, were given diets with 380 g crude protein and metabolizable energy (ME) 22.5 MJ/kg DM (diet 1) or with 480 g and 21.1 MJ/kg DM (diet 2). Diets were given nearly to appetite and consisted of cod, cod offal, fish meal, blood meal, grain, wheat bran, lard, maize starch and a vitamin supplement; DM content of diets was about 26 percent. Mean daily feed intake was 246 and 294 g and mean daily weight gain was about10 g on either diet. There was no

significant difference between diets in digestibility of nitrogen or digestibility of energy. Retention of N during the first 3 periods was 740 and 1116 mg; 843 and 1082 mg; 1145 mg and 1263 mg. In periods 4 and 5 retention of N decreased for both diets and average values were 1010 for diet 1 and 840 mg for diet 2. From estimations of energy and N metabolism it is concluded that in period 1 and 2, diet 2 with 48 percent crude protein was preferable to diet 1 with 38 percent crude protein in giving the greatest retention of N and the greatest efficiency of utilization of ME.

SCIENTIFUR code: 6-M.
Zeitschrift für Tierphysiologie, Tierernährung und Futtermittelkunde, 44 (1), 30-31, 1980.
1 table. CAB-abstract.
In English.

SOME PROBLEMS ON AMINO ACID AND VITAMIN NUTRITION OF MINKS.

(K některým otázkám aminokyselinové a vitaminové výzivy norku.)

Milos Skřivan, Vysoka Skola Zemedelska, Prague, Czechoslovakia.

Addition of 0.4 percent lysine, 0.2 percent methionine and 0.1 percent tryptophan overcame the protein deficiency in diets for mink. A supplement of 2.37 mg pantothenic acid increased the fertility of female mink. For optimum fertility of the females, pantothenic acid 5 to 6 mg/kg liveweight daily was needed.

SCIENTIFUR code: 6-M.
Agrochemica, Czechoslovakia, 20 (2), 58-60, 1980.
7 references. CAB-abstract.
In Czechoslovakian.

ZINC POISONING IN FERRETS (MUSTELA PUTORIS FURO).

E.F. Straube, N.B. Walden, Dept. of Agric., Vet. Research Institute, Park Drive, Parkville, Victoria, 3052, Australia.

An outbreak of illness is described in a group of experimentally-housed ferrets fed exclusively on raw meat which was accidentally contaminated with a zinc compound. The condition was manifested by nephrotoxicity, and zinc poisoning was diagnosed after autopsy and laboratory investigation.

SCIENTIFUR code: 6-8-0.
Laboratory Animals, 1981, 15, 45-47.
2 figs., 6 references. Authors' summary.

ZINC TOXICITY IN THE FERRET.

E.F. Straube, N.H. Schuster, A.J Sinclair, Vet. Research Institute, Dept. of Agriculture, Park Drive, Parkville, Victoria, 3052, Australia.

Ferrets were fed 500, 1500 and 3000 ppm zinc in their diets for up to 6 months. Thegroups fed the two highest concentrations of zinc showed severe signs of toxicity between 1 to 2 weeks and the ferrets on the 3000 ppm diet died in less than 2 weeks. The lesions in this group were a diffuse nephrosis, haemorrhages in the intestine and a severe macrocytic hypochromic anaemia. There was a more severe diffuse nephrosis and some glomerular damage in the 1500 ppm group. These ferrets also had a macrocytic hypochromic anaemia. In both the 1500 and 3000 ppm groups there was an increase in zinc and a depression of copper in the liver and kidney tissue. All the zinc-treated ferrets showed decreased serum caeruloplasmin oxidase activity. The results indicated that the anaemia was more the result of the haemorrhages than of the zincinduced copper deficiency. These findings suggest that ferrets are more susceptible to excess of dietary zinc than other species so far studied.

SCIENTIFUR code: 6-8-0:
J. Comp. Path. 1980, Vol. 90, 355-361.
2 tables, 16 references. Authors' summary.

BIOLOGICAL EFFECTS OF PCBs AND PBBs ON MINK AND FERRETS A REVEIW.

R.K. Ringer, R.J. Aulerich, M.R. Bleavins, Animal Sciences Department and Pesticide Research Center, Michigan State University, East Lansing, MI 48824, USA.

A search for the cause of reproductive complications and excessive newborn mortality in mink fed Great Lakes fish in the late 1960's led to the demonstrated toxicity of polychlorinated biphenyls (PCBs) in this carnivore. Studies were undertaken to quantitate the toxicity of several PCBs on mink and ferrets, to contrast placental transfer to the fetus and milk biotransfer to the newborn, and to compare PCB to polybrominated biphenyl (PBB) toxicity.

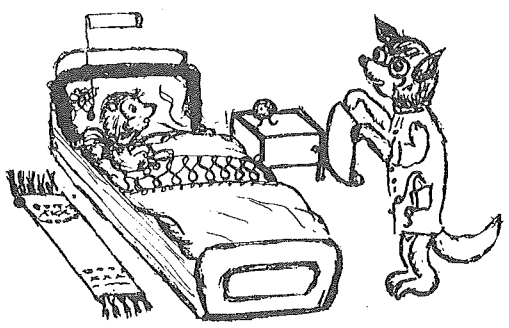
Dietary levels as low as 2 ppm Aroclor ^{R} 1254 impaired mink reproduction. Complete fetotoxicity for Aroclors 1242 or 1254 was determined to be less than 5 ppm. The dietary concentration lethal to 50 percent of the adult mink was calculated as 8.6 and 6.65 ppm for Aroclors 1242 and 1254, respectively. The ferret was found to be somewhat less sensitive to several of these chlorinated hydrocarbon compounds.

PCB transfer to the newborn via milk was greater than placental transfer. PBB was not as fetotoxic as PCBs but was lethal to the adult at a lower dietary concentration.

SCIENTIFUR code: 6-8-M-O.

Halogenated Hydrocarbons: Health and Ecological Effect. Edited by M.A.Q. Khan. Pergamon Press Inc., Elmsford, N.Y. 1981.

11 tables, 36 references. Authors' abstract.



The diagnosis i poisoning, but the question is how far it is zinc, PCB or PBB !

PLACENTAL AND MAMMARY TRANSFER OF POLYCHLORINATED AND POLYBROMINATED BIPHENYLS IN THE MINK AND FERRET.

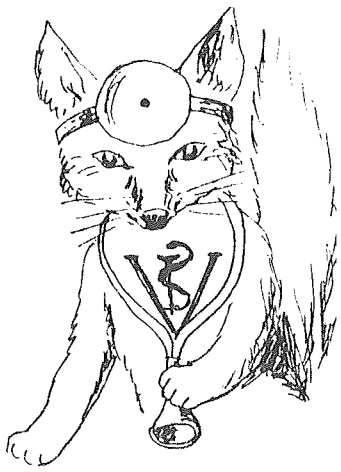
M.R. Bleavins, R.J. Aulerich, R.K. Ringer, Dept. of Animal Science, Michigan State University, East Lansing, Michigan 48824, USA.

The placental and mammary transfer of polychlorinated biphenyls (PCBs) and polybrominated biphenyls (PBBs) was measured in the mink and European ferret. In short-term studies, PVBs were found to cross the placenta more readily than PBBs. Transfer of PCBs was greater in the ferret than in the mink. In a longer term study of placental and mammary transfer, newborn mink kit concentrations of PCBs and PBBs were similar. However, by 2 weeks of age, PBB levels were significantly higher than PCB levels. Milk levels of PBB were determined to be four times those of PCB. For both compounds, the mother's milk was found to be the major route of offspring exposure, with placental transfer being much less consequential.

SCIENTIFUR code: 6-8-M-O.

3 tables, 32 references. Authors' abstract.

Avian and Mammalian Wildlife Toxicology: Second Conference, ASTM STP 757, D.W. Lamb and E.E. Kenaga, Eds., American Society for Testing and Materials, 1981, pp 121-131.



VETERINARY

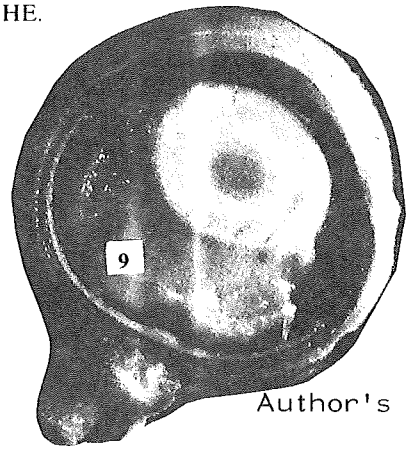
OCULAR LESIONS IN MINK AFFECTED WITH ALEUTIAN DISEASE.

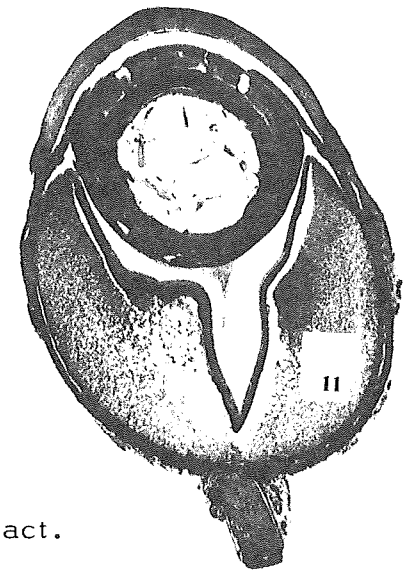
W.J. Hadlow, Rocky Mountain Laboratories, Hamilton, MT 59840, USA.

Uveitis, characterized by infiltrates of lymphocytes and plasma cells, was the principal ocular lesion in 122 sapphire and pastel mink affected with experimental Aleutian disease. It was present to various degrees in all but five mink examined five to 164 weeks after inoculation (intraperitoneal or intranasal) with any of four North American strains of Aleutian disease virus. The uveitis, mostly iridocyclitis, was accompanied often by protein-rich fluid in the anterior chamber and less often by fibrin and cells in the vitreous body. Cellular infiltration of the limbus, seldom pronounced, also occurred in about 20% of the mink. In 11 mink with moderate or severe uveitis, the retina was detached by pools of protein-rich fluid. Infiltrates of lymphocytes, plasma cells, and a few histocytes often were found in the orbital soft tissues, occasionally in association with retrobulbar arteritis. In general, the ocular lesions were more severe in sapphire than in pastel mink. The uveitis accompanies glomerulonephritis, the principal lesion of Aleutian disease, much more regularly than do several other lesions of the disease. Like the glomerulonephritis, it probably results from the deposition of circulating immune complexes.

Fig. 9: Fibrinous exudate in vitreous body formed white coagulum in globe of sapphire mink nine weeks after intraperitoneal inoculation with Pullman virus.

Fig. 11: Entire retina detached by protein-rich fluid exudate in sapphire mink 15 weeks after intraperitoneal inoculation with Pullman virus. HE.





SCIENTIFUR code: 2-9-M.
Vet. Pathol. 19, 5-15, 1982.
12 figs., 16 references. Author's abstract.

SIMPLE METHOD FOR PREPARATION OF ALEUTIAN DISEASE ANTIGEN.

Yoshio Shimizu, Kazuyuki Inoue, Shunji Tamura, Tadayuki Yamashita, Tukasa Kurimoto, Dept. of Vet. Pharmacoloty, Obihiro University of Agriculture and Veterinary Medicine, Obihiro-shi, Hokkaido 080, Japan.

Preparation of Aleutian disease antigen on a large scale is described, using a combination of ammonium sulphate precipitation and sephadex G-200 chromatography. The antigen gave specific results in counter-immunoelectrophoresis tests on infected mink.

SCIENTIFUR code: 9-M.
Japanese Journal of Veterinary Science, 42, 6, 717-723, 1980.
1 table, 3 figs., 10 references. CAB-abstract.
In English with summary in Japanese.

PSEUDOMONAS PNEUMONIA OF MINK: PATHOGENESIS, VACCINATION, AND SEROLOGIC STUDIES.

Gerald G. Long, Anthony M. Gallina, John R. Gorham, Animal Disease Diagnostic Laboratory, School of Veterinary Medicine, Purdue University, West Lafayette, IN 47907, USA.

Fulminating pneumonia was produced in mink by the intratracheal administration of Pseudomonas aeruginosa. The sequence of pulmonary lesions was focal inflammation, focal necrosis, and widespread inflammation and necrosis. Secondary lesions of peracute hemorrhage and necrosis were the result of bacerial spread via the airways. Invasion of vessels walls by P aeruginosa was a terminal event and was secondary to bacillary invasion and necrosis of adjacent tissues. Regional (lymphatic) and systemic spread of bacteria followed the development of pulmonary lesions, but there was little morphologic evidence of tissue damage in other organs. Immunofluorscence studies showed that P aeruginosa antigen was dispersed within pulmonary cells and was free in the lung parenchyma. Mink surviving beyond postinfection hour 60 had a macrophage infiltration into limited pulmonary lesions.

A vaccine trial was conducted with P aeruginosa lipopolysaccharides (LPS) used as antigen, and an enzymelinked immunosorbent assay was used to detect antibody. Antibody was detected in mink after vaccination wit LPS or natural exposure. Mink with antibody to LPS, from vaccination or naturally acquired, were resistant to experimental infection.

SCIENTIFUR code: 9-M.
Am. J. Vet. Res., Vol. 41, no. 10, 1720-1725, 1980.
3 tables, 4 figs., 28 references. Authors' summary.

COMPARISON OF CANINE PARVOVIRUS WITH MINK ENTERITIS VIRUS BY RESTRICTION SITE MAPPING.

Gary K. McMaster, Jon-Duri Tratschin, Günter Siegl, Dept. of Virology, Swiss Institute for Experimental Cancer Research, 1066 Epalinges s/Lausanne, Switzerland.

The genomes of canine parvovirus and mink enteritis virus were compared by restriction enzyme analysis of their replicative-form DNAs. Of 79 mapped sites, 68, or 86%, were found to be common for both types of DNA, indicating that canine parvovirus and mink enteritis virus are closely related viruses. Whether they envolved from a common precursor or whether canine parvovirus is derived from mink enteritis virus, however, cannot be deducted from our present data.

SCIENTIFUR code: 9-M.
Journal of Virology, Vol. 38, No.1, 368-371. 1981.
2 figs., 23 references. Authors' abstract.

COMPARISON OF THE EFFECTS OF A MULTI-COMPONENT VACCINE AND A FORMALIN-KILLED CELL VACCINE ON PROTECTION AGAINST ENZOOTIC OF HEMORRHAGIC PNEUMONIA DUE TO PSEUDOMONAS AERUGINOSA IN MINK.

Chiyoji Abe, J. Yuzuru Homma, Hiroshi Noda, Ryo Yanagawa, Kazuyuki Morihara, Hiroshige Tsuzuki, Satoshi Takeuchi, Dept. of Bacteriology, Inst. of Medical Science, University of Tokyo, Minato-ku, Tokyo 108, Japan.

Effectiveness of a multi-component vaccine consisting of the common antigen (OEP) derived from Pseudomonas aeruginosa strain N 10 (serotype E) and toxoids of protease and elastase was compared with that of formalin-killed celles of strain N 10 on protection against enzootic of hemorrhagic pneumonia due to P. aeruginosa in mink.

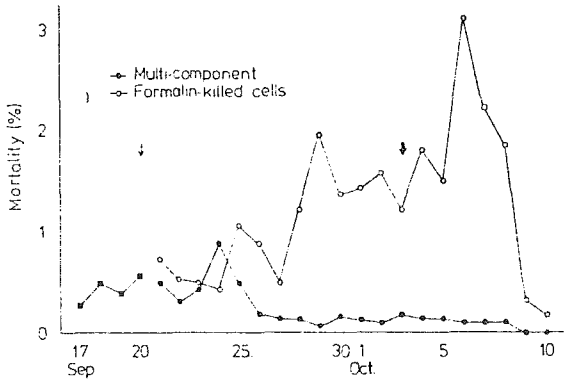


Fig. 1. Rate of death in farm A.
↓ One hundred μg of the multi-component vaccine or 10^9 cells of formalin-killed cell vaccine was administered to two groups of mink.
⇓ An additional vaccination of 100 μg of the multi-component vaccine was administered only to group B.
Mortality indicated as the ratios of the number of deaths to the total number of mink vaccinated.

One administration of the multi-component vaccine (100 μg each of OEP, protease toxoid and elastase toxoid) clearly prevented enzootic of hemorrhagic pneumonia due to P. aeruginosa (serotype G) in mink, while a vaccination of formalin-killed celles was much less effective in preventing an epidemic.

The difference in mortality rates between two vaccines was remarkable.

SCIENTIFUR code: 9-M.

Zbl. Bakt. Hyg., I. Abt. Orig. A 249, 413-417, 1981.
1 fig., 1 table, 18 references. Authors' summary.
In English with summaries in English and German.

INTESTINAL ENTAMOEBA OF CAGED FUR-BEARING ANIMALS IN KAZAKHSTAN.

ЭНТАМЕБЫ КИШЕЧНИКА КЛЕТОЧНЫХ ПУШНЫХ ЗВЕРЕЙ В КАЗАХСТАНЕ

R. N. Appasov, M. T. Nazyrov, USSR.

Species of entamoeba found in the intestines of vulpes fulva, alopex lagopus, mustela lutreola and myocastor coypus from various animal farms in the Kazakh SSR are described and figured. These species, which were differentiated not only by their morphology (details are presented in a comparative table with E. histolytica) but also by their cultural properties, pathogenicity and host specificity, are considered as independent and are named, respectively, E. fulva N. sp., E. lagopus N. sp., E. lutreola N. sp. and E. Nutriae N. sp. attempts to infect 7 species of laboratory animals with these 4 protozoans showed that only kittens and hamsters were susceptible to all 4, but pathological changes and clinical disease were caused in kittens only by 3 (E. fulva, E. lagopus and E. lutreola) and in hamsters only by E. lutreola. Citellus undulatus was also susceptible to infection with E. lutreola and kittens and hamsters were susceptible to infection with entamoeba from C. undulatus. Cross-infection tests with the 4 new species also gave negative results. The prevalence of infection in the various farms investigated averaged 16.0 percent in V. fulva, 13.0 percent in A. lagopus, 20.2 percent in M. lutreola and 16.5 percent in M. coypus. Climatic, age and seasonal variations were also recorded. In the environment, the vegetative forms of these parasites survived for 30 min to 2 days at temperatures of 27 to 41 deg C. cysts survived longer, those of E. fulva for 10 to 61 days.

SCIENTIFUR code: 9-F-O.

Trudy Instituta Zoologii Akademii Nauk Kazakhsoi SSR, 37, 107-123, 1977.

5 tables, 6 figs., 15 references. CAB-abstract.

In Russian.

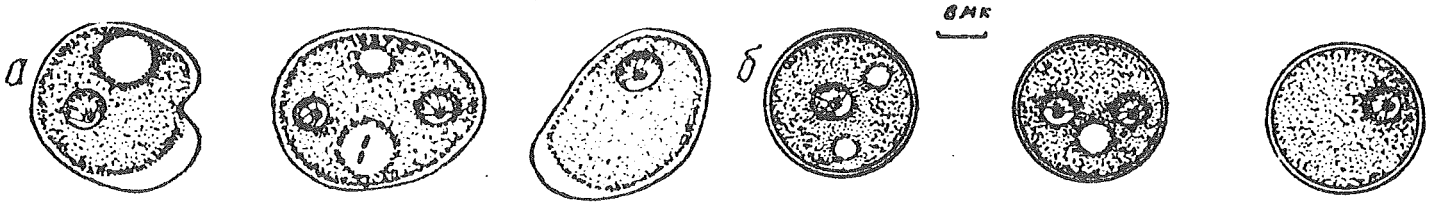


Рис. 3. *Entamoeba lagopus* песцов: *а* — вегетативные формы; *б* — цисты

DERMATOMYCOSIS OF CHINCHILLA CAUSED BY TRICHOPHYTON MENTAGROPHYTES.

(A csincsilla Trichophytonmentagrophytes okozta börgombásodása).

Z. Horváth, M. Kéri, Landler J.u. 2, 1400 Budapest, Hungary.

The examinations were carried out on a large-scale chinchilla farm on approximately 5000 chinchillas. The cutaneous lesions were caused by T. mentagrophytes.

The omission of the treatment of dermatomycosis may result in the affection of 10 to 12% of the chinchillas. Griseofulvin in a dose of 3 mg/day pro animal could be applied neither in the drinking-water nor in the feed because of its taste-damaging influence. For therapeutical and prophylactic vaccination, the following preparations were tested: Trichosan (PHYLAXIA), a fungus extract for human use and TFL-130, a lyophilized vaccine against ringworm of cattle containing live germs. The repeated application of the former vaccine gave a satisfactory result but its use is highly labour requiring. The latter vaccine produced dermatomycosis by ifself on a few animals. Studies are in progress on this phenomenon.

For the local treatment of dermatomycosis, Canesten ointment (EGYT) proved to be efficacious, its disadvantage is however, the high labour requirement.

The simultaneous application of Canesten ointment and Mycosid or Mikofen powder in the sand bath and the effect of klotrimazol were also studied. Klotrimazol powder had a prominent antimycotic effect also in the sand bath. Mycosid and Mikofen applied in the sand bath could only diminish the number of the necessary local treatments.

Though on large-scale farms the occurrence of dermatomycosis can be diminished by favourable environmental hygiene, it can not ensure in itself the control or eradication of the disease.

SCIENTIFUR code: 9-0.
Magyar Állatorvosok Lapja 1980, 35 (9), 592-601.
7 tables, 4 figs., 8 references. Authors' summary.
In Hungarian with summaries in Hungarian, Russian, English and German.

YERSINIA ENTEROCOLITICA
EXPERIMENTAL PATHOGENICITY FOR CHINCHILLA.

M. Raevuori, S.M. Harvey, M.J. Pickett, Dept. of Food Hygiene, State Veterinary Medical Institute, P.O. Box 368, 00101 Helsinki 10, Finland.

An intragastric inoculation of approx. 2×10^{10} Yersinia enterocolitica cells killed chinchillas in three days in the case of four strains out of six tested. Because of the sensitivity of chinchillas to this bacterium, the test is useful for the evaluation of the virulence and invasiveness of Y. enterocolitica isolates. This animal model could also be used for studies on the mechanism of the infection.

SCIENTIFUR code: 9-O.
Acta vet. Scand. 1979, 20, 82-91.
1 table, 27 references. Authors' abstract.
In English with summaries in English and Swedish.

AUJESZKY'S DISEASE IN DOG, CAT AND FOX.

(Ein Beitrag zur Diagnostik der Aujeszkyschen Krankheit bei Carnivoren).

M. Rosenbruch, G. Schaible, H.-A. Schoon, L.-Cl. Schulz, Tierärztliche Hochschule Hannover, Bischofsholer Damm 15, Inst. für Pathologie, 3000 Hannover 1.

Of 43 cases diagnosed pm between 1975 and 1980, 30 were in dogs, 12 in cats and one in a silver fox; 21 cases were confirmed by virus isolation. Common pm lesions were pulmonary dedema with interstitial pneumonia, blood stasis of the liver, lung and kidneys, hyperaemia of the stomach with no or abnormal contents, and dedema of subcutis, and lymph nodes. Salient CNS lesions were non-purulent meningitis, proliferation of flial cells, and encephalitis with perivascular double-layer mononuclear cell infiltration.

SCIENTIFUR code: 9-F

Practische Tierärzt, 62 (5), 389-392, 394, 1981.
2 tables, 5 figs., 24 references. CAB-abstract.
In German.

NATURAL LA CROSSE VIRUS INFECTION IN THE RED FOX (VULPES FULVA), GRAY FOX (UROCYON CINEREOARGENTEUS), RACCOON (PROCYON LOTOR), AND OPOSSUM (DIDELPHIS VIRGINIANA).

T.E. Amundson, T.M. Yuill, Dept. of Veterinary Science, Univ. of Wisconsin-Madison, 2655 Linden Drive, Madison, Wisconsin 53706, USA.

Natural infection of sentinel red foxes (Vulpes fulva) and free-ranging red foxes, gray foxes (Urocyon cinereoargenteus) and raccoons (Procyon lotor) with La Crosse (LAC) virus was demonstrated. One isolage of LAC virus was obtained from a sentinel red fox in an enzootic area. The viremia titer of the LAC virus-infected red fox was above the threshold of infection for Aedes triseriatus mosquitoes. Antibody responses were measured by the microneutralization test employing four California group viruses: LAC, snowshoe hare, trivittatus, and Jamestown Canyon. Four of six sentinel red foxes developed LAC virus neutralizing antibody. Antibody titers peaked between days 7 and 34 and were stille detectable by day 345 post-infection. Homologous LAC virus antibody titers were consistently 4-fold or greater than heterologous titers. Serological evidence for natural LAC virus infection was demonstrated in 33 of 57 (58%) free-ranging red foxes, 18 of 32 (57%) gray foxes, and 4 of 16 (25%) raccoons. Antibody titers were comparable in free-ranging foxes infected naturally and those infected experimentally by mosquito bite. The prevalence of infection was significantly different ($P < 0.001$) for foxes trapped in three distinct areas within the enzootic region. Rates of infection in foxes by area coincided with LAC virus antibody prevalence observed in free-ranging chipmunks and with reported case of human LAC encephalitis in Wisconsin.

SCIENTIFUR code: 9-F.
Am. J. of Trophical Med. and Hygiene, 30, 3, 706-714, 1981.
4 tables, 2 figs., 35 references. Authors' abstract.

ENCEPHALITOZOONOSIS IN THE BLUE FOX - MORPHOLOGICAL IDENTIFICATION OF THE PARASITE.

Svein Fr. Mohn, Thor Landsverk, Knut Nordstoga, Natl. Vet. Inst.,
P.O. Box 8156 Dep., Oslo 1, Norway.

Microsporidian organisms causing great losses among young blue foxes (Alopex lagopus) were isolated and propagated in monolayer cell cultures and examined by transmission- and scanning electron microscopy. The parasites was found to fullfil the criteria set up for the genus Encephalitozoon and the ultrastructural findings indicated that the parasites was morphologically identical to Encephalitozoon cuniculi previously isolated from some other mammalian species. Terminal vesicles on the extruded polar filaments seen on scanning electron micrographs were discussed to be similar formation as described for the microsporidian Nosema michaelis.

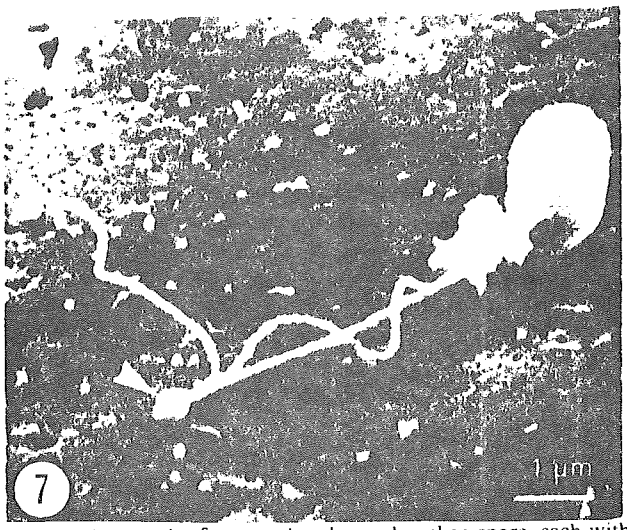
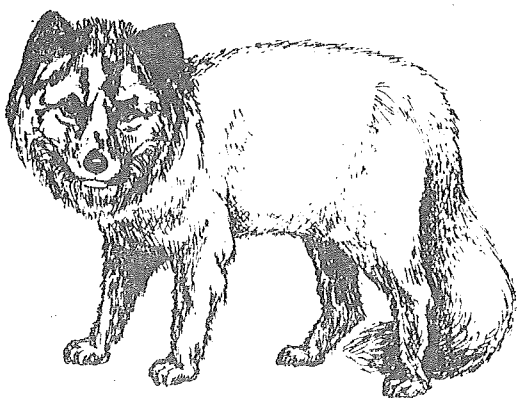


Fig. 7. Scanning electron micrograph of one oval and one shrunken spore, each with an extruded polar filament. At the end of one of the filaments there is a vesicle formation (arrow). × 10000.

SCIENTIFUR code: 9-F.
Acta path. microbiol. scand., Sect. B, 89, 117-122, 1981.
10 figs., 17 references. Authors' abstract.



STUDIES ON A CARRIER STATE OF SALMONELLA IN FOXES.

(Badania nad nosicielstwem paleczek rodzaju Salmonella u lisów).

A. Kopczewski, G. Chyliński, ul. Kartuska 249, 80-125 Gdańsk, Poland.

On the basis of bacteriological examinations of rectal swabs and serological examination of blood by a tube agglutination method, a carrier state of Salmonella in foxes was diagnostised. In 16 (94.11%) out of 17 farms salmonellae were isolated, but only in the animals from three farms positive serological reactions were found. Out of 863 samples Salmonellae were isolated in 189 cases (21.9%); among them S. typhimurium - 118 (13.87%), S. choleraesuis 46 (5.33%) and S. dublin 25 (2.89%). The obtained results point to a great usefulness of bacteriological examinations of rectal swabs for the determination of a carrier state of Salmonella. Serological examinations of blood are almost useless for this purpose in foxes.

SCIENTIFUR code: 9-F.
Medycyna Weterynaryjna (Poland), Vol. 37, 3, 176-177, 1981.
15 references. Authors' summary.
In Polish with summaries in English and Russian.

A CASE OF DIROFILARIASIS IN WILD FOX, WITH SPECIAL REFERENCE TO LESIONS IN THE PULMONARY ARTERIAL SYSTEM.

キツネの Dirofilariasis の1例，とくに肺動脈系の病変について

Hirozo Ashizawa, Giichi Kugi, Dai Nosaka, Susumu Tateyama, Rihachi Kurogi, Lab. of Vet. Path., Fac. of Agric., Miyazaki Univ., Funatsuka 3-210, Miyazaki 880, Japan.

Few papers have been published in Japan to report dirofilariasis in foxes. In February 14, 1979, autopsy was conducted on a wild fox,

Vulpes vulpes japonica (adult male), caught in Oita Prefecture. As a result, the right ventricle of the heart contained several worms of dirofilaria immitis. In this animal the pulmonary arterial system (the pulmonary artery and its branches running in the lung) harbored a relatively few worms. Nevertheless, the vascular intima was so hyperplastic that the vas cular lumen became remarkably narrow or was rather obstructed. These changes could be observed by the naked eye. Histological examination revealed very outstanding proliferous endoangiitis which was so severy that the site of proliferation (composed of connective tissue) was collicular, villous, or papillary in shape. Moreover, mild cellular infiltration was noticed at the site of proliferation of the intima.

As a result of intense lesions of the intima, blood vessels increased its size (or the vascular caliber increased and the vascular wall thickened). They were also deformed remarkably. Their cross section was not round or elleptic, but was mostly irregular in shape. With the increase in size and thickness of blood vessels, the smoothmuscle layer of the media was prolonged and thinned. It split and was disintegrated in one area and another to disappear eventually. In some cases, however, a part of this layer was thickened restrictedly in accordance with the deformation of blood vessels. Elastic fibers underwent relatively mild changes, dissociated to some extent, and were degenerative. Particularly, the media was thickened distinctly in arterioles (or so-called muscular branches). Thrombosis (with thrombi almost completely organized) was noticed in some parts of the pulmonary arterial system.

In short, the pathological findings of the pulmonary arterial system in the present investigation were almost identical with dogs reported by many previous authors. But in the fox studied, it can be regarded as characteristic that proliferous endoangiitis was especially marked and that the proliferous portion mostly presented a villous (or papillary) appearance.

Furthermore, microfilariae were found in blood capillaries of the alveolar wall in this fox.

SCIENTIFUR code: 9-F.
Bull. of the Fac. of Agric., Miyazaki University, 27, 2, 243-249, 1980.
6 figs., 34 references. Authors' summary.
In Japanese with English summary.

TREATMENT OF SARCOPTIC MANGE IN ARCTIC (BLUE) FOX.

(Behandling av skabb hos blårev).

Gunnar Berge, Norges Veterinærhøgskole, Postboks 8146-Dep., Oslo 1, Norge.

Bromocyclen and HCH were both effective against sarcoptic mange in blue foxes, though two severly infected foxes died while receiving HCH treatment, suggesting that it could be toxic. Parenteral or oral treatment with closantel was effective in only three of nine animals. Fenchlorfos tablets given by mouth daily for five weeks gave a very good effect in two and good effect in three of six animals.

SCIENTIFUR code: 9-F.
4 tables, 13 references. CAB-abstract.
Norsk Veterinærtidsskrift, 93, 6, 413-419, 1981.
In Norweigian with summary in German.

PAPILLARY EPICARDIAL MESOTHELIOMAS ASSOCIATED WITH ENCEPHALITOZOONOSIS IN BLUE FOXES.

K. Nordstoga, T. Landsverk, Dept. of Pathology, Vet. College of Norway, P.O. Box 8146, Dep., Oslo 1, Norway.

Epicardial growths with the appearance of papillomatous neoplasms were found in 8 of about 170 young Alopex lagopus in areas adjacent to coronary arteries affected by encephalitozoon cunculi.

Fig. 1: Scanning electron micrograph of papillary-polypous epicardial lesions; unchanged epicardial surface below.

The parasites were always found outside the tumourous lesions which probably arose in response to chronic inflammatory changes of the adjacent coronary vasculature, and developed later into growths corresponding to mesotheliomas.

SCIENTIFUR code: 9-F.
Veterinary Pathology, 18, 4, 564-566, 1981.
3 figs., 13 references. CAB-abstract.

A CASE OF PARAGONIMIASIS IN JAPANESE FOX, WITH SPECIAL REFERENCE TO THE PATHOLOGICAL FEATURES OF THE LUNGS.

キツネの肺吸虫症の1例

—とくに肺の病理学的所見について—

Hirozo Ashizawa, Giichi Kugi, Dai Nosaka, Susumu Tateyama,
Miyazaki University, Faculty of Agriculture, Japan.

Paragonimus infection was observed in one Japanese fox (Vulpes vulpes japonica) (adult male) captured during the hunting season in the suburbs of Oita City in 1979 (the fluke was identified as Paragonimus westermani by Dr. Ichiro Miyazaki). Since natural infection of flukes in wild fox is rarely observed in Japan, this case is considered valuable.

Macroscopical examination disclosed that a total of 25 flukes were parasitic in 13 cysts; that is, 8 flukes in 4 worm-cysts in the anterior lobe of the right lung, 2 in 1 worm-cyst in the median lobe of the right lung, 9 in 5 cysts in the posterior lobe of the right lung, and 6 in 3 cysts in the posterior lobe of the left lung. In addition, 1 fluke had penetrated into the pulmonary tissue and 1 had invaded into the bronchial lumen of the anterior lobe of right lung. A worm-cyst not containing flukes was also observed in the accessory lobe.

Histological studies revealed that the pathological features on the worm-cysts and on the pulmonary parenchyma around the worm-cyst were almost identical to the general description by previous workers in pathology of paragonimiasis. However, it is noteworthy that the wall of cyst and pulmonary tissue and pulmonary pleura around the worm-cyst

appeared many egges in the present case. That is, in these parts, either several eggs were found in several places in a scattered manner or a large number of eggs were gathered together. Where the eggs were gathered together, nodules caused by the eggs were also observed. Furthermore, 10 foci of accumulated eggs which were from the size of a millet grain to the little finger head were observed in each pulmonary lobe (except for the median lobe of the right lung). The fact that a large number of eggs were observed in the lung specimen is considered to be the result of vigorous egg-laying capacity of the flukes. These findings indicate that the fox is a suitable host for the Paragonimus westermani.

Furthermore, in this fox, Dirofilaria immitis was parasitic on the pulmonary artery system of the lungs, and the vascular lesion was considerably remarkable.

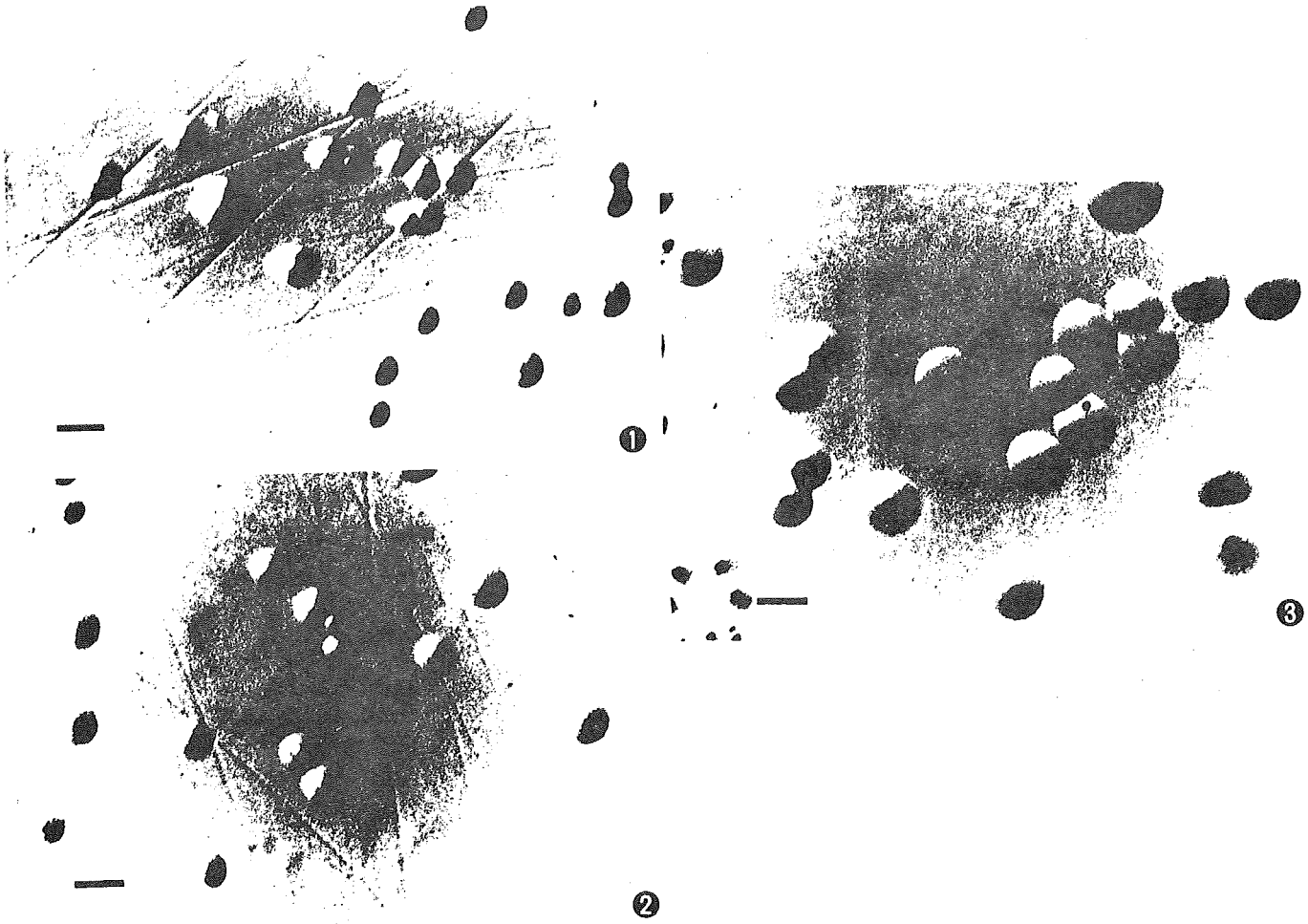
SCIENTIFUR code: 9-F.
Bull. of the Fac. of Agriculture - Miyazaki University, Japan, Vol. 27, 1, 47-53. 1980.
6 figs., 14 references. Authors' summary.
In Japanese with summary in English.

ISOLATION OF MYCOPLASMAS FROM RACCOON DOG (NYCTEREUTES PROCYONOIDES VIVERRINUS), FOX (VULPES VULPES JAPONICA) AND JAPANESE BADGER (MELES MELES ANAKUMA).

Yasuo Kanamoto, Hitoshi Kotani, Manabu Ogata, Yukio Fukumoto,
Div. of Microbiology, Hiroshima Prefectural Institute of Public Health, Ujina-Kanda 1-5-70, Minami-ku, Hiroshima 734, Japan.

Mycoplasmas were isolated from seven raccoon dogs, a fox and a Japanese badger. The animals which were apparently healthy, had been accidently captured in Hiroshima prefecture from April to June 1979 and were kept in a zoological Park. A strain isolated from a fox was identified as mycoplasma molare.

This is the first report of the isolation of M. molare from a fox and of mycoplasma species from a raccoon dog and Japanese badger.



Explanation of Figures

Figures show the colonies of *Mycoplasma* strains LM2, FM1 and AGM1 isolated from raccoon dog, fox and Japanese badger, respectively, grown on the solid medium. The photomicrographs were taken after the cultures were incubated at 37°C for 2 days.

Fig. 1. Strain LM2 isolated from raccoon dog.
Fig. 2. Strain FM1 isolated from fox.
Fig. 3. Strain AGM1 isolated from Japanese badger.
Bar=200 μm.

SCIENTIFUR code: 9-0.
Japanese Journ. of Vet. Science, 43, 2, 267-271. 1981
3 tables, 3 figs., 10 references. CAB-abstract.
In English with abstract in Japanese.

ON HOOKWORMS FROM RACCOON DOGS AND FOXES, WITH A NOTE ON SOME RELATED SPECIES.

Ryoji Noda, Giiti Kugi, Lab. of Vet. Med., Coll. og Agriculture, and Veterinary Practioner, Beppu City, Oita Prefecture, Japan.

Parasitological survey was undertaken on raccoon dogs and foxes from the northern part of Kyusyu and the neighboring areas. Ancylostoma kusimaense (Nagayosi, 1955), and Arhrostoma miyazakiense (Nagayosi, 1955) Yoshida and Arizone 1976) were found from raccoon dogs, and the latter species from foxes, representing a new host record. Some observations were made on the morphology, especially that of bursa copulatrix, of A. miyazakiense and some related species. The absence of incision on the median line of the ventral part of bursa copulatrix is considered to be an important character of the genus Arthrostoma (Cameron 1927). A key to the species of the genus is presented.

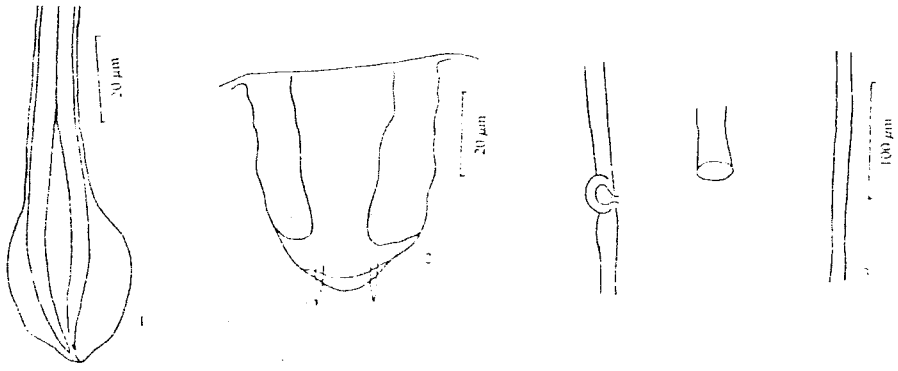


Fig. 1-3. *Arthrostoma miyazakiense*. 1 Tips of spicules. 2 Genital cone, ventral view. 3 Vulva and vulvar papilla, ventral view (see text).

SCIENTIFUR code: 9-F.
Bull. Univ. Osaka Pref., Ser. B. Vol. 32, 63-68, 1980.
2 tables, 12 figs., 14 references. Authors' abstract.
In English.

IMMUNIZATION OF FERRETS AGAINST DIROFILARIA IMMITIS BY MEANS OF CHEMICALLY ABBREVIATED INFECTIONS.

Lyndia Slayton Blair, W.C. Campbell, Merch Institute for Therapeutic Research, P.O. Box 2000 Rahway, NJ 07065, USA.

Ferrets were exposed to two successive inoculations with 30 third-stage larvae of the canine heartworm Dirofilaria immitis, the inoculations being approximately 5 months apart. Each infection was terminated by ivermectin therapy approximately 2 months after inoculation. The ferrets were challenged with 30 larvae 3 weeks after the termination of the second infection, and were necropsied approximately 6 months after challenge. Of the four ferrets that survived this protracted experimentation, two were entirely free of heartworm while the other two had only a single female worm each. In contrast, 14 control ferrets that had not been immunized (four of which had been given ivermectin doses) were all infected at necropsy, yielding a mean of 6.6 worms per ferret.

SCIENTIFUR code: 9-0.
Parasite Immunology, 3, 143-147, 1981.
1 table, 15 references. Authors' summary.

IMMUNITY TO INFLUENZA IN FERRETS. XIV: COMPARATIVE IMMUNITY FOLLOWING INFECTION OR IMMUNIZATION WITH LIVE OR INACTIVATED VACCINE.

R.J. Fenton, A. Clark, C.W. Potter, Cancer Research Unit, Cell Biology, Glaxo Group Research Ltd., Greenford, Middlesex, England.

Immunization by live influenza virus induced a greater protective effect against subsequent challenge by the homologous virus than by the corresponding killed virus vaccine. Furthermore, tracheas excised from 11-day and 28-day influenza-virus-infected ferrets were more resistant to reinfection than tracheas excised from ferrets immunized by killed influenza vaccine, despite equivalent serum antibody titres at these times.

Histological examination of trachea sections taken from vaccinated and virus-infected animals showed an increased cellular inflammatory infiltrate in the latter at Days 11 and 28 after immunization. The amount of IgG detected in these sections, measured by a fluorescent antibody technique, correlated with the extent of cellular infiltration, the fluorescence being both intra- and extracellular for sections from virus-infected animals, but only extracellular in sections from Day-28 vaccinated animals. In contrast there was little or no cellular infiltration into lung tissues, the levels of IgG detected being comparable to those in sections taken from control animals.

These results provide further evidence that live influenza vaccines induce local antibody in the upper respiratory tract of ferrets, in contrast to killed influenza vaccines, and that this local induction may play a significant role in the greater protective efficacy of live influenza vaccines.

SCIENTIFUR code: 9-O.
Br. J. exp. Path., 62, 297307, 1981.
3 tables, 4 figs., 25 references. Authors' summary.

VIRURIA IN DOGS INFECTED WITH CANINE DISTEMPER.

D.T. Shen, J.R. Gorham, V. Pedersen, Agricultural Research Service, USDA and Dept. of Microbiology & Pathology, 337 Veterinary Science Building, Washington State University, Pullman, Washington 99164, USA.

Our experiments confirm earlier reports that viruria occurs in distemper-infected dogs and ferrets. Demonstrable viruria appears by Day 6 and persists through Day 22 after exposure in subclinically infected dogs. Nasal exudates from dogs with canine distemper virus (CDV) were infectious for a longer period than was urine. Shedding of attenuated-vaccine virus from the urine of ferrets was not demonstrated. Virulent

virus was not detected in the urine of vaccinated ferrets after challenge with virulent virus.

SCIENTIFUR code: 9-O.
VM/SAC, Vol. 76, 8, 1175-1177, 1981. Authors' abstract.
5 tables, 3 references.

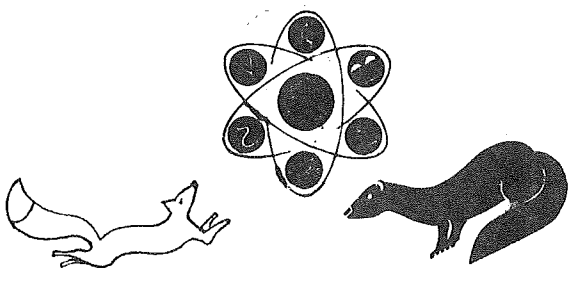
THE EFFECT OF IMMUNES ON THE SPREAD OF DISTEMPER IN SMALL FERRET POPULATIONS.

Douglas Kelker, Dept. of Mathematics, University of Alberta, Edmonton, Alberta, Canada T6G 2G1.

The rate of distemper virus (DV)-immune ferrets in inhibiting the spread of DV in small closed populations of individually caged ferrets was studied. A random walk epedimic simulation and a "Poisson" epedemic simulation were used in conjunction with actual experimental outbreaks. The results of the simulation and the experimental outbreaks are in agreement.

After the DV became established in a totally susceptible population, vaccination of 50 - 90% of the survivors failed to stop the outbreak. Conversely, it is difficult to start an outbreak if 70% or more of the population is immune at the time DV is introduced.

SCIENTIFUR code: 9-O.
Comput. Biol. Med., Vol. 10, 53-60, 1980.
1 fig., 3 tables, 8 references. Author's abstract.



COMMUNICATION

CONGRESS CONCERNING GENETIC AND REPRODUCTION IN FUR BEARING ANIMALS.

Pietrozawodsk, 23-26th June 1980.

Professor W.A. Beriestow

GJ/EA

23 July 1981.

Dear professor W.A.Beriestow

From professor J. Maciejowski, Poland, I have been informed that a congress in genetic and reproduction concerning fur bearing animals has been held in Pietrozawodsk on 23-26 June this year.

As far I am informed there was given many important reports during the congress, and these reports are printed in a proceeding.

As editor of SCIENTIFUR - of which journal I enclose the latest issue for your information - I should be interested in receiving the proceedings from the congress, so that we shall be able to bring abstracts of the reports in SCIENTIFUR.

I hope you will be able to send the proceedings to us, but we are interested in all kinds of scientific reports concering fur bearing animals, so I should be glad if you can provide me with other earlier reports and, of course, reports and abstracts in future.

Hoping for future cooperation I remain

yours sincerely

Gunnar Jørgensen

АДАПТАЦИОННЫЕ
РЕАКЦИИ
ПУШНЫХ ЗВЕРЕЙ

ОРГКОМИТЕТ

III Всесоюзной научной конференции по биологии и патологии пушных зверей

III ПЕТРОЗАВОДСК·1981 КОНФЕРЕНЦИЯ

185610 Петрозаводск,
Пушкинская, 11
Институт биологии
Карельского филиала
АН СССР

тел. 7-61-75
7-30-15

Viacheslav A. Berestov
Honoured Scientist of the Karelian ASSR,
Doctor of Veterinary Science, Professor,
Chief of the Laboratory of Physiology of Fur-Bearing
Animals, the Institute of Biology of the Karelian
Branch of the Academy of Science of the USSR
11 Pushkinskaya St.
Petrozavodsk USSR
Tel. 7-61-75

Dear professor Gunnar Jørgensen

From professor W.A.Berestow, I send the proceedings of the congress in genetic and reproduction concerning fur bearing animals which was held in Petrozawodsk on23-26 June this year.

Thank you for your proposal to future cooperation. I hope I will send an article for your journal at the end of the year.

With best wishes

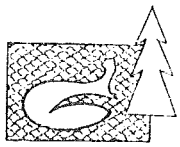
sincerely yours

W.A.Berestow

CONGRESS CONCERNING GENETIC AND REPRODUCTION
IN FUR BEARING ANIMALS.
Pietrozawodsk, 23–26th June 1980.

КАРЕЛЬСКИЙ ФИЛИАЛ АН СССР
ИНСТИТУТ БИОЛОГИИ

АДАПТАЦИОННЫЕ РЕАКЦИИ ПУШНЫХ ЗВЕРЕЙ



ПЕТРОЗАВОДСК 1980

СОДЕРЖАНИЕ

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профессор *В. А. БЕРЕСТОВ*

CONGRESS CONCERNING GENETIC AND REPRODUCTION IN FUR BEARING ANIMALS.

Pietrozawodsk, 23-26th June 1980.

As it appears from the correspondance with professor W.A. Berestow we have received the proceedings from the congress in Pietrozawodsk.

The proceedings cover 18 scientific reports and are in 168 pages.

Everything is written in Russian, but thanks to Mrs. Eugenia Jørgensen, Danish Fur Breeders Association, and Mr. Asbjørn Brandt, this Institute, we have been able to translate the abstracts which are given on the following pages.

As far we can evaluate it is reports of high value and mainly dealing with basic problems.

Again the question comes up: How to get it translated into English to a reasonable price ?

We can provide interested readers with copies of the single reports - in Russian - , but we suggest that further information easiest can be obtained direct from professor W.A. Berestow, whose adress is written at the top of his letter.

Reactions of adaptation in fur bearing animals. Inst. of Biol., Karelian, Petrozawodsk, AN USSR, 1980:

636.934.591.5.
PREVENTING STRESS IN MINK AND FOX WITH AMINOZIN.
V.A. Berestov, L.K. Kozevinkova, G.M. Malinina, V.M. Olejnik, N.N. Tjutjunik.
Supplementation of 1 and 10 mg aminozin/kg feed resulted in stress-alleviation in both foxes and minks. 10 mg aminozin/kg feed gave negative skin values.
30 references, pp 5-15.

636.934.591.5.
EVOLUTION AND SPECIFICITY OF THE MORPHOLOGICAL ADAPTATION OF FUNCTIONS IN FUR BEARING ANIMALS LIVING BOTH ON LAND AND IN WATER.
V.P. Galancev.
Fundamental organic changes as a result of adaptation in amphibian fur bearing animals of three different mammalian families is reviewed. Convergency of adaptation was shown between animals of phytogenetic distance. The similarities of adaptation to diving in water was stressed.
36 references, 2 figs., pp 15-22.

599.325.577.16 (470.22).
LIVER VITAMIN A, E, B1 AND B2 CONTENTS IN THE WHITE HARE LIVING IN KARELIEN.
V.V. Belkin, G.G. Petrova, S.P. Izotova, V.F. Rodjukova, G.A. Petrova.
The magnitude of the liver vitamin A, E, B1 and B2 contents are compared to the biology of the species and the nourishment. Correlation was determined between the vitamin contents in the liver, the amount in the feed and the animals physiological state.
7 references, pp 23-27.

636.934.2:577.153.
LIPID COMPOSITION OF LIVER LYSOMERS OF BLUE FOX.
E.J.Lizenko, O.M. Bolgova, S.D. Gurjanova.
Using differential centrifugation the lysosomal fraction was separated and analyzed via Thin layer Chromatography and Spectrofotometry for the lipid composition and acid phosphatase activity of normal and intestinal parasite infected foxes. There were no significant differences between the two groups.
16 references, pp 27-38.

636.934:591.111.1.
SERUM COMPLEMENT COMPONENTS IN BLOOD FROM FUR BEARING ANIMALS.
E.L. Melnik.
Preliminary investigations has been performed on blood serum from mink, fox, and wild muskrat in order to determine the relative activity of their complement components.
2 figs., 31 references, pp 38-49.

636.934:591.111.1.

THE ONTOGENETIC DEVELOPMENT OF LEUCOCYTE PHAGOCYTOSIS IN FARM REARED MINK AND BLUE FOX.

L.B. Uzenbaeva.

Mink anf fox leucocyte phagocytosis has been compared to investigations done on other carnivores. Furthermore the dynamics of reproduction and development of the phagocytes has been investigated in detail.

2 figs., 15 references, pp 49-57.

636.934.57:591.111.1.

THE BLOOD SERUM CONTENT AND DYNAMICS OF IMMUNOGLOBULIN G AND M IN MINK KITS.

K.E. Jakovleva.

A method was developed for determining mink immunoglobulin G and M, by modifying Mantzini's method using human antiserum. Immunoglobulin G and M concentrations were determined in mink kits 2-6 months old.

11 references, pp 57-61.

636.934+591.1:577.15.

ONTOGENETIC DEVELOPMENT IN SOME BLOOD SERUM ENZYMES IN MINK AND FOX.

L.K. Kozevnitcova, V.V. Ostaszkova, H.I. Meldo.

In both mink and fox the activity of alkaline phosphatase was low at weaning and reaching highest level at the age of 2 months.

The activity of cholinesterase reached a maximum at the age of 1 month, declining to a minimum in 2 month old animals. The acitivity of alkaline phosphatase and cholinesterase stabilizes at the age of 5-6 months and 2 months, respectively.

17 references, pp 62-67.

636.934+591.1:577.15.

BLOOD CORTICOSTEROID CONTENT OF MINK AND BLUE FOX.

V.M. Olejnik.

The blood corticosteroid content was determined to be dependent on seasonal variations and to a minor extend on age.

In the same season the hormone level of mink was higher than the level in the fox.

1 fig., 20 references. pp 67-73.

636.934.2:591.478.

MINERAL COMPOSITION OF BLUE FOX HAIR IN EARLY POSTNATAL DEVELOPMENT.

N.V. Tjurnina.

By determining the mineral composition in 10, 20, 30, and 60 days old fox cubs, certain growth dynamics were found in a number of macro and micro minerals.

3 figs., 4 references. pp 73-83.

636.934.2:591.478.

SEX DIMORPHISM IN HAIR MINERAL COMPOSITION OF BLUE FOX.

N.V. Tjurnina.

The hair K, Mg, Zn, Cu, and Fe composition was determined in hair from blue foxes. The results revealed differences regarding sex and type (long or short hair).

1 fig., 8 references. pp 84-89.

636.934.57:591.13.

THE INFLUENZE OF THE DIETARY COMPOSITION ON THE PHYSIOLOGICAL STATUS OF MINK.

N.N. Tjutjunik, V.A. Kulikov, H.I. Meldo.

Morphological and biochemical alternations due to changes in the feed composition were determined, e.g. the alterations were seen as fluctuations in the erythropoitic organs, activity of blood serum enzymes and unspecific immunity.

22 references. pp 89-104.

616-005.4:636.934.57.

THE THERAPEUTIC EFFECT OF CHLORAPHYLL IRON DERIVATIVES IN MINK.

V.A. Berestov, G.G. Petrova, N.N. Tjutjunik, S.P. Isotova.

Iron containing compounds derived from chloraphyll had a stimulating effect on erythropoietic organs in mink viz an increase in haemoglobin and erytrhocytes. Particular advantage was seen using 10 mg elemental iron/mink/day.

22 references, pp 105-118.

636.934:591.111.1.

THE INTENSITY OF SEROLOGICAL REACTIONS OF TOXOPLASMOSIS MINK.

V.D. Melnikov.

Using RAK and RFSK methods, 730 blue foxes and 288 minks from different farms in Karelien, were tested. After comparing the two methods, the RFSK was considered the most potent. Furthermore a linear correlation was found between the intensity of the serological reactions and the immunological status of the animal reflected in the magnitude of the process of infection.

11 references. pp 119-124.

636.934:691.111.1.

MATERIAL ON TOXOPLASMOSIS IN FUR ANIMALS.

V.D. Melnikov, A.P. Rodjukov, A.A. Berestov.

The serum protein composition of RSK and RFSK positive mink is presented. Despite the lack of clinical symptoms, significant alterations in the blood protein spectrum was revealed: In general there was a rise in the total protein content viz beta and gamma globulines and a lowering of the albumin and alpha globulin content in the blood serum of the animals.

5 references. pp 124-128.

634.934:616.995:591.69.

SAPROPHYTIC NEMATODES IN BLUE FOX LIVING ON KARELIAN FARMS.

L.V. Anikieva, V.S. Anikanova, A.V. Grabovik.

The nematodes isolated from the fox infestations could be classified in 25 species divided into 15 genera families and 5 orders families and 4 orders. The time of developmental initiation and the seasonal dynamics were determined.

5 figs., 13 references. pp 142-150.

619:611.717.636:934.

THE OSTEOLOGY OF THE FRONT LEG OG THE SILVER FOX.

M.I. Lebedov, A.N. Romanov.

Using X-ray pictures the osteology of the thoracic limb is described in some details.

11 figs., 3 references. pp 151-162.

LETTERS TO THE EDITOR

RAFAEL GARCIA ° MATA
RECONQUISTA 165 - Of. 316
1369 BUENOS AIRES
ARGENTINA

February 8, 1982

Mr. Gunnar Joergensen
SCIENTIFUR
48H Roskildevej
DK-3400 Hilleroed
Denmark

Dear Mr. Joergensen:

I want expressly congratulate you for editing SCIENTIFUR. It is better every issue. A very good help for the mink rancher and a most useful guide for researchers on fur animals.

A little note to support that opinion. I had had no opportunity to read in Journal of Heredity (1973, 64, 111-119) the work of L. C. Erway and S. E. Mitchell on: Prevention of otolith defect in pastel mink by manganese supplementation". The inclusion of the reference in the last issue of Scientifur, 5(4):42, was a nice surprise to me. For more tha fifteen years to now I was intrigued about the total disapearance of screw neck in the pastel minks of the farm I was in charge. Impossible for me to be proud of the work done, because I havent' done anything but avoiding to keep the extreme affected animals as breeders.

I have a better explanation now. Since the year 1966 we have been adding to the diet of minks 4 grams per ton of manganese sulfate to the ready mixed ration. We did that only as a prevention to avoid any kind of deficiency, never thinking, of course, about the influence on screw neck or otolith defect in pastel mink.

I take this opportunity to wish to you and all the members of the staff of Trollesminde, a very happy new year.

Sincerely yours

278W 100S
Valparaiso, Indiana 46383

February 9, 1982

Mr. Gunnar Jorgensen, Editor
SCIENTIFUR
48 H Roskildevej, DK-3400
Hilleroed, DENMARK

Dear Gunnar,

Enclosed please find my personal check for $65.00 for the 1982 edition of Scientifur. I assume that this will be equal to the 250 Dkr required.

The following is an abstract of a recent article that I wrote which you may wish to include in one of the future issues of SCIENTIFUR. I do feel that the data on kit weights at different ages and from different litter sizes may be of interest to your readers as well as the basic concept that ALL ranchers should give serious consideration to a objective, scientific weighing program throughout the ranch year for the annual evaluation of their genetic, ranch and nutrition management for the ranch year.

SCIENTIFIC GUIDELINES FOR MINK WEIGHING PROGRAMS

W. L. Leoschke, Valparaiso University
Valparaiso, Indiana 46383

Survey data is presented on dark and pastel kits at the Northwood Ranch, Cary, Illinois, 1971-75. Data on kit weights at 3, 14, 21, 28, 35 and 42 days of age is differentiated relative to litter size 5, 6, 7 & 8.

Specific recommendations relative to practical rancher selection of a 20 to 40 litter survey from May through November are made including factors of litter size, maternal history, sex, age and colorphase. Advantages are cited for obtaining survey weight data on these 20-40 litters at 4, 6, 18 and 26 weeks of age.

Fur Rancher Blue Book of Fur Farming 1982 Edition.

I appreciate deeply the fine work that you are doing with SCIENTIFUR. I know that I am not alone in this sense of full respect for what you have done for the world scientific community on fur animal research.

I am looking forward to 1984 and another wonderful session of the International Congress on Fur Animal Production.

Sincerely yours,

Bill

William L. Leoschke
MINK NUTRITION RESEARCH

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF ANIMAL SCIENCE
ANTHONY HALL

EAST LANSING · MICHIGAN · 48824

January 26, 1982

Gunnar Joergensen
NJF's Fur Animal Division
Scientifur
48H Roskildevej
DK-3400 Hilleroed
Denmark

Dear Gunnar

Just a note to accompany the enclosed copies of a couple of articles on mink and ferrets that you may wish to abstract in Scientifur.

I enjoyed the last issue of Scientifur very much. Keep up the good work.

Sincerely

Dick Aulerich

Richard J. Aulerich
Professor

RJA/cmd

Enclosures

scruffy fox mystery

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF FISH AND GAME

1300 COLLEGE ROAD
FAIRBANKS, ALASKA 99701

April 29, 1982

Dr. Gunnar Joergensen
48H Roskil - DEVEJ
DK - 3400
Hilleroed
DENMARK

Dear Dr. Joergensen:

I am the wildlife disease specialist for the State of Alaska. We have encountered a pelage problem in red foxes. I have contacted Dr. Gordon Finley regarding this matter. He suggested that I contact you to ask for your help.

Approximately 1 year ago, trappers in Alaska reported catching many foxes with very few guard hairs on their backs. Our Department purchased 20 such carcasses and pelts from trappers. We examined the animals and found no evidence of any ectoparasites nor any viral, bacterial, or fungal infections. We had hair samples analyzed for various minerals and found that calcium and magnesium levels were significantly elevated when compared to hair samples taken from normal pelts. We began to suspect that the abnormality was a result of a nutritional or hormonal imbalance. I have contacted several researchers in the United States for assistance on this problem. Although they have been helpful, they have been unable to provide us with conclusive answers to our questions. We had considered conducting a feeding trial to try to produce this same condition but decided against this approach. We were lucky enough to obtain three live foxes with the absence of guard hairs. After nearly 3 months in captivity, these animals have shown no improvement in the fur problem. I am enclosing a copy of a newspaper article which describes the matter in more detail.

I would greatly appreciate any advice or suggestions you might wish to make on this matter. Thank you for your consideration.

Sincerely,

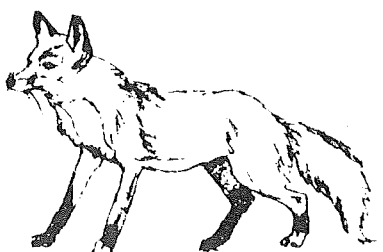
Randall L. Zarnke

Randall L. Zarnke, Ph.D.
Game Biologist
Division of Game
(907) 452-1531

Enclosure

Readers who can help Dr. Zarnke - and the foxes in Alaska - please, take direct contact to Dr. Zarnke.

The Editor.



11-K10LH

Nutrition suspected in scruffy fox mystery

By FRED PRATT
Staff Writer

While Fairbanksans may be spending many dollars on mineral supplements for their diets, it appears local foxes are getting too much calcium and magnesium for their own good.

That's the preliminary indication from nine months of studies of some scruffy looking fox pelts brought to the local Fish and Game office by puzzled trappers. The research will continue this winter, according to Randy Zarnke, a local game biologist who investigates diseases and parasites in wild animals.

"The problem was first brought to our attention early in January when one of the biologists here who does some trapping brought in a fox pelt that had guard hairs missing over large areas," Zarnke said. Local trappers brought in several more animals, all with guard hairs gone from the front shoulders, the middle of the back and the rear legs.

The foxes with the puzzling condition came from an area surrounding Fairbanks, and it has trappers concerned because it makes a $80 or $100 fox pelt almost worthless.

"There were several reports from people associated with the Interior Alaska Trappers Association, so we decided to investigate it a little further," Zarnke said. The investigation involved Zarnke, furbearer biologist Herb Melchior and University of Alaska veterinary science professor Robert Dieterich.

Foxes do rub off guard hairs late in the winter trapping season when they are shedding, Zarnke said, producing a condition trappers call "rub" that is most common in the rear shoulder. However, the researchers were pretty confident that was not the cause because the problem was encountered early in the season.

Loss of guard hair can also be caused by the fox freezing to the ground after it is trapped and then being ripped from the ice too quickly, but that is usually noticeable to the trapper at the time.

"We ruled out parasites," Zarnke said. "There is a parasite that can cause a condition like that—the variety of conditions called 'mange'—but it wasn't that."

They put samples of skin and hair in certain cultural media and generally ruled out a virus, fungal infection or bacteriological problem.

Some foxes, generally called "sampson foxes," have no guard hairs—apparently due to a genetic problem. Zharnke said the animals encountered here are not sampson foxes, although some trappers who have encountered the condition have taken to calling them "partial sampsons."

"We decided to take some hair samples from normal foxes and these 'affected' foxes, which we had when we purchased about 20 pelts and carcasses from the trappers," Zarnke said. The samples were sent to a commerical laboratory for analysis of about a dozen different elements.

"The results showed the hair of the affected foxes had elevated levels of calcium and magnesium," Zarnke reported. "We reviewed the literature, but found nothing about having too high a mineral content. Most everything written was about mineral deficiencies."

The investigation then entered a period where it proceded a bit erratically. Every few weeks somebody would come up with a good idea and it would be traced to a dead end. Then everyone would brainstorm for a while until a new direction was taken.

Still, just about everything pointed to a nutritional cause for the problem.

"We contacted a couple fur farms in the Midwestern states that have research firms as part of their operations, and one of them referred us to a fellow at Auburn University in Alabama," Zarnke recalled. "He listened intently and said it was really interesting to him."

It seems a gray fox in Alabama had been found with the same symptoms. A trapper captured one alive and brought it to the univesrity. The people at Auburn suspected a nutritional problem and began planning an experiment that would check out their ideas.

But during the two weeks they were designing the experiments, the fox was being fed on commerical dog food and it started to grow normal guard hairs.

That information made the researchers here think they were closer to the answer with a nutritional culprit.

Then a Fish and Game employee who raises sled dogs brought in a brochure from the Iams dog food company that gave a detailed analysis of the mineral content of its products. Zarnke contacted them and the head of the company's research unit expressed great interest.

"They volunteered to supply us with food for foxes if we decide to take some in for a feeding trial," Zarnke said. "We are considering now that we will capture some normal foxes and put them on an altered diet that had additional calcium and magnesium to normal dog food, then we would feed other foxes normal dog food."

"If we can, we would like to get a couple of foxes that show the absence of guard hairs and feed them normal dog food too," he added. "We have found a place where we can do the study, and we have found a trapper who said if one of us goes along with him to help him handle them he will be willing to help us capture some live foxes."

One can speculate widely about the cause of nutritional problems in foxes, Zarnke said.

The hare population is quite high now and one could expect that if hares are more abundant foxes are concentrating on them and getting more calcium and magnesium from them.

"That would be just a rough guess at what is going on," he stressed. Foxes eat a widely varied diet of small animals, some of which are not game animals and are not monitored very closely by Fish and Game researchers. Their food chain is quite complex.

Zarnke said the problem is probably not one that could affect the family dog.

Fox trapping season begins Nov. 1, Zarnke said, and he will probably run the trapper's line with him until the foxes necessary for the experiments are obtained.

Meanwhile, if anyone does encounter a balding fox and manages to get it in a bag and tied down to the sled for a ride home, Zarnke urged them to call him at the Fish and Game office.

Statens Husdyrbrugsforsøg
NATIONAL INSTITUTE OF ANIMAL SCIENCE

Forsøg med pelsdyr
RESEARCH IN FUR ANIMALS

Roskildevej 48 H
3400 Hillerød

Tel. (03) 26 14 10
Giro 2 08 56 07

Dr. Randall L. Zarnke, Ph.D.
State of Alaska
Dept. of Fish and Game
Div. of Game
1300 College Road
Fairbanks
Alaska 99701

REF. GJ/EA J. NR. DATO May 14, 1982.

Dear Dr. Zarnke

Thank you for your interesting letter and copy of a newspaper article which I received from you today.

I am sorry, but I am not able to help you direct with the problem, because I do not work with foxes, and I do not know about similar syndromes in mink.

Therefore, I today have sent copies of your letter and of the article to some fox experts in Scandinavia and asked them to try to help you with the problem.

The experts who will receive your material are:

Dr. Tapio Juokslahti
Finnish Fur Breeders Association
Helves Foundation
Martinkyläntie 48, Box 5
SF-01601 Vantaa 60, Finland,

phone: 358 (9)0-848822.

Dr. Hans Rimeslåtten
Agricultural University of Norway
Box 17, 1432 Ås-NLH, Norway

phone: 47 (0)2 - 940060. Local 638.

Dr. Arne Helgebostad
The veterinary college of Norway
Dept. of Fur bearing Animals
P.O. Box 8146
Oslo 1, Norway.

Furthermore, I will bring your material in SCIENTIFUR - which are read of experts in fur animal production in all pelt producing countries - and ask those who have an idea about the problem to take direct contact to you.

When you have got the answer of the problem, we will be very grateful to receive a report or at least an abstract of a possible report to bring in SCIENTIFUR of which you will recieve a copy of the issue publishing your material.

Yours sincerely

Gunnar Jørgensen

The 5th World Conference on Animal Production

Tokyo, Japan August 14–19, 1983

OFFICIAL MAILING ADDRESS:
THE 5TH WCAP CONFERENCE SECRETARIAT
c/o National Institute of Animal Industry
Tsukuba Norindanchi P.O. Box 5
Ibaraki 305, JAPAN

2nd Announcement

THE 5TH WORLD CONFERENCE ON ANIMAL PRODUCTION

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