Roe deer mortality in the Czech Republic

Pikula Jiri
University of Veterinary and Pharmaceutical Sciences Brno

Importance of roe deer *(Capreolus Capreolus)*

- Native game species
- Forest – steppe species found throughout the Czech Republic
- Economically one of the most important
  - Estimated spring population of 260 000 indiv.
  - Bag records amount to 110 000 indiv. a year
- Non-economical importance – component of natural ecosystems

Roe deer - haematology

- haemoglobin g/l — 145±25
- haematokrit — 40-53%
- erytrocytes T/l — 11.48±1.19
- leukocytes G/l — 0.82±0.37
  - neutrophils (segments) — 43.4±11.4
  - neutrophils (bands) — 1.0±0.7
  - lymfocytes — 40.6±3.3
  - monocytes — 0.3±0.3
  - eosinophils — 13.4±9.8
  - bazophils — 1.4±2.4

Charakteristics of roe deer

- teeth
  - » **0033**
  - » **3133**
- Distribution in Europe - China (besides Ireland, Mediteranean islands and northern parts of Scandinavia)
- Forest-steppe species

Roe deer - antlers

Roe deer - peruke

Roe deer – physiological data

- Body length 100-140 cm
- Height in withers 60-90 cm
- Body weight 17-23 kg
- Heat (oestrus) July / August
- Pregnancy 7 months (270-280 days)
- Season of births May-June
- Milk nutrition 2-3 months
- Milk consumption 0.8-1.5 l
- Number of fawns 1-2-4
- Birth weight 1.4-2 kg
- Females start reproduction at 7-8 months
- Males at 14 months

Roe deer – digestive apparatus and nutrition

- Cervidae lack the gall bladder
- Species selecting concentrated, easily digestible feeds rich in energy
- Feeding cycle 8-12 times per day
- Capacity and structure of GIT (e.g. Forestomachs) is subject to seasonal changes (mucosa is diminished in winter, so the ability to use feed is altered)
- Bacterial species active in the metabolism of sugars and proteins prevail in the ruminal microflora
- Only one species of ruminal protozoan ciliates **Entodinium Dubari**

Orphaned fawns in captivity

- Low chances of survival for animals under 1300 g
- Supporting infusion therapy (physiological saline + glucose)
- Milk composition (ashes 23%, protein 10%, fat 6%, lactose 4%)
- replacers: 1) goat milk
  2) 2 parts of condensed milk + 1 part of water
  3) 1/3 rolled oats decoction + 2/3 cow milk
- Addition of multivitamines and selenium, from the second week twigs of broad-leaved trees, herbs, high quality meadow hay
- Danger of keeping males – aggressive behaviour

Age structure of the roe deer population

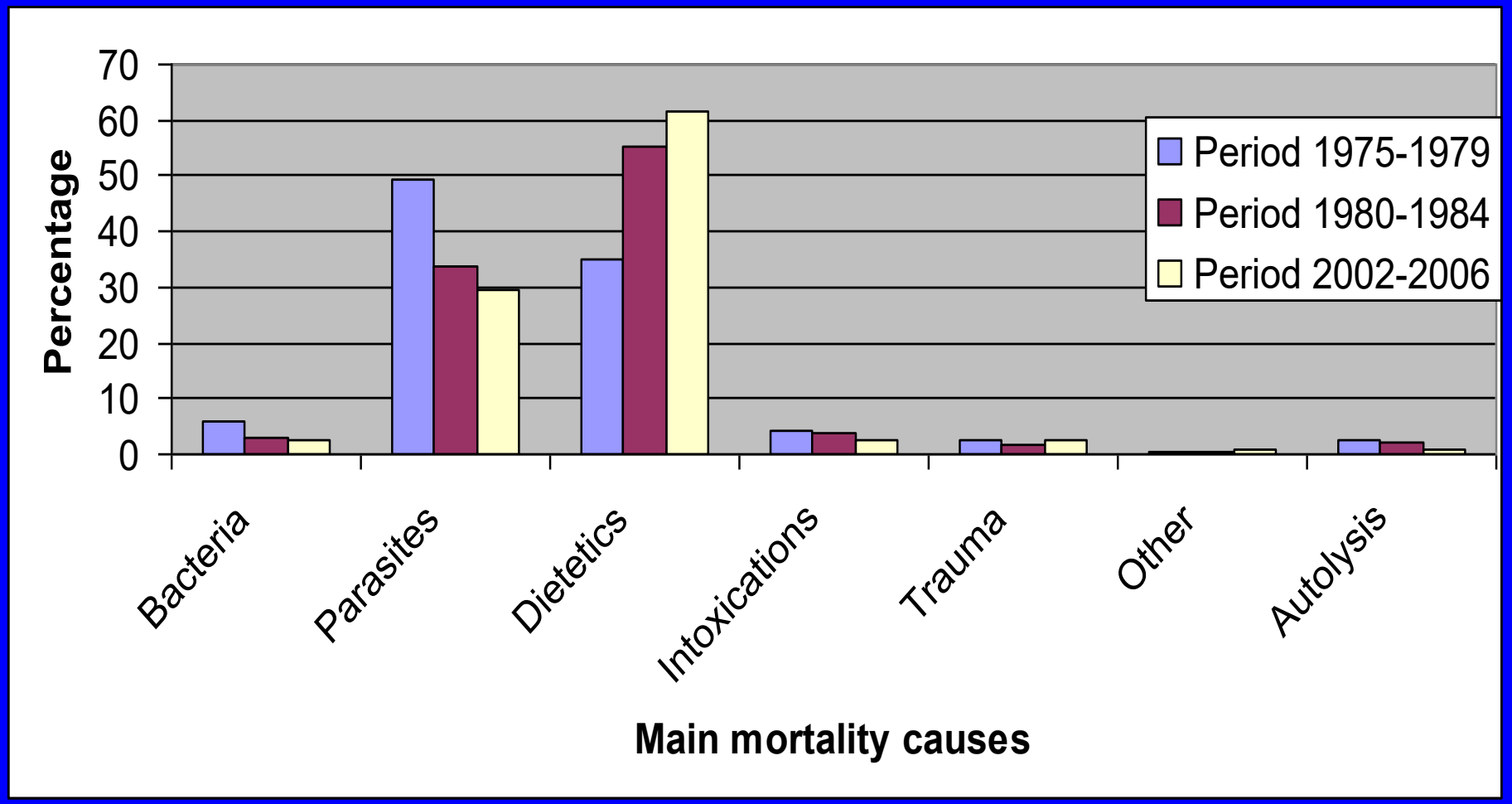
Pikula J, Koubek P, Kratochvíl Z, Kux Z: Reproduction of Roe Deer Population in Czechoslovakia. Acta Sc. Nat. Brno, 19 (6): 1-47.

Age class	Surviving individuals from the starting number of 1000	Mortality within individual age classes	Mean life expectancy
0-1	**1000**	350	2.8
1-2	650	368	3.0
2-3	411	175	**3.4**
3-4	339	198	**3.0**
4-5	272	268	2.7
5-6	199	286	2.4
6-7	142	316	2.2
7-8	97	320	2.0
8-9	66	379	1.8
9-10	41	415	1.5
10-11	24	625	1.3
11-12	9	444	1.5
12-13	6	500	1.0
13-14	**3**	1000	0.5

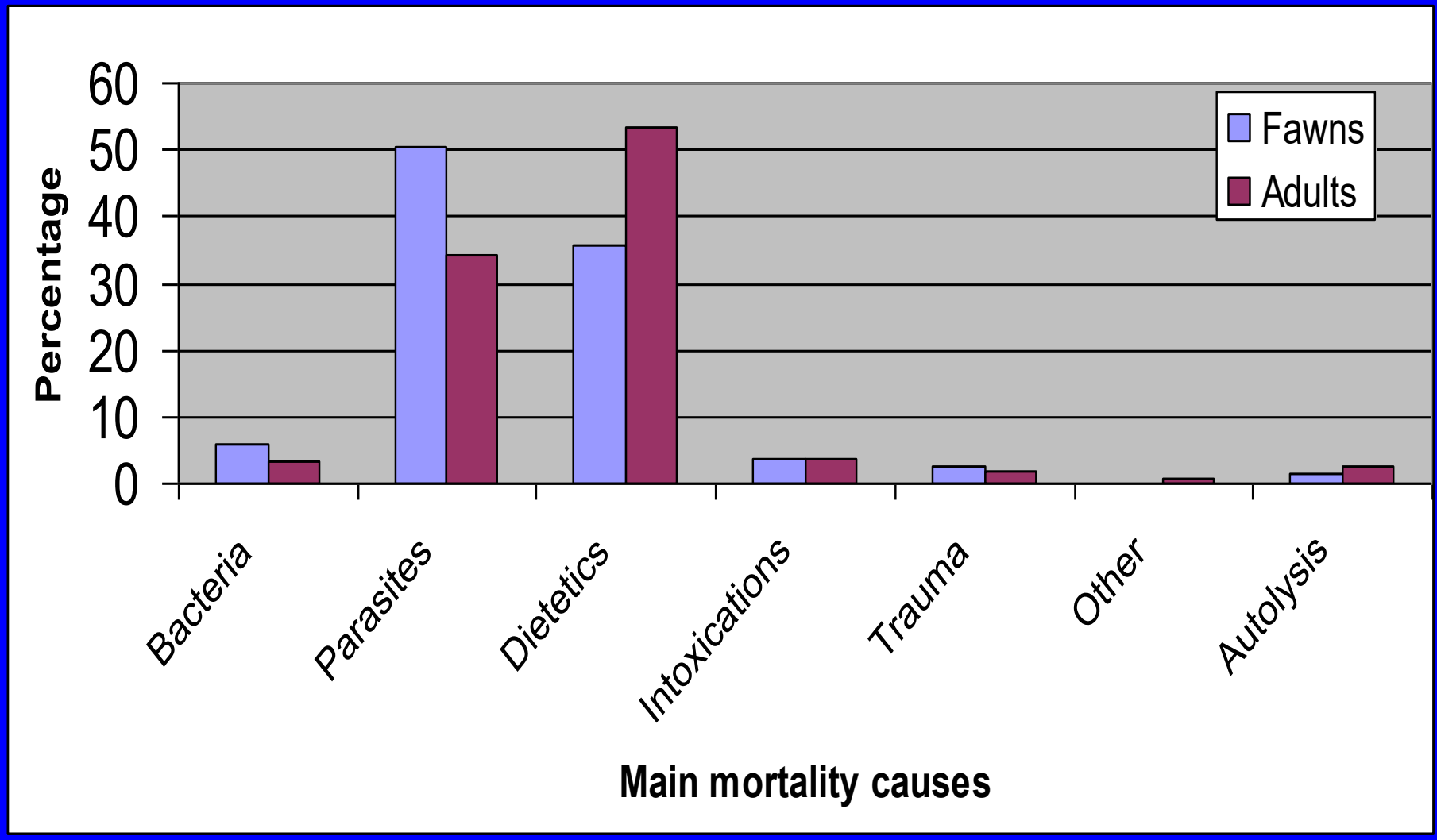
A retrospective analysis of roe deer mortality – determination of main mortality causes

Period	Bakteria	Parasites	Dietetics	Intoxications	Traumas	Other	Autolysis	∑
1975-1979	50	421	301	36	20	4	23	855
1980-1984	14	158	260	18	8	1	10	469
2002-2006	7	83	174	7	7	2	2	282
∑	71	662	735	61	35	7	35	1606

Comparison of main mortality causes in the roe deer during three periods of study



Comparison of main mortality causes in the roe deer fawns and adult individuals

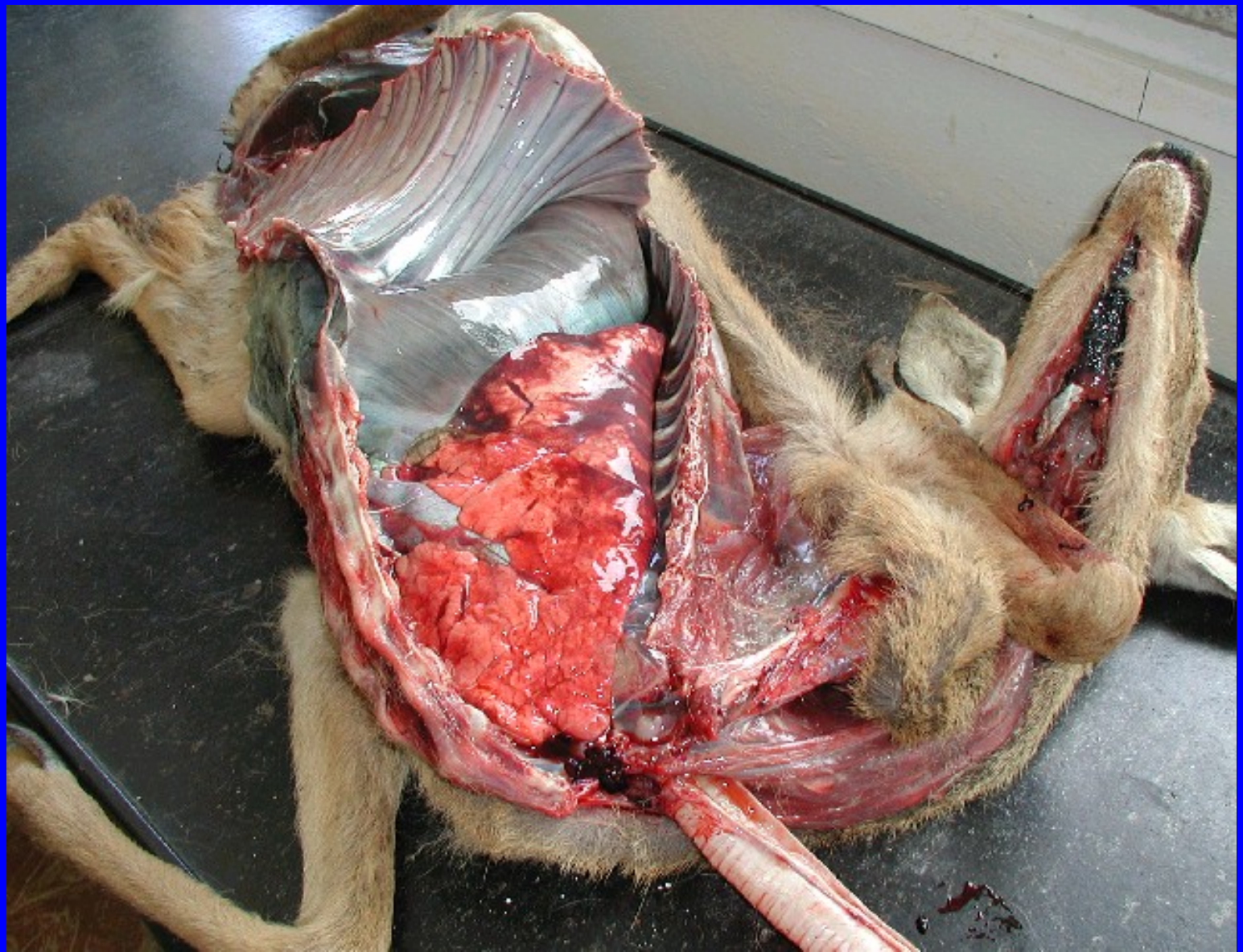


Parasites as causes of mortality in the roe deer

Represent 30-50%

- Lungworms
- Gastrointestinal parasites
- Warbles

Lungworms
parasitic bronchopneumonia

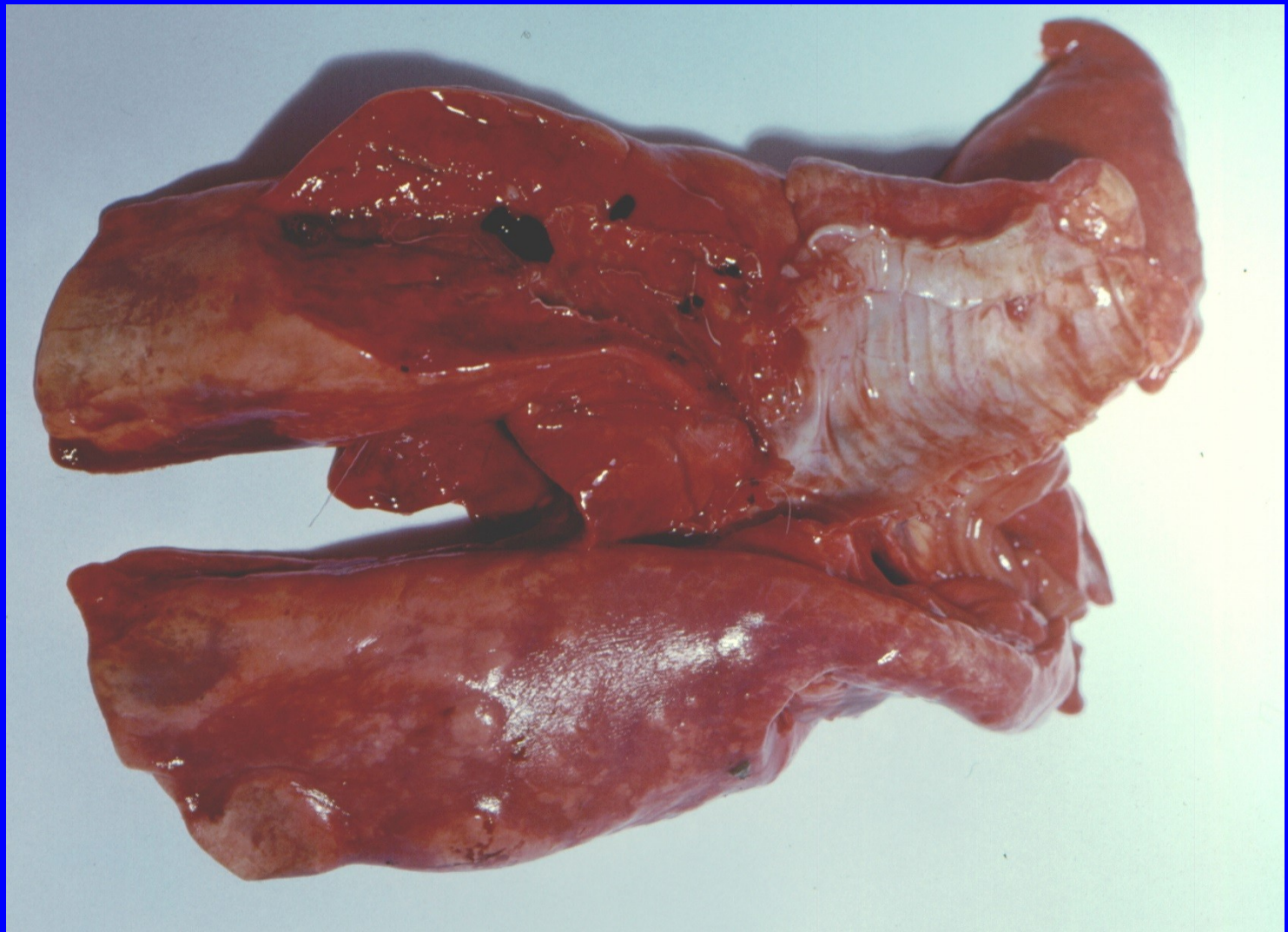


Dictyocaulosis in the roe deer

Dictyocaulus viviparus

Capreocaulosis in the roe deer

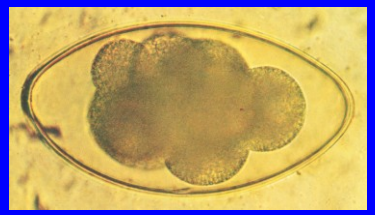
Capreocaulus (Varestrongylus) capreoli



Gastrointestinal parasites

- *Haemonchus* sp.
- *Ostertagia* sp.
- *Trichostrongylus* sp.
- *Nematodirus* sp.
- *Trichuris* sp.
- *Bunostomum* sp.
- *Chabertia* sp.
- *Moniezia benedeni*
- Coccidia (*Eimeria* sp.)

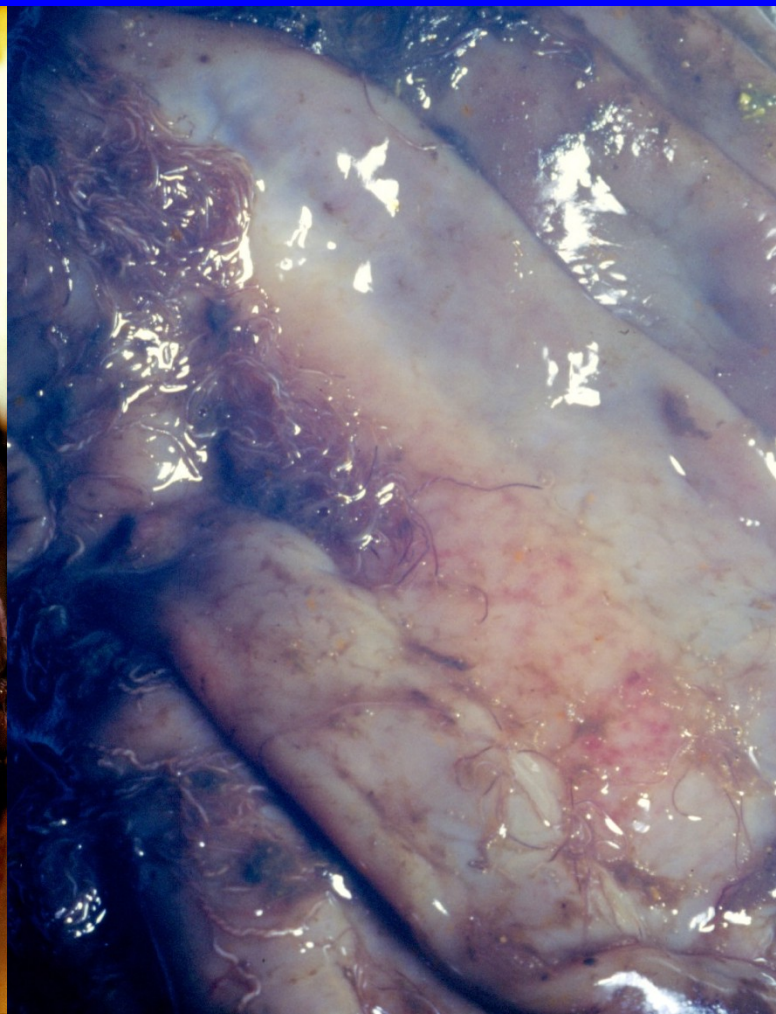




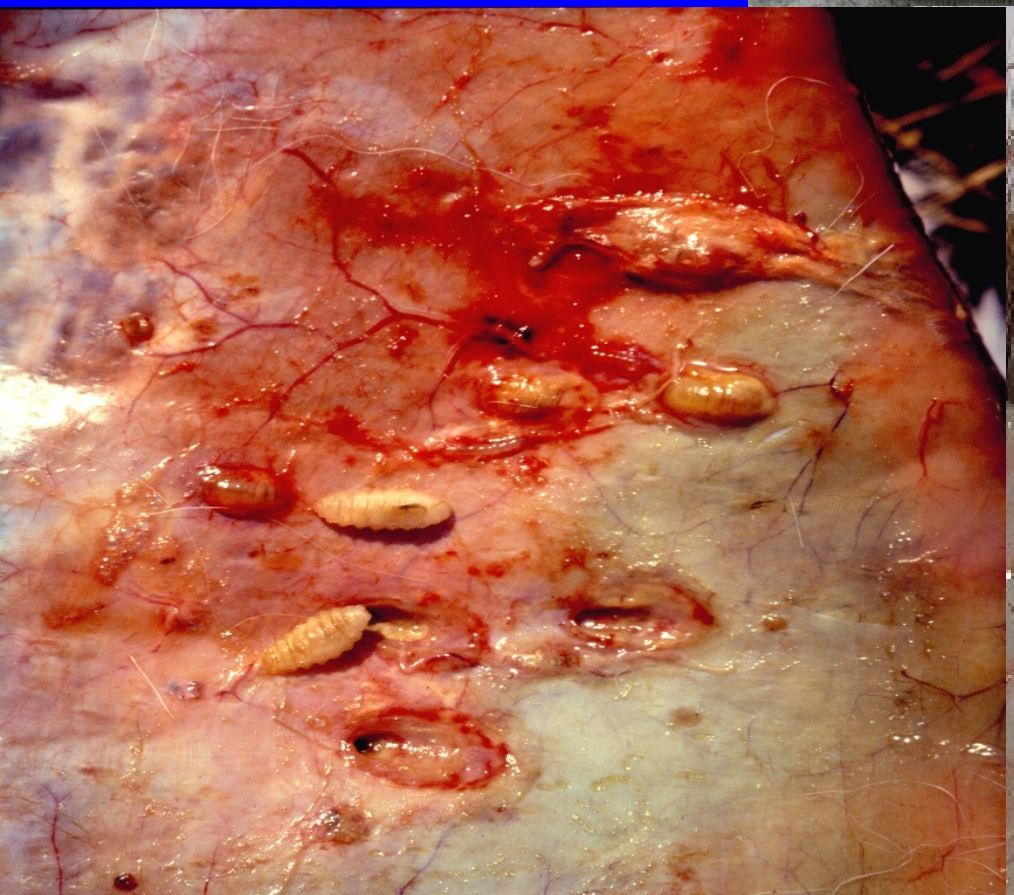

Gastrointestinal parasites

Haemonchosis in the roe deer



Hypodermatosis in the roe deer

Hypoderma diana



Bot flies in the roe der

Cephenemyia stimulator

Bacterial infections as causes of mortality in the roe deer

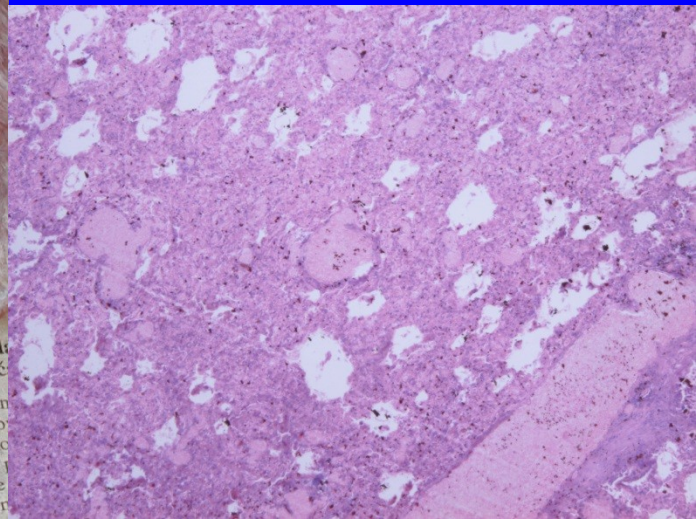
Amount up to 10%

- Pasteurella multocida; Mannheimia haemolytica
- Staphylococcus aureus
- Listeria monocytogenes
- Actinomyces bovis
- Pseudomonas aeruginosa
- Yersinia pseudotuberculosis
- Bordetella bronchiseptica

Pasteurellosis

Pasteurella multocida

Mannheimia haemolytica

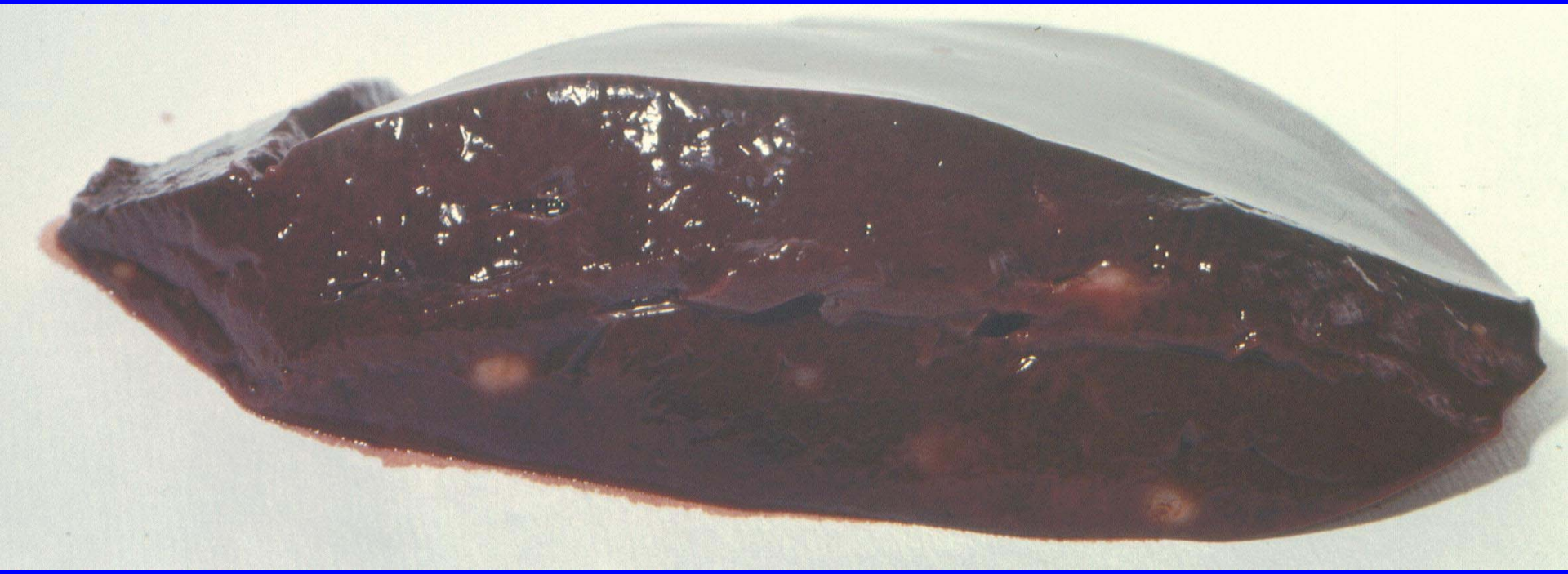


Staphylococcosis

Staphylococcus aureus

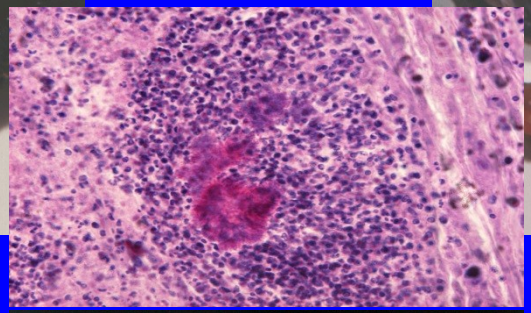
Listeriosis

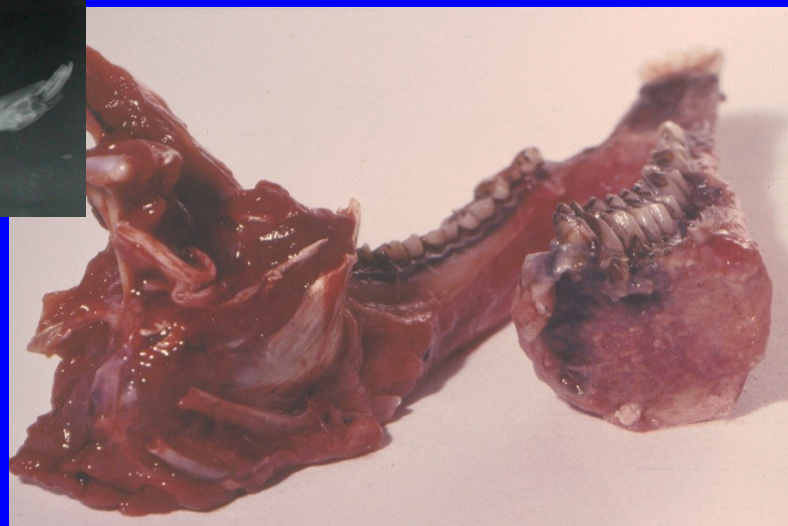
Listeria monocytogenes



Actinomycosis

Actinomyces bovis

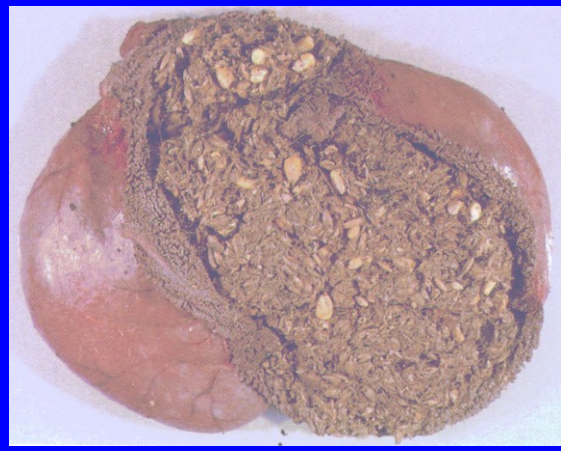




Dietetic disturbances

Participate by 40 – 60 % in the roe deer mortality

- Intake of winter rape 63%
  - **dimethyldisulfide produced in rumen by bacterial reduction of** the aminoacid S methyl-cysteinsulfoxide
  - Haemolytic anemia
- Lack of feed during autumn and winter, intake of frozen feeds (potatoes, mangold) 23%
- Intake of grain (wheat laid for pheasants resulting in grain overload) 7%
- Intake of tree needles 7%



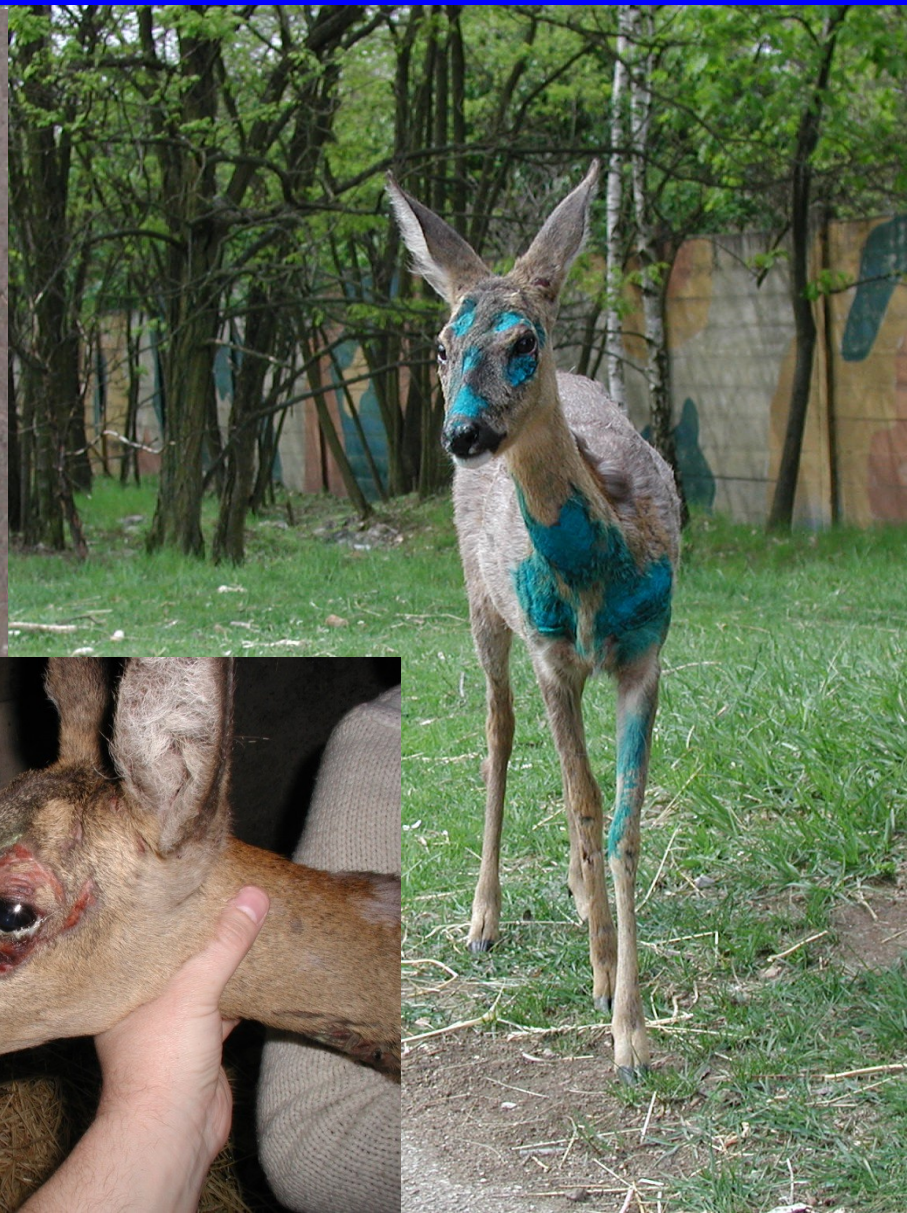
Other causes of mortality in the roe deer

Represent up to 10 %

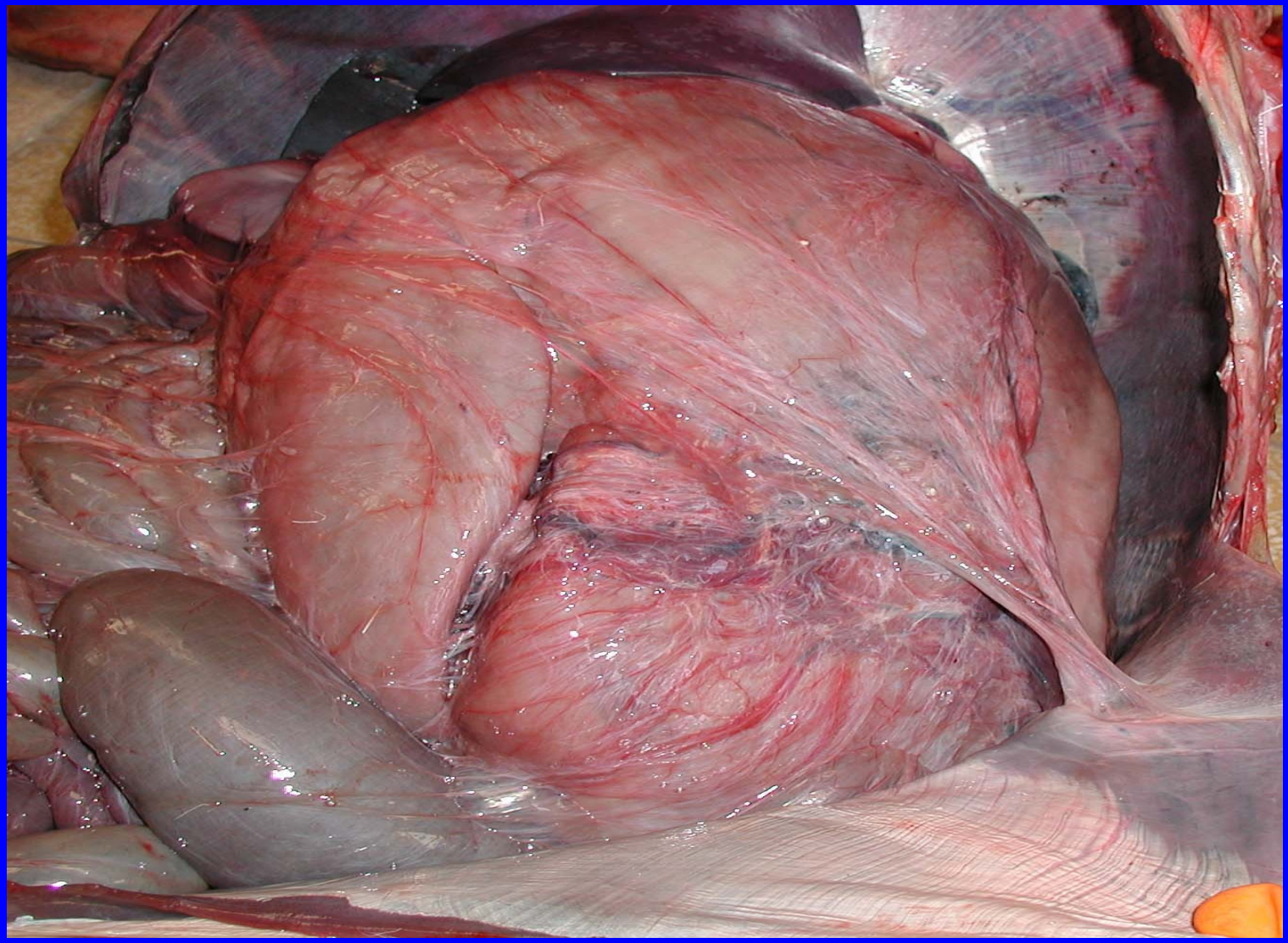
- Intoxication by chemical substances used in the agriculture
  - Artificial fertilizers, plant protection products
- Trauma – traffic accidents
- Agricultural mechanisation
  - Injuries to fawns during mowing of fodder crop
- Feral dogs
  - Lung oedema of chased animals
- Predators
  - Wild boar, fox, lynx
- Foreign bodies in GIT
  - Freezer bags, ropes, etc.
- Tumours
  - Liver adenocarcinoma

Lung oedema after being chased by a predator

Other causes of mortality in the roe deer



Other causes of mortality in the roe deer - trauma to the abdominal wall



Summary

- Losses due to mortality = about 17% of the bag record
- Humans considerably influence the roe deer
  - In a positive way (feeding during winter, de-worming, endeavours to increase the population density, shooting weak and diseased specimens)
  - In a negative way (landscape management – selection of agricultural crops, landscape fragmentation, tourism, roads and traffic)