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ОБНАРУЖЕНИЕ ЭЙМЕРИЙ У КАСПИЙСКОЙ НЕРПЫ (*PUSA CASPICA* GMELIN, 1788)

Крапивина В. В.¹,

аспирант,

vladimirakrapivina@yandex.ru

Аннотация

Настоящее исследование направлено на выявление паразитофауны у каспийской нерпы (*Pusa caspica* Gmelin, 1788). Нами были проанализированы три пробы кала от погибших по естественным причинам нерп, предоставленные кандидатом биологических наук, научным сотрудником Прикаспийского института биологических ресурсов Дагестанского федерального исследовательского центра РАН, Чунковым М. М., собранные в период полевых выездов в декабре 2025 г. и доставленные в лабораторию паразитологии Пермского ГАТУ. Анализ проводили комбинированным методом по Г. А. Котельникову и В. М. Хренову, а также методом седиментации. Фрагменты кишечника фиксировали в альтернативном растворе на основе глицерола, после чего проводили стандартную процедуру гистологического исследования с окрашиванием срезов гематоксилином и эозином. Сканирования проводили на автоматической системе VisionAssist (WestMedica, Австрия) с программным обеспечением Vision (Медика Продакт, Россия). В результате были обнаружены яйца лентеца *Diphyllobothrium* sp. Cobbold, 1858, а также в одной пробе отмечены в большом количестве неспорулированные ооцисты *Eimeria* sp. Морфометрические показатели ооцист составили длину $45,18 \pm 1,75$ мкм, при ширине $23,64 \pm 1,85$ мкм. Гистологический анализ показал разрушение стенки кишечника вследствие тропных изменений.

Ключевые слова: нерпа, ооцисты, эймерии, микроскопия, морфология

¹ Федеральное государственное бюджетное образовательное учреждение высшего образования «Пермский государственный аграрно-технологический университет имени академика Д. Н. Прянишникова» (614990, Россия, г. Пермь, ул. Петропавловская, д. 23)

DETECTION OF *EIMERIA* INFECTION IN CASPIAN SEAL (*PUSA CASPICA* GMELIN, 1788)

Krapivina V. V.¹,
Postgraduate Student,
vladimirakrapivina@yandex.ru

Abstract

The present study is aimed at identifying the parasitic fauna of the Caspian seal (*Pusa caspica* Gmelin, 1788). We analyzed three fecal samples from seals that died of natural causes, provided by M. M. Chunkov, Cand. Sc. (Biology), Researcher at the Caspian Institute of Biological Resources of the Dagestan Federal Research Center of the Russian Academy of Sciences, collected during field trips in December 2025 and delivered to the Laboratory of Parasitology of the Perm SATU. The analysis was performed using the combined method of G. A. Kotelnikov and V. M. Khrenov, as well as the sedimentation method. The intestinal section was also fixed with Aldofix and subsequently a standard histological examination procedure was performed with hematoxylin-eosin staining of sections and scanning using the VisionAssist automatic system (WestMedica, Austria) with Vision software (Medica Product, Russia). As a result, eggs of the tapeworm *Diphyllobothrium* sp. Cobbold, 1858 were found, as well as a large number of unsporulated oocysts of *Eimeria* sp. in one sample. The morphometric parameters of the oocysts were 45.18 ± 1.75 microns long and 23.64 ± 1.85 microns wide. Histological analysis showed the destruction of the intestinal wall due to cadaveric changes.

Ключевые слова: Caspian seal, oocysts, *Eimeria*, microscopy, morphology

Introduction. The Caspian seal *Pusa caspica* Gmelin, 1788 is a relict species of true seals, taxonomically related to the ringed (*Pusa hispida*) and Baikal (*Pusa sibirica*) seals. At the moment, the Caspian seal is classified as a threatened species, is listed in the Red Book and requires close attention in many aspects, including veterinary [1, 3], however, the parasitofauna of this species is currently not fully understood.

Material and methods. Three samples from Caspian seals were kindly provided by M. M. Chunkov, Candidate of Biological Sciences, Researcher at the Caspian Institute of Biological Resources of the Dagestan Federal Research Center of the Russian Academy of Sciences, collected during field trips in December 2025 and delivered to the Laboratory of Parasitology of the Perm

¹ Federal State Budgetary Educational Institution of Higher Education "Perm State Agro-Technological University named after academician D. N. Prianishnikov" (23, Petropavlovskaya st., Perm, 614990, Russia)

State Pedagogical University. The combined research method according to G. A. Kotelnikov and V. M. Khrenov, as well as the sedimentation method, were used. The preparations were viewed at magnification $\times 100$ and $\times 400$ on a Meiji microscope (Japan) and photographed using a Vision camera (Canada). The intestinal section was fixed with Aldofix and subsequently a standard histological examination procedure was performed with hematoxylin-eosin staining of sections and scanning using the VisionAssist automatic system from WestMedica (Austria) with Vision microscopy automation software from Medica Product (Russia).

Results. Morphologically, the feces from the seal's intestinal contents had a characteristic sausage-shaped shape, with a diameter of about 2 cm. Homogeneous, with an admixture of remnants of fish bones and wool. Microscopically, feces consists of detritus – undifferentiable residues, with an admixture of a small amount of connective tissue and muscle fibers, partially preserved their striation. Parasitological analysis revealed eggs of the tapeworm *Diphyllobothrium* sp. Cobbold, 1858 in all samples, as well as a large number of unsporulated oocysts of *Eimeria* sp. in one sample (fig.). The morphometric parameters of the oocysts were 45.18 ± 1.75 microns long and 23.64 ± 1.85 microns wide. Histological analysis showed the destruction of the intestinal wall due to cadaveric changes.



Fig. *Eimeria* oocysts from feces of Caspian seals
Magnification $\times 400$

At the moment, 14 species of helminths have been registered in the modern Caspian seal. Of these, there are 8 species of trematodes: *Pseudamphistomum truncatum*, *Metorchis bilis*, *Mesorchis advena*, *Ciureana badamschini*,

Maritrema sobolevi, *Metorchis xanthosomus*, *Opisthorchis felineus*, *Cryptocotyle lingua*, 2 species of cestodes.: *Diphyllobothrium phocarum* and *Ligula colymbi*, 3 species of nematodes: *Anisakis schupakovi*, *Eustrongylides excisus*, *Paraflaroides caspicus* and 1 species of acanthocephalus – *Corynosoma strumosum*. There are also 2 species of protozoa: *Eimeria* sp. and *Sarcocystis* sp., 1 species of lice – *Echinophthirius horridus* and 1 species of mites – *Halarachne* sp. [2] The invasion of *Toxoplasma gondii* and *Dirofilaria immitis* has been established by serological methods [4]. Invasion by *Eimeria* was previously recorded only by histological method in populations from Kazakhstan and Azerbaijan.

Conclusion. Parasitological examination of feces from Caspian seals revealed eggs of *Diphyllobothrium* sp. Cobbold, 1858 and large oocysts of an unidentified *Eimeria* species.

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