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FORMATION OF A STABLE LOCAL NUTRIA POPULATION (*MYOCASTOR COYPUS*) IN THE LOWER REACHES OF THE DNISTER RIVER (UKRAINE)

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Key words

nutria, population formation, population dynamics, Dnister, Black Sea region

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Abstract

The nutria is an alien species in the ecosystems of the Lower Dnister and the formation of its local population in the river's floodplain was analysed. The most frequent cases of occurrence of the species in natural habitats of southern Ukraine, particularly in Odesa Oblast, coincide with the periods of high demand for fur in the 1980s and 1990s, which is associated with the mass breeding of these animals in private farms and their escapes. Data on the periodic occurrence of nutrias in natural ecosystems of Odesa Oblast were summarised. Until the early 2000s, due to cold winters, nutrias had been unable to form a stable local population. At that time, information about such observations most often came from the north of Odesa Obalst, particularly from Podilsk, Okny, Shyriaieve, and Zakharivka raions. Seven out of ten reports of nutria sightings in the wild within Odesa Oblast came from these areas. In the early 21st century, information about nutria sightings in the hunting grounds of the Odesa Oblast began to appear evenly from all districts, indicating a stable process of nutria dispersal throughout the region. Since 2000, about 60 such reports have been collected. The first reliable record of the nutria in the Lower Dnister was reported from the Kuchurgan Estuary by a colleague, O. Arkhipov, who managed to photograph the animals in July 2024. However, oral reports on the nutria's presence the Lower Dnister National Nature Park began to arrive regularly only in 2023. The collected material (about 30 reports) allowed the distribution of nutria to be analysed by habitats within the park. This species is characteristic of water areas surrounded by dykes and embankments, generally the coastal waters of the Dnister Estuary in places where semi-submerged trees carried by the current are concentrated. These areas are key nutria habitats, but they are also attractive for and characteristic of native predators—European mink and Eurasian otter—which may prey on young nutrias. The possible competitive relationships between two invasive species—nutria and muskrat—for trophic resources are considered, since both species are herbivores feeding mainly on roots of aquatic and wetland vegetation.

Cite as

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Формування сталого осередку існування нутрії (*Myocastor coypus*) у пониззі річки Дністер (Україна)

Микола Роженко, Микола Степанок

Резюме. Проаналізовано формування осередку нутрії у заплаві Нижнього Дністра, чужорідного виду для екосистем регіону. Частота трапляння нутрій у природних умовах півдня України, зокрема на Одещині, співпадає з високим попитом на хутро у 1980–1990-х рр., що пов'язано з масовим утриманням цих тварин у приватних господарствах, звідки і ставалися втечі. Узагальнено дані щодо періодичного трапляння нутрій у природних екосистемах Одещини, як і до початку 2000-х років у зв'язку з холодними зимами не могли сформувати природні осередки свого існування. У цей час інформація про такі зустрічі найчастіше надходила з півночі Одещини — з Подільського, Окнянського, Ширяївського та Захарієвського районів. Із цих районів було 7 із 10 повідомлень про зустрічі нутрій в природі у межах Одещини. На початку XXI ст. інформація про зустрічі нутрій в мисливських угіддях Одещини почала рівномірно надходити з усіх районів області, що свідчить про стабільність процесу розселення нутрій по всій цій області. Це співпадає з тенденцію, описаною в цілому для України. Починаючи з 2000 р., зібрано біля 60 подібних повідомлень. Перша достовірна реєстрація нутрій у пониззі р. Дністер здійснена на Кучурганському лимані колегою О. Архиповим, якому у липні 2024 р. вдалося зробити фото тварин. Натомість усні повідомлення про наявність нутрій у межах Нижньодністровського національного природного парку почали надходити регулярно тільки з 2023 р. Зібраний матеріал (біля 30 повідомлень) дозволив провести аналіз розповсюдження нутрій за біотопами у межах парку. Вид характерний для таких біотопів, як ділянки водного простору, оточені системами узвиш у вигляді дамб і насипів, загалом берегова акваторія Дністровського лиману в місцях зосередження напівзатоплених дерев, винесених течією річки. Саме такі ділянки є ключовими для мешкання нутрії, проте привабливі й характерні також для аборигенних хижих — норки європейської та видри річкової, які можуть проявляти хижацтво щодо молодих нутрій. Розглядаються можливі конкурентні стосунки між двома інвазійними видами — нутрією й ондатрою — за харчовими ресурсами, оскільки обидва ці види є фітофагами і харчуються здебільшого корінням водно-болотної рослинності.

Ключові слова: нутрія, формування популяції, динаміка чисельності, Дністер, Причорномор'я.

Introduction

In the European Union, the nutria (*Myocastor coypus*) is listed as an alien invasive species and is considered among the 100 most dangerous invasive species in the world by the International Union for Conservation of Nature (IUCN) and its Global Invasive Species Database. The impact of alien species on the ecosystems has both ecological and economic consequences. Nutrias pose a threat to wetlands. In many countries, including member states of the European Union, the nutria has been recognised as an invasive species whose abundance must be limited. Nutrias were introduced to Ukraine from Argentina during the Soviet era, in 1930, and were bred on farms.

In the mammal fauna of the Lower Dnister, the nutria had been absent [Oleinyk & Rozhenko 2011], although since the late 1970s there have been reports of the species being sighted in small rivers of Odesa Oblast, such as the Yahorlyk, Tylyhul, Kuyalnyk, and others. During that period, the distribution of nutrias was sporadic, which prevented the formation of stable settlements of the species in the region. Cold winters were also unfavourable and survival rates were low [Zagorodniuk & Lazariev 2024; Lazariev*et al.* 2025]. However, since the late 1990s, when fur demands declined and winters became milder, the number of reports about nutria sightings has increased notably.

Occasionally, such reports were presented as sightings of beavers, but they were never confirmed when checking the information. The presence of nutrias in the territory of the Lower Dnister National Nature Park was first reported in 2022 by fishermen. Further studies allowed the first record localities of the species, its population dynamics, and routes of dispersal within the park to be clarified. The wetlands of the Lower Dnister are natural habitats of semi-aquatic mammals, where populations of the native European mink (*Mustela lutreola*) and Eurasian otter (*Lutra lutra*) exist.

Materials and Methods

The following data sources were used in this study: 1) results of monitoring conducted by the staff of conservational and research departments of the national park; 2) survey results of park visitors, fishermen, and vacationers; and 3) results of own observations and records of the animals and traces of their life activities.

Study area

In a geomorphological context, the study area is quite homogenous. The floodplain has a lowland relief, somewhat dissected by watercourses and floodplain and oxbow lakes. The typical landscape of the national park comprises fens, swamp forests, open floodplains, and patches with woody, aquatic, and semi-aquatic vegetation. They provide suitable habitats, including shelter and food like the rhizomes, stems, and leaves of reed and cattail. The water caltrop, water lily, and pondweed serve as additional food resources.

The floodplains are dominated by species that form long stripes of plant communities overgrowing the shallows—*Phragmites australis* (dominant species), *Zizania latifolia*, *Glyceria maxima*, *Scirpus litoralis*, and others. The common reed (*Phragmites australis*) usually forms a monodominant association (Fig. 1*b*), with an admixture of *Phragmitetum typhosum*, *Typhetum angustifoliae*, and other associations. These are spread along the banks of the Dnister on long distances, due to the relatively high homogeneity of the banks. The most widespread species are the white willow (*Salix alba*), almond willow (*Salix triandra*), dewberry (*Rubus quesius*), narrowleaf cattail (*Typha angustifolia*), bushgrass (*Calamagrostis epigejos*), couch grass (*Elymus repens*), flowering rush (*Butomus umbellatus*), water caltrop (*Trapa natans*), floating fern (*Salvinia natans*), common duckweed (*Lemna minor*), perfoliate pondweed (*Potamogeton perfoliatus*), sago pondweed (*Stuckenia pectinata*), tape grass (*Vallisneria spiralis*), hornwort (*Ceratophyllum demersum*), white waterlily (*Nymphaea alba*), the largest European locality of yellow waterlily (*Nuphar lutea*), and others.

The climate of the territory is affected by both mediterranean and temperate continental air masses, and thus it is transitional between marine and continental climates. Recently, it has been characterised by a low amount of precipitation, notable fluctuations in air temperature, short winters with frequent thaws, and long and hot summers. As a result of climate change, mean annual temperatures for the past 100 years increased by 2°C in the region [Bolshakov & Matygin 2018]. This tendency has been retained in the Lower Dnister region in the past decade, which is evidenced by the data of the local meteorological station on changes of mean annual temperatures (Fig. 2).

Fig. 1. Nutria habitats in the Lower Dnister National Park: (*a*) a developed habitat of the species among driftwood carried by the current to the mouth of the Hlybokyi Turunchuk channel; (*b*) a community of *Phragmites australis* and white waterlily (*Nymphaea alba*) in the littoral zone of the mouth of the Dnister River.

Рис. 1. «Нутрієві» угіддя в Нижньодністровському НПП: (*a*) облаштована ділянка мешкання виду серед скупчення дерев, що під час повеней течією винесена у гирлову частину протоки Глибокий Турунчук; (*b*) угруповання *Phragmites australis* та латаття біле (*Nymphaea alba*) в береговій зоні гирла р. Дністер.

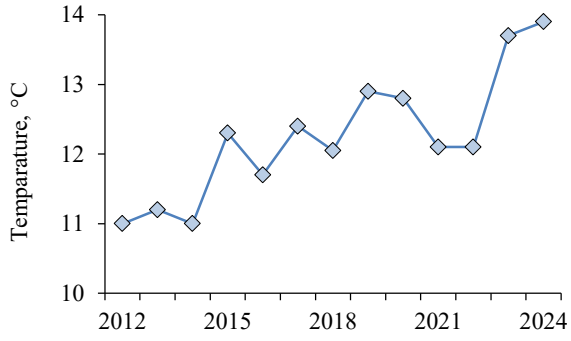

Fig. 2. Average annual air temperature in 2012–2024 (°C) according to data from the Odesa National University weather station in the village of Mayaki.

Рис. 2. Середньорічна температура повітря за 2012–2024 роки (°C) за даними метеопосту Одеського національного університету в с. Маяки.

Temperature fluctuations are the most pronounced in winter, when cold air masses arrive to the south of Ukraine from the inland regions. The summer is limited by the dates when mean daily temperatures rise over and fall below 15°C, respectively. This is the longest season of the year.

In the Lower Dnister region, summer begins around the 15th of May and lasts until the 25th of September, that is, for more than 110 days. The hottest months are August and July. The mean annual precipitation is 360–400 mm. The prevailing wind directions in the Dnister Delta, according to long-term observations, are north–northwest and south–southeast. Average annual wind speeds range from 3.0 to 4.9 m/s. High wind speeds are most frequent in March.

After the regulation of the Dnister's flow, water exchange in the lake–floodplain system occurs mainly due to winds of meridional and adjacent directions. Surge winds are southern, eastern, and southeastern. Ebb winds are northern, western, and northwestern. These winds are the main factors that significantly affect the water level in the third hydrological zone of the Dnister. Fogs are frequent in the cold period of the year. The average annual air humidity is ca. 75%.

The highest elevations are the Dnister and Turunchuk riverbank ridges, which have a relative height of 0.5 to 3 m during periods of baseflow. In addition, artificial elevations are also positive elements of the relief in the floodplain, such as embankments with a height of 0.5 to 2.5 m. Other positive elements of the relief in the Dnister floodplain are the floating islands consisting of tightly woven reed roots (less often cattail roots), rush, and silted sediments. In the southern areas of the Lower Dnister National Nature Park, the microrelief is pronounced with small depressions and elevated areas up to 1 m. The depressions are periodically filled with water, especially during floods.

Results and Discussion

Introduced species that appear and spread in an area due to either intentional or unintentional human activity are rightly considered the second most dangerous threat to biodiversity (after direct habitat destruction). In cases when the ecological niche of the alien species is not occupied and there are no competitors in the new territory, the successful naturalisation of the introduced species and the displacement of the native ones are highly likely scenarios.

Distribution and habitats

A stable local population of the nutria has emerged in the Kuchurhan Estuary (Odesa Oblast), where the animals were introduced from farms or private estates, either intentionally or unintentionally (according to reports of the local media).

The presence of nutrias in the territory of the Lower Dnister NNP, which is located downstream of the Turunchuk, is one of the examples of the expansion of the initial settlement of an introduced species to neighbouring areas. Fishermen first reported the occurrence of nutrias in the Lower Dnister NNP in 2022, after which systematic monitoring of the animals and the formation of a local population has started (Fig. 3, *c*). This local population was also included in the review of areas of successful introduction of nutrias in Ukraine [Lazariev *et al.* 2025].

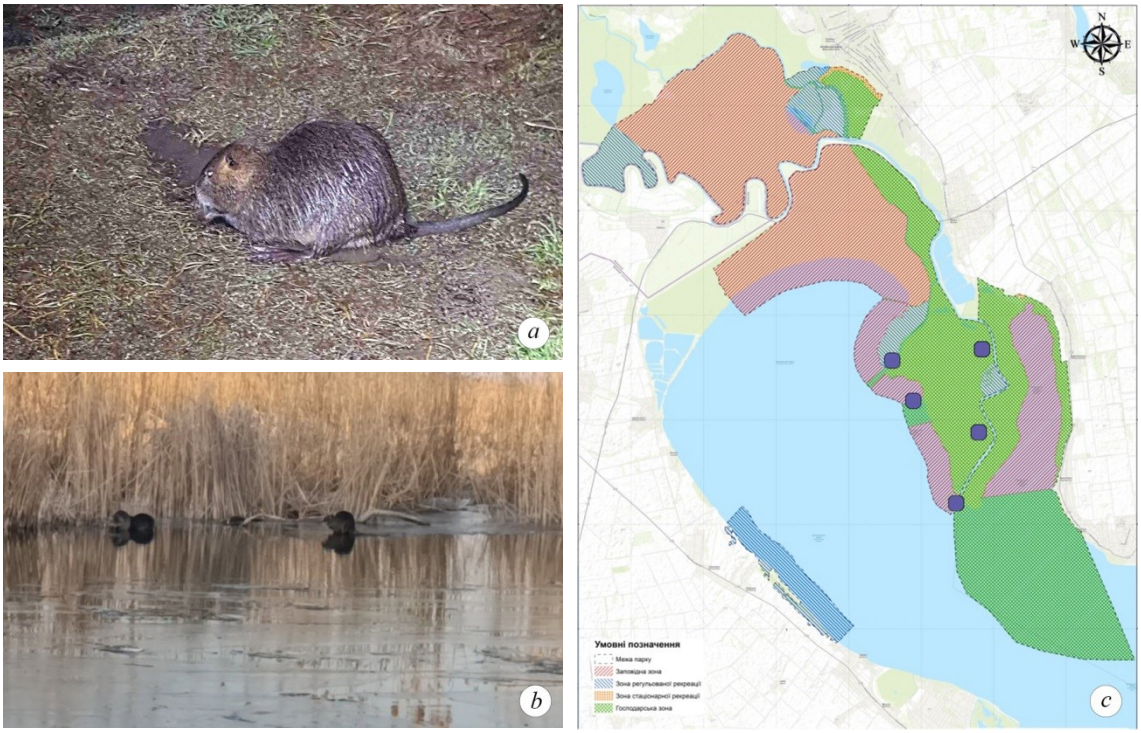

Fig. 3. The nutria in the Lower Dnister: (*a*) localisation of spatial groups of the nutria within the established local population in the Lower Dnister National Nature Park and nutrias near the water edge; (*b*) a single specimen on the bank of the Dnister, 2024, photo by Z. Zakirov; (*c*) a group of nutrias at the mouth of the Hlybokyi Turunchuk, photo by O. Petrenko, March 2025.

Рис. 3. Нутрія на Нижньому Дністрі: (*a*) локалізація просторових угрупувань нутрії в межах сформованого осередку цього виду в Нижньодністровському НПП та приклади розміщення нутрій біля урізу води — (*b*) одиночна особина на березі р. Дністер, 2024 р., фото З. Закіров; (*c*) група нутрій у гирлі р. Глибокий Турунчук, фото О. Петренко,березень 2025 р.

Considering that the phenotype (coat colouration) of the nutrias that were sighted by the park's visitors was the same, we can suggest that the stable local population emerged from no more than two pairs of a single genetic lineage.

Interactions with the native species

Nutrias occupy different parts of the shoreline, from the shallows to various kinds of elevations, including driftwood. A group of nutrias has settled among the branches that were carried by the current during floods to the mouth of the Hlybokyi Turunchuk, the Dnister's tributary (see Fig. 1, *a*). They often settle on low banks as well (Fig. 2, *a–b*).

The areas occupied by nutrias practically overlap with the ranges of the Eurasian otter and European mink. All three mammal species are semi-aquatic and the presence of elevations such as dykes and high banks is essential for them to make their burrows and dens. Such microhabitats are critically important for all semi-aquatic mammals since some of their biological cycles, especially the breeding season, require the very conditions these habitats provide.

In particular, otters, minks, and nutrias arrange their nursery burrows and dens in territories with similar ecological characteristics. Furthermore, limited spatial resources such as resting and burrowing places, when occupied by nutrias, become unsuitable for the others, that is, the appearance of nutrias limits the opportunities of the native species of using these areas. The increasing abundance of nutrias in the Lower Dnister may lead to the rearrangement of the spatial distribution of other groups of mammals, especially the semi-aquatic species.

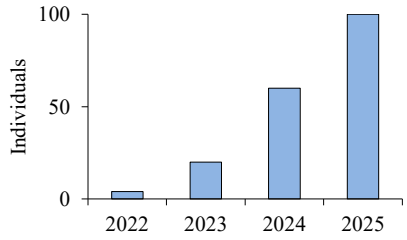

Fig. 3. Dynamics of the local nutria population (*Myocastor coypus*) by years in the lower reaches of the Dnister River (individuals).

Рис. 4. Динаміка чисельності нутрії (*Myocastor coypus*) за роками в пониззі річки Дністер (особин).

Population dynamics and ecology

Conditions of the nutria's existence in the Lower Dnister NNP (food availability, lack of direct competition with other rodents due to their low abundance, and favourable weather conditions) have created optimal conditions for the rapid growth of the local population and in four years its size have reached about 100 individuals (Fig. 4).

This semi-aquatic mammal inhabits wetlands, lake banks, slow channels, especially in areas with fleshy plants growing along the banks; it also has a semi-vagrant lifestyle remaining sedentary when food and shelter are available.

Our data suggest that the nutria rests and raises its offspring in open nests constructed on mounds and among dense thickets made of bent reed and cattail stems. It digs burrows in steep banks, which vary in structure from simple tunnels to complex passage systems. By consuming the vegetation that holds the soil together, it can cause erosion and transform marshes into areas covered with open water.

Conclusions

Regular monitoring is needed to forecast the impact of this invasive species on the local ecosystem and for a timely management of ecological and economic problems it may cause. Research into the distribution range of the species and its ecological relationships within the communities of the Dnister Delta should also be carried out.

Under conditions of active successions of plant communities that lead to the loss of natural landscapes, including in protected areas, the nutria as a distinct herbivore can, at a certain level (growth) of abundance, substantially slow down the negative ecological processes related to the overgrowth of floodplain lakes and channels.

When estimating the possible impact of the nutria as an introduced species on the Lower Dnister biota, such as the destruction of the root system of plants and related destabilisation of the upper soil layer, the carrying of over 30 types of pathogens and parasites including toxoplasmosis and tuberculosis, and its role in provoking spatial conflicts with native species, preference should be given to the elimination of this species from wetland areas.

The appearance of a new invasive species of semi-aquatic mammals will certainly affect the formation and distribution of such indigenous species as the European mink and the Eurasian otter, and this impact can turn out to be negative due to competition for spatial resources.

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Declarations

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Conflict of interests. The authors have no conflict of interests to declare relevant to the content of the article.

Handling of materials. The study was carried out in compliance with the current legislation of Ukraine in regard of working in protected areas and with living animals.

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