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TRENDS IN THE RANGE AND ABUNDANCE OF THE EURASIAN OTTER (*LUTRA LUTRA*) IN UKRAINE

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Eurasian otter, irrigation systems, mortality, range, population dynamics, poaching

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Abstract

In the past, the Eurasian otter inhabited water bodies in the forest and forest-steppe zones and the Carpathians in Ukraine. In the steppe zone, between 1980 and 1985, it survived in the Dnipro River, in the lower reaches of the Southern Bug, Dnister and Danube rivers, and also in the Siverskyi Donets River. In 1987–1988, the otter appeared in the south of Zaporizhzhia and Kherson oblasts, and in 1992–2003 in other locations as well. Its spread was facilitated by a reduction in the negative impact of hunting, due to the decline in the popularity of furs made from wild animals (otter, beaver, marten, coypu, muskrat, and mink), which led to an increase in population numbers. The expansion of its range was facilitated by the construction of the North Crimean Canal (1957–1994) and the Kakhovka irrigation system (1967–1991), which allowed the otter to colonise their complex networks and remote water bodies. The regulation of the Dnister River's flow and the drying up of its delta led to the formation of a south-western population. Between 1990 and 1995, the otter spread into the steppe regions of the Donbas via the tributaries of the Siverskyi Donets. By the end of the 20th century, the southern boundary of the otter's range had reached the coasts of the Azov and Black seas. Between 2010 and 2015, it entered the Crimean Peninsula via the North Crimean Canal, where it had been absent for several thousand years. Censuses of game animal populations in Ukraine have been conducted since 1962. Despite their imperfections, they have shown that otter populations are increasing in all eco-geographical regions. In 2000, 8735 individuals were recorded, whereas 11 685 in 2005, 12 232 in 2010, 13 614 in 2015, and 13 972 in 2019. Moreover, this is occurring against a backdrop of deteriorating hydrochemical conditions of water bodies and a decline in the diversity of the fish fauna. The causes of otter mortality (n = 213) include the killing of animals by owners of fish ponds (75.59%), being run over by vehicles (5.16%), the impact of floods and ice-related phenomena (5.63%), predation by white-tailed eagles (0.91%) and, at the end of the 20th century, hunting by hunters (12.71%). The spread and population growth of the Eurasian otter in Ukraine have been largely driven by a reduction in hunting pressure and a shorter duration of ice cover, caused by climate warming.

Cite as

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Тенденції змін ареалу та чисельності видри річкової (*Lutra lutra*) в Україні

Анатолій Волох

Резюме. (1846 знаків) У минулому євразійська видра мешкала у водоймах лісової та лісостепової зон, а також у Карпатах на території України. У степовій зоні в період з 1980 по 1985 р. вона зустрічалася на річці Дніпро, у нижній течії річок Південний Буг, Дністер і Дунай, а також на річці Сіверський Донець. У 1987–1988 роках видра з'явилася на півдні Запорізької та Херсонської областей, а в 1992–2003 роках — в інших місцях. Її розселенню сприяло зменшення негативного впливу полювання, обумовлене зникненням моди на хутро диких тварин (видра, бобер, куниці, нутрія, ондатра та норка), що призвело до зростання чисельності. Значний позитивний вплив на розширення ареалу створило будівництво Північно-Кримського каналу (1957–1994) та Каховської зрошувальної системи (1967–1991), що дозволило видрі заселити їхні складні мережі та віддалені водойми. Регулювання стоку річки Дністер та висихання її дельти призвели до формування південно-західної популяції. У 1990–1995 роках видра поширилася в степові райони Донбасу через притоки Сіверського Донецька. До кінця XX ст. південна межа ареалу видри досягла узбережжя Азовського та Чорного морів. У період з 2010 по 2015 р. вона потрапила на Кримський півострів через Північно-Кримський канал, де була відсутня протягом кількох тисяч років. Переписи популяцій мисливських тварин в Україні проводяться з 1962 р. Незважаючи на їх недосконалість, вони показали, що популяції видри зростають у всіх еко–географічних регіонах. У 2000 р. зареєстровано 8 735 особин; у 2005 р. — 11 685; у 2010 р. — 12 232; у 2015 р. — 13 614; а у 2019 р. — 13 972. Причому, це відбувається на тлі погіршення гідрохімічного стану водойм та зниження різноманітності рибної фауни. Серед причин смертності видр (n = 213) — вбивство тварин власниками рибних ставків (75,59 %), наїзд транспортних засобів (5,16 %), вплив повеней та льодових явищ (5,63%), хижацтво орлана-білохвоста (0,91%) та, наприкінці 20 століття, полювання мисливців (12,71%). Поширення та зростання чисельності євразійської видри в Україні значною мірою зумовлені зменшенням мисливського тиску та скороченням тривалості льодового покриву, спричиненими потеплінням клімату.

Ключові слова: видра євразійська, зрошувальні системи, загибель, ареал, динаміка, браконьєрство.

Introduction

The Eurasian otter is a valuable fur-bearing animal which has been driven to extinction in many parts of Europe as a result of excessive hunting. Legislative initiatives, which first emerged in the United Kingdom, in Ukraine[1], and subsequently in other countries, led to a complete ban on the exploitation of its resources. However, otter hunting did not cease. This, along with other factors, had a negative impact on its populations, whose numbers continued to decline. In 1961, around 370 otters were recorded in Odesa and Dnipropetrovsk oblasts, whilst none were found in Mykolaiv and Kherson oblasts[2].

In the 1980s, otter populations declined to such an extent in many countries that hunting was banned in Switzerland, Liechtenstein, the Netherlands, the former Czechoslovakia, and West Germany, whilst in East Germany and the Soviet Union otter hunting was regulated via issuing special licences. However, in Belgium, Italy, Romania, France, Spain, Sweden, and Norway, otters were permitted to be hunted throughout the year by any means [Loy *et al*. 2022, 2024]. In Lower Saxony (Germany), despite special measures, the Eurasian otter remains on the brink of extinction to this day[3]. In Austria, between 1990 and 1998, most otters were found in border areas where optimal ecological conditions prevailed. This allowed for a constant exchange of animals and helped to maintain the genetic health of their regional population.

The presence of a significant number of fish ponds was crucial for the species' survival. Elsewhere in Austria, only a few, presumably migratory, otters were present [Jahrl 1998]. Therefore,

[1] Rules governing hunting, hunting seasons and hunting methods. 1927. NKZ Bulletin. No. 4, 23–31 October: 1–6.
[2] Data from thesis by E. D. Krainev 'Game Animals of Ukraine...' (Kyiv, 1971).
[3] Data presented by M. Thomas & F. Gethöffer. At the Conference 'VWJD-TAGUNG: Erforschung, Schutz und Management von Wildtieren im Anthropozän' (Goslar, 2024).

significant funds are spent on restoring its European populations in most countries [Jantsch & Leitner 2022]. In some regions of the Russian Federation, as well as in Mongolia and Kazakhstan, there has been an increase in otter populations and an expansion of their range due to a decline in demand for their fur [Oleynikov & Saveljev 2016]. Otter populations have declined significantly in some provinces of Turkey [Gurbanov & Meşe 2025] and on the islands of Greece. In our country, otter hunting was resumed between 1945 and 1967, which worsened the condition of its populations. It was only after the species was listed in the IUCN Red List [Loy *et al.* 2022] and, in 1994, in the Red Book of Ukraine with status II ('endangered'), that a noticeable increase in its range and population began. At the 7th International Otter Colloquium (IOC), held on 14–12 March 1998 in Třeboň (Czech Republic), IUCN/SSC otter specialists (OSG) and participants developed and agreed on a series of recommendations for the further conservation of otters in Asia, Europe, North and South America, as well as in Africa [Conroy *et al.* 1998].

Given the complex and ambiguous situation regarding the status of otter populations in Eurasia, we have decided to share the results of our long-term research with the scientific community.

Materials and Methods

We began collecting data for this article between 1973 and 1976 in Cherkasy, Poltava, and Kirovohrad oblasts of Ukraine. The main research was carried out on tributaries of the Dnipro (the Tiasmin, Ros, Zolotonoshka, and Vilshanka rivers), as well as on the Kremenchuk Reservoir. During expeditions, the basins of the Vorskla, Psel, Sula, Hirsky, and Hnylyi Tikych rivers were surveyed. Important data were obtained during fieldwork carried out to develop projects for the spatial planning, conservation, restoration and recreational use of national nature parks, such as the Lower Dnister (2006–2007), Prypiat–Stokhid (2010), Desna–Starogutsky (2011), Derman–Ostrogsky (2012), Karmeliukove Podillia (2015), Male Polissia (2018), Lower Dnipro (2019), Oleshky Sands (2020), and Mezin (2025); regional landscape parks including Izmail Islands (2005, 2015), Kinbur Spit (2020), Dnister named after Serhii Didych (2022), and Nizhyn (2023); and nature reserves such as Danube (1999–2000), Yelanets Steppe (2011), Dnipro–Oril (2015), and Drevlyansky (2014).

Particular attention was paid to surveying the riparian zones of water bodies, identifying traces of otter activity and their dens, as well as observing the animals at night. In addition, literature sources, archival materials, departmental data and the results of our own research conducted between 1973 and 2025 in the steppe and forest zones, the forest-steppe, the Carpathians, and southern Crimea were analysed.

Results and Discussion

Distribution dynamics

Previously in Ukraine, the Eurasian otter inhabited water bodies in the forest, forest-steppe, and Carpathian regions (Fig. 1). At the beginning of the 20th century, due to high demand for its fur, otter hunting reached an extraordinary scale, resulting in low population numbers and a very sporadic distribution. In many places, the otter ceased to be found altogether and was no longer even mentioned [Korneev 1959]. The otter was a particularly rare animal in the steppe zone.

In 1921, it was recorded as an extremely rare sight in some water bodies of Dnipropetrovsk oblast [Barabash 1928]. In the North-Western Black Sea region at the beginning of the 20th century, the otter survived only in the floodplains of the Danube, Dnister, and Southern Bug rivers and was not found at all on the numerous tributaries of the interfluve areas. In 1927, a single individual was captured near the village of Baraboy in Odessa Raion, where it could only have come from the Ovidiopol area (8.8 km) or from Garagol Bay of the Dnister Estuary (27 km) [Brauner 1923]. Despite the hunting ban, the otter population in Ukraine did not increase. For a long time, its fur, which retains its high quality throughout the year, was highly prized. This led to intensive hunting of otters, and as a result, only a few individuals managed to survive in some water bodies far from human settlements.

Fig. 1. The Eurasian otter in Ukraine: in the Molochna River near the village of Tambovka, Melitopol Raion, Zaporizhzhia Oblast. Photo by theauthor. 23.04.2013.

Рис. 1. Видра річкова в Україні: на річці Молочна, поблизу села Тамбовка Мелітопольського району, Запорізька обл. Фото автора. 23.04.2013.

In the 1970s, the southern boundary of the otter's range in Ukraine was thought to extend from the Danube Delta along the Black Sea coast, skirting the southern steppes, to the Don Lowlands [Heptner *et al.* 1967]. However, this did not correspond to reality, as the otter was also found in the steppe zone at that time. In particular, they were found in the lower reaches of the Dnister and Dnipro rivers, in the floodplains of the Ingul and Southern Bug (Nova Petrivka, Nova Odesa, Voznesensk, Pervomaisk), in the Ingulets (Dariivka), as well as in the bays of the Kakhovka Reservoir and Lake Lenin. From 1947 to 1961, hunters in Odesa, Dnipropetrovsk, Mykolaiv, and Kherson oblasts harvested between 1 and 15 otter pelts annually [Abelentsev 1968]. In 1961, one otter was shot by hunters on the Obytichna River in Primorskyi Raion, Zaporizhzhia Oblast, near the village of Radolivka[1].

For a long time, the Eurasian otter was absent from the lower reaches of the Dnipro River and was not included in the list of well-studied fauna of the Black Sea Biosphere Reserve. However, after 1965, sightings of the species in its water bodies became relatively regular [Gizenko 1967]. During this period, the otter was also a rare inhabitant of the floodplain lakes of the Siverskyi Donets, where it was found in Kreminna, Stanitsa-Luhanska, Sloviano-Serbskyi and some other raions of Luhansk Oblast [Sulik 1979].

Subsequently, despite targeted searches for otters, no new habitats were found in southern Ukraine. However, we subsequently established [Volokh 2003] that between 1980 and 1985, in the steppe region between the Dnipro and Don rivers, the otter, as a great rarity, survived in the following locations:

- the Dnipro floodplains between the cities of Nova Kakhovka and Kherson;
- the headwaters of the Kakhovka Reservoir (Bilenko-Rozumovskyi floodplains) and the southern part of Khortytsia Island;
- the Samara River in Dnipropetrovsk Oblast;
- the lower reaches of the Southern Bug, Dnister, and Danube;
- the floodplain of the Siverskyi Donets in Donetsk and Luhansk oblasts.

The regulation of the Dnister River's flow by hydroelectric dams and the embankment of the floodplain during the construction of the Odessa–Reni motorway led to the significant drying up of its delta. Following this, some of the otters migrated to small steppe rivers (Alkaliya, Baraboy, Kuchurgan, Kuyalnik, Sarata, Yagorlik, etc.), as well as to the Danube and Black Sea estuaries. This led to the formation of a significant south-western population[2]. Since time immemorial, this animal has inhabited the Ingul, Southern Bug, and Ingulets rivers in Mykolaiv and Kherson oblasts. By the end of the 20th century, it had spread to ponds and became a common species on many tributaries of the aforementioned rivers [Nakonechny & Nakonechna 2023].

[1] Oral report by V. S. Havrylenko, Director of the Askania-Nova Nature Reserve.
[2] Rozhenko, M. V. 2006. Carnivore Mammals of the North-Western Black Sea Region (Fauna, Population Dynamics and Morphology): Abstract of Thesis. Institute of Zoology NAS of Ukraine. Kyiv, 1–24. [Ukrainian]

In 1987–1988, otters appeared in the south of Kherson [Roman 2000] and Zaporizhzhia oblasts, and in 1992–2003 in many other locations [Volokh 2003]. At the same time, the otter appeared in the Black Sea bays on the Kinburn Peninsula [Selunina 2008]. By the end of the 20th century, otters had already been recorded in Dnipropetrovsk Oblast in the floodplain lakes of the Orel River (the villages of Mohyliv and Baibakivka in Tsarychanka Raion, and the villages of Kovpakivka and Hupalivka in Magdalynivka Raion), on the Vovcha River (Pokrovskyi), the Karachunivskyi Reservoir (Kryvyi Rih), in the Nikopol floodplains (Nikopol), and in the lower reaches of the Bazavluk River near the village of Leninske in Apostolivskyi Raion [Bulakhov & Pakhomov 2006]. In the water bodies of the Dnipro–Oril Nature Reserve, the prolonged presence of otters has been recorded only in certain lakes (Solone, Solonenke, Horbove, and Sokilky) [Antonets & Okulova 2014].

In Donetsk Oblast, as early as 1988, we recorded the presence of otters in Velyka Novosilka Raion in the Mokri Yaly River near the village of Komar, as well as in Dobropillia Raion on the Byk River near the village of Kamianka. Around 1990–1995, their rapid spread to other parts of the Donbas began to be observed. Via the tributaries of the Siverskyi Donets (Borova, Derkul, Zherebets, Chervona, Tepla, etc.), it spread into the steppe regions of Donetsk (Sloviansk, Krasnolymansk) and Luhansk (Bilovodsk, Bilokurakine, Lutugino, and Sloviansko-Serbsk) oblasts [Kolesnikov & Kondratenko 2006; Taranenko *et al.* 2008]. The otter soon colonised the water bodies of Antratsyt, Markiv (the rivers Aidar and Lizna), and Krasnodon (the rivers Velyka Kamianka and Luhanchyk) raions [Zagorodniuk & Korobchenko 2014].

In 2007, otters began to be sighted in the Kamyshevakha and Lozova rivers (Luhansk basin) near the city of Stakhanov. Until 1990, it inhabited most water bodies in the steppe zone, but was absent from a large part of Kherson Oblast south of the Dnipro. The otter's colonisation of this territory was facilitated by the construction of the North Crimean Canal (1957–1994) and the Kakhovka irrigation system (1967–1991), both of which featured extensive water networks (Fig. 2).

In general, by the end of the 20th century, the southern boundary of the otter's range had reached the coasts of the Azov and Black seas, and between 2010 and 2015, it entered the Crimean Peninsula via the North Crimean Canal, where it had been absent for several thousand years (Fig. 3).

The destruction of the Kakhovka Hydroelectric Power Station dam by Russian occupiers on 6 June 2023 had a major impact on all residents of the Dnipro floodplain. According to data from the Hydrometeorological Institute of the State Emergency Service of Ukraine, this resulted in the transformation of the Kakhovka Reservoir (area: 2155 km², length: 240 km, and maximum width: 23 km) into a system of channels and lakes covering an area of 655.9 km² as of 18.06.2023. Despite this ecological disaster, the Eurasian otter has gained many new high-quality habitats between the cities of Zaporizhzhia and Kherson, which it will colonise in the coming years.

In southern Ukraine, with its shallow rivers that have very slow currents and previously often froze to the bottom, a significant cause of the otter's expansion has been substantial climate warming. This has resulted in the absence of ice cover, or its short duration, on many of Ukraine's water bodies over the last 50 years. As the otters' dispersal occurs during the winter period, this has enabled the pioneers of the migration to establish themselves in their new habitats.

Fig. 2. Various otter habitats in the steppe zone: (*a*) the Siverskyi Donets River; (*b*) the main canal of the Kakhovka irrigation system; (*c*) seasonal irrigation canals.

Рис. 2. Різні місця проживання видр у степовій зоні: (*a*) річка Сіверський Донець; (*b*) головний канал Каховської зрошувальної системи; (*c*) сезонні зрошувальні канали.

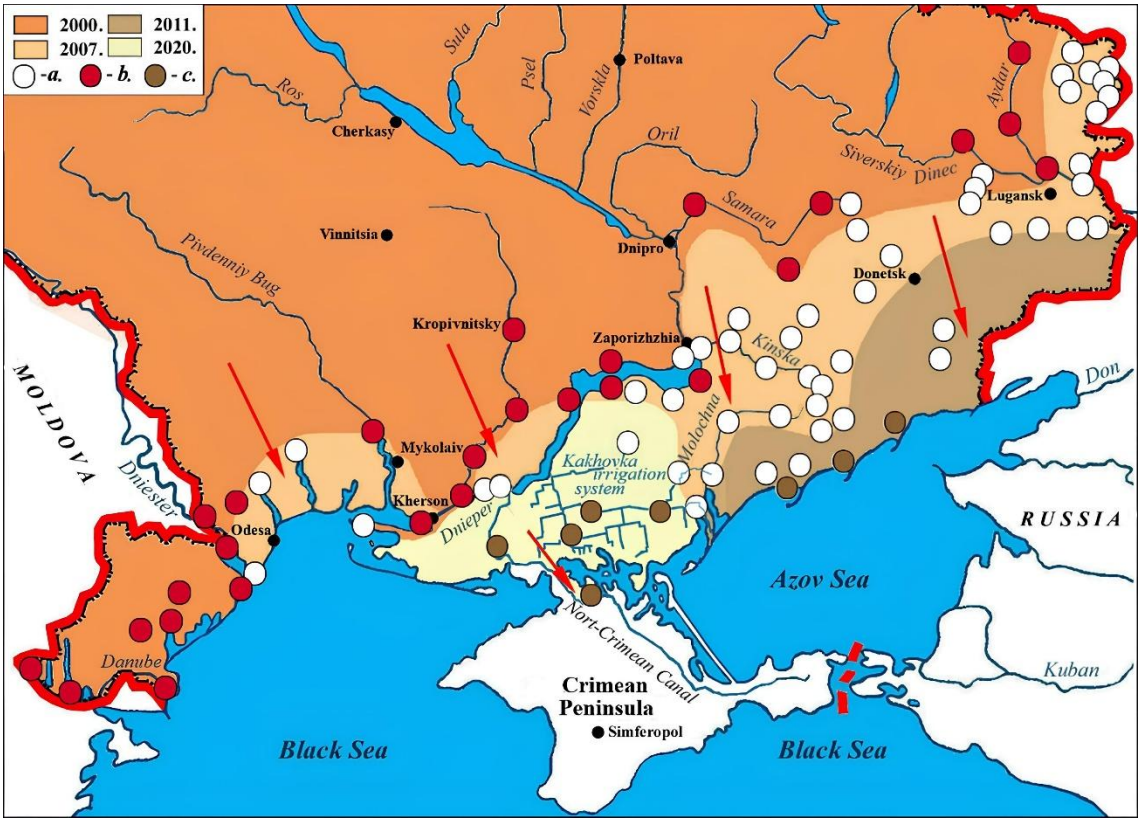

Fig. 3. The southern part of the otter's range in Ukraine: (*a*) 1965; (*b*) 1990; (*c*) 2010–2015.

Рис. 3. Південна частина ареалу видри в Україні: (*a* 1965 р.; (*b*) 1990 р.; (*c*) 2010–2015 рр.

Although the otter was listed in Ukraine's Red Book in 2009, it should be noted that this measure has not been backed up by any concrete conservation actions and has had little impact on the recovery of the species' populations. The otter is currently saved, like other fur-bearing animals, solely by the absence of fashion trends and, consequently, the lack of demand for its fur. In this regard, a recovery of its populations has been recorded in Belgium, Denmark, Germany, France, Switzerland, and other European countries. In contrast, in the northern part of European Russia, where hunting takes place, there is a growing trend towards listing the Eurasian otter in regional Red Data Books [Oleynikov & Saveljev 2016].

Otter population dynamics

Otter hunting is characterised by low efficiency and requires experience, which hunters in the species' new habitats lack. Due to its nocturnal activity, its presence remained undetected for a long time, allowing the immigrants to colonise suitable habitats and increase their numbers.

Until 1961, no census of game mammals had been conducted in Ukraine, and therefore it is impossible to determine their previous population size. An analysis of otter pelt harvests is of some value to researchers [Abelentsev 1977], but, due to the appropriation of a certain quantity of fur and its sale through private channels, it cannot even provide a reasonable estimate of its approximate former population size. Following the organisation of special censuses in Ukraine, the first factual data on the size of the otter population and other wildlife became available.

In 1961, 1600 individuals were recorded, and 4000 otters in 1969. Most of the animals lived in the Polissia regions (around 2000) and in the forest-steppe (around 1200); significantly fewer were recorded in the Carpathians (around 400) and in the steppe zone (370) [thesis by Krainev, loc. cit.].

In Cherkasy Oblast, according to author's autumn censuses, the otter population declined from 185 to 35 individuals between 1964 and 1975. At the same time, hunters handed over a total of just 17 skins to state purchasing points between 1964 and 1967, and none at all between 1968 and 1975. There is no doubt that the data obtained were very close to the truth, as at that time the otter was a sought-after trophy and hunters attached great importance to determining its population size.

Subsequently, as the populations of wild boar, elk, roe deer, and red deer grew and hunting for them intensified, priority was given to these species in Ukraine. Otters and some other fur-bearing animals were overlooked by the hunting management authorities and, in the 1980s, were excluded from official state statistics. It is therefore simply impossible to track changes in its population over a long period of time across the whole country. The resumption of otter surveys and the collection of data on its population in most regions has not led to an improvement in the quality of monitoring of its populations. This is primarily due to the fact that censuses of most game mammals are conducted within a very short timeframe, predominantly using methods such as noise-driven drives, tracking, and counting animals at feeding sites, etc. In contrast, otter surveys are highly dependent on weather conditions and require the demarcation of individual plots, special assessment of water bodies for subsequent extrapolation, and so on [Georgiev 2007].

In other words, following the ban on hunting this species and its inclusion in Ukraine's Red List, the accuracy of population estimates has deteriorated significantly. It is known that in 2000 there were 8735 otters in our water bodies, whereas 11 685 in 2005, 12 232 in 2010, 13 614 in 2015, and 13 972 in 2019 (Table 1). They merely confirm the indisputable fact that the otter population in Ukraine is growing and that the species has become established across all regions.

Table 1. Dynamics of the Eurasian otter population in Ukraine*

Таблиця 1. Динаміка чисельності видра річкової в Україні*

Territorial affiliation	1995	2000	2003	2005	2007	2016	2019
Cherkasy Oblast	212	300	411	389	355	390	396
Chernivtsi Oblast	61	237	385	545	606	608	611
Chernihiv Oblast	496	400	386	510	449	666	828
Dnipropetrovsk Oblast	15	27	101	157	205	279	79
Donetsk Oblast	12	37	10	4	11	101	138
Ivano-Frankivsk Oblast	109	157	215	299	302	423	543
Kropyvnytskyi Oblast	164	653	463	291	500	641	783
Kharkiv Oblast	109	651	938	947	404	188	240
Kherson Oblast	–	9	17	50	34	139	82
Khmelnytskyi Oblast	450	756	879	1066	1262	1253	1 244
Kyiv Oblast	419	605	779	680	726	738	753
Luhansk Oblast	22	4	20	211	237	248	118
Lviv Oblast	228	241	342	490	564	1127	1 240
Mykolaiv Oblast	–	20	73	77	128	82	39
Odesa Oblast	147	113	59	43	62	29	18
Poltava Oblast	637	846	1066	1276	1332	1207	1 083
Rivne Oblast	308	585	683	745	832	797	763
Sumy Oblast	301	525	681	760	768	935	903
Ternopil Oblast	124	138	169	247	275	474	480
Vinnytsia Oblast	1075	1154	1167	1115	903	1289	1 477
Volyn Oblast	239	342	537	481	585	662	639
Zakarpattia Oblast	89	282	448	536	640	528	563
Zaporizhia Oblast	–	–	55	55	82	45	1
Zhytomyr Oblast	12	653	840	711	970	991	951
The city of Kyiv	–	–	10	–	–	–	–
Total	5229	8735	10 734	11 685	12 232	13 840	13 972

*According to data from the State Committee on Statistics of Ukraine, '2TP–Hunting'.

However, it is not feasible to use them to analyse the status of its regional populations. For example, according to Table 1, in the water bodies of Odesa Oblast over a 24-year period (1995–2019), there was supposedly a decline in the Eurasian otter population from 147 to 18 individuals, which does not correspond to reality. Despite the fact that in 2001 its reported population stood at around 300 individuals, its actual size was significantly larger. In particular, according to scientists, in the Danube Biosphere Reserve alone, 97–130 otters were recorded at the end of the 20th century [Zhmud 1999]. Furthermore, many animals inhabited the Danube floodplain outside the reserve, the floodplains of the Dnister, and the banks of numerous estuaries and rivers. Naturally, in some places the otter population has declined, whilst in others it has increased. In 2002, there were at least 100–120 otters occurring in Mykolaiv Oblast (according to estimates by G. Boiko, a game expert from the former Mykolaivlis association), which is several times higher than the official statistics.

However, in many places where otters have appeared recently, their numbers were not counted at all, but were given as estimates. In 2002, at least ~300 otters inhabited the water bodies of Zaporizhzhia and Luhansk oblasts, and around 150 occurred in Donetsk Oblast, although officially the figures were only a few dozen individuals. It should be noted that the area of land suitable for otter habitation is significantly smaller in most steppe regions than in the forest-steppe or Polissia regions. According to the results of a questionnaire survey in 98 raions across 10 oblasts of Ukraine, a stable otter population was recorded in 67.4% of cases, resources increased in 20.4%, and declined in only 12.2%. Moreover, in the latter case, this concerned the upper reaches of small rivers and streams, where otters reside only in summer [Panov 2002].

Nowhere across Ukraine's various natural zones have we been able to record any decline in otter populations or instances of their disappearance. In the optimal parts of their range, a normal redistribution of resources is taking place, linked to changes in the hydrological regime of water bodies. In areas where marshes have been drained in Polissia and the forest-steppe, otters readily inhabit drainage channels, reaching high population levels in these new habitats. Consequently, statistical data on otter populations in Ukraine are significantly underestimated and far from reality.

Population surveys conducted by scientists have shown that, despite the deterioration in the hydrochemical characteristics of water bodies and the decline in fish diversity, otter populations are increasing in many parts of Ukraine (Fig. 4). In the water bodies of the Dnipro–Oril Nature Reserve, the otter population fluctuated between 4 and 8 individuals in 2001–2009 [Antonets & Okulova 2014].

In 2007–2008 the otter population in the water bodies of Kharkiv Oblast was estimated at 100–120 individuals [Skorobogatov *et al.* 2015]. The animals preferred medium-sized rivers, where their population density was 0.8 individuals per 10 km. This figure in small rivers (Bereka, Britai, Homilsha, Mzha, Merla, Orelka, Orel, and others) was significantly lower, at 0.4–0.6 individuals per 10 km. Between 2006 and 2012, the population of the Eurasian otter in the lower reaches of the Southern Bug and Ingul basins increased significantly. In 2023–2024, it was estimated at 86–108 individuals, which is 58.1% higher than in 1992–1995 and 38.5% higher than in 2000–2005.

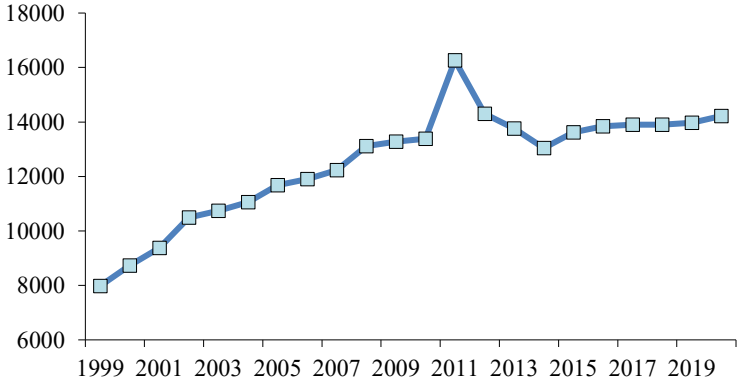

Fig. 4. Population trends of the Eurasian otter in Ukraine in 1999–2020 according to 2TP–Hunting data.

Рис. 4. Динаміка чисельності видри річкової в Україні протягом 1999–2020 рр. за даними «2ТП–Мисливство».

The average estimated otter population density was 0.49 individuals: 0.18 in the Berezan Estuary, and up to 1.14 individuals per 10 hectares of water area in the lower reaches of the Siniukha and the Kovalevsky floodplains. The main habitats of the Eurasian otter remain the floodplains of the Southern Bug, Ingul, and Ingulets rivers, from which the animals disperse into tributaries and migrate across watersheds [Nakonechny & Nakonechna 2023]. This indicates a growing population, occurring against a backdrop of range expansion. Currently, during the war with Russia, the otter population has increased, but it is impossible to record its numbers in many water bodies.

In the water bodies of the Russian Federation, the otter population declined by 10–20% between the 1940s and 1950s and the early 2000s. However, in some regions of the country, as well as in Mongolia and Kazakhstan, there has been an increase in otter populations and an expansion of their range over the last 5–7 years due to a decline in demand for their fur. The current estimated otter population in the Russian Federation is ~60–80 thousand individuals. Population density can vary from 5–8 to 0.05 individuals per 10 km of watercourse shoreline. The otter is listed in the Red Data Books of 48 countries and is a commercially hunted species in 21 regions of the Russian Federation [Oleynikov, Saveljev 2016].

Causes of otter mortality

Fish traps and gillnets pose a major threat to animals living along the banks of water bodies. Of the 486 cases of otter mortality in the former GDR, 45% occurred in these fishing traps in the north, 35% in the centre, and 1.9% in the south. Many animals were caught in snares (14%), killed directly by humans (12%), or died in collisions with motor vehicles (11%) [Stubbe 1977]. In the central regions of the country, out of 127 cases, 32.3% died in traps, 25.2% from natural disasters; 9.4% were shot, 10.2% killed by other means, 6.3% killed by dogs, and 15.8% died in road traffic accidents [Stubbe 1978]. A study of 92 dead otters in northern Germany (Schleswig–Holstein) showed that roadkill was the main cause of death. Among the infectious diseases found were *Vagococcus lutrae*, *Toxoplasma gondii*, and *Emmonsi*a spp. Non-suppurative forms of pneumonia were predominant in the lungs of some of the dead animals (n = 12) [Rohner *et al.* 2022]. In British rivers, the gall fluke (*Pseudamphistomum truncatum*) has a significant negative impact on Eurasian otters (n = 160). When this trematode is detected, a strong positive correlation was observed between infection and gallbladder pathology [Simpson *et al.* 2009].

The main causes of death (n = 213) among Eurasian otters in Ukraine (Fig. 5) are the killing of animals by owners of fish ponds (75.59%), being hit by vehicles (5.16%), the effects of floods and ice-related phenomena (5.63%), predation by white-tailed eagles (0.91%) and, at the end of the 20th century, hunting by hunters (12.71%).

Within the Dnipro–Oril Nature Reserve, three cases of otters being killed in fishing traps were recorded in 1998, and otters were killed by poachers in 2008 [Antonets & Okulova 2014]. At the slightest opportunity, the animals fall prey to the tenants and owners of the ponds where carp (*Cyprinus carpio*), silver carp (*Hypophthalmichthys*) and grass carp (*Ctenopharyngodon idella*) are farmed (Fig. 6, *a–b*). In recent years, there has been a noticeable increase in the number of otters killed by vehicles. Post-mortem examinations have shown (Fig. 6, *c*) that in such cases, death occurs instantly as a result of damage to the skull and brain.

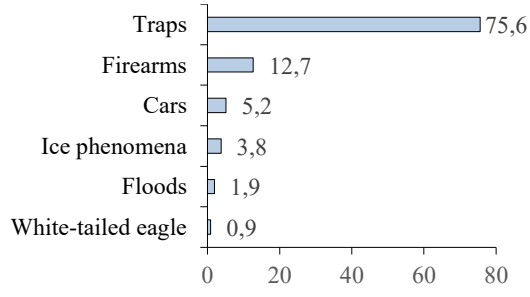

Fig. 5. Causes of otter mortality in Ukraine (%).

Рис. 5. Причини смертності видр в Україні (у %).

Fig. 6. Dead otters: (*a*) killed in a trap (Chernivtsi Oblast, Hlybochok River, 28 February 2024); (*b*) killed by hunters (Zaporizhzhia Oblast, pond, village of Chervonyi Yar, 25 November 2015); (*c*) skull fragments following a collision with a car (Chernivtsi Oblast, town of Storozhynets, 4 July 2024). Photo by author.

Рис. 6. Мертві видри: (*a*) загибла в пастці (Чернівецька область, р. Глибочок, 28.22.2024); (*b*) вбита мисливцями (Запорізька область, ставок, с. Червоний Яр, 25.11.2015); (*c*) уламки черепа після зіткнення з автомобілем (Чернівецька область, м. Сторожинець, 04.07.2024). Фото автора.

Currently, in many European waters, the Eurasian otter is threatened by persistent pollutants that, despite legal prohibition and government control, significantly exceed toxic thresholds [Kean *et al.* 2021]. For example, high concentrations of organochlorine pesticides, PCBs, heavy metals and anticoagulant rodenticides were detected in the tissues of this animal from the upper Loire river basin (France) [Lemarchand *et al.* 2010]. The levels of perfluoroalkyl substances in water bodies across England and Wales have risen significantly, which has had a negative impact on otter survival [O'Rourke *et al.* 2022].

In southern Ukraine, the Eurasian otter, having settled in the rivers, has begun to inhabit ponds. It can live there all year round, but some individual otters migrate to these bodies of water during the hot summer, when the steppe rivers become very shallow or dry up. In winter, when the ponds freeze over, the otters move from the ponds to the rivers. This period in the animals' lives is the most dangerous—it is during these migrations that they fall prey to wolves, dogs, and poachers [Nakonechny & Nakonechna 2023].

Conclusions

1. At the end of the 20th century, the otter's range in Ukraine expanded as it colonised many water bodies in the steppe zone. In 2010–2015, it penetrated the North Crimean Canal to the freshwater discharge sites on Lake Syvash. Currently, the southern border of the range runs along the northern coast of the Black and Azov seas.

2. Due to the lack of demand for otter fur, poaching is no longer a limiting factor for its population. The most negative impact is caused by owners of ponds where mainly carp, silver carp, and grass carp are bred.

3. The reasons for the resettlement and growth of the otter population in Ukraine were the reduction of hunting pressure, the construction of a network of irrigation canals, and the reduction in the duration of ice cover.

4. To date, we have little knowledge of the geographical distribution and population size of this fascinating animal, which wildlife experts can only estimate very roughly.

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Handling of materials. All manipulations with living animals were carried out using non-lethal techniques and in compliance with the current legislation of Ukraine.

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