

The present status of Bewick's Swans *Cygnus columbianus bewickii* in Ukraine

ALEXANDER A. CHOVAN & VITALY V. KAZANNIK

Department of Zoology, Taras Shevchenko National University of Kiev,
64 Volodymyrska Street, Kiev 01601, Ukraine.

E-mail: alexchov1987@gmail.com

Abstract

A review of the literature on Bewick's Swans *Cygnus columbianus bewickii* in Ukraine indicated that it was an occasional visitor to the country during the 20th century, with small numbers recorded wintering on the northern coast of the Azov Sea. The species has occurred more regularly since winter 2006/07, with some tens of birds counted on the Dnieper River during migration and in the central Syvash on the west coast of the Azov Sea in winter months. Resting and foraging sites were identified on Kiev Reservoir, where numbers of Bewick's Swans counted peaked at 83 individuals in November 2014. We report here for the first time the importance of the Dnieper River in providing staging sites for Bewick's Swans in Ukraine.

Key words: Bewick's Swan, Dnieper River, Kiev Reservoir, migration routes.

The Bewick's Swan *Cygnus columbianus bewickii* breeds on tundra habitat in arctic Russia, from Cheshskaya Bay (east of the Kanin Peninsula) in the west to Kolyuchin Bay on the Chukchi Sea in the east (Rees & Beekman 2010; Nagy *et al.* 2012). Three wintering populations have been defined: the Northwest European Population which breeds in the western part of the range and migrates to winter in northwest Europe; the Caspian Population which winters on the Caspian Sea; and the Eastern Population which nests in the northeast Russia and winters in China, Japan and Korea. The boundaries of the breeding distributions for each of the three populations and the

degree of any overlap between them in the Russian arctic remain unclear (Syroechkovski 2002; Rees 2006). Current thinking is that the Caspian Population breeds in arctic western Siberia, with spring migration routes from the Caspian Sea following the Tobol, Ishim and Ob River catchments (Belik *et al.* 1997) to nest sites most likely on the Yamal and possibly the Gydan Peninsulas, but this requires confirmation (Syroechkovski 2002; Rees & Beekman 2010). Observations from the River Voykar suggest that Bewick's Swans breeding in west Siberia follow two migratory routes, with some birds heading to the Caspian/central-Asia region to winter

and others using unknown wintering sites further east in central to southeast Asia (Golovatin & Paskhalny 1997; review in Rees 2006). The western boundary of the breeding range for the Eastern Population has traditionally been considered to be the Lena River Delta (Rees 1991; Kistchinski 1979), with individuals ringed on the Delta subsequently seen wintering in China (Rees 2006), but again whether Eastern Population birds nest further west needs to be confirmed.

The Bewick's Swan has the global conservation status of Least Concern (BirdLife International 2010), and the Eastern Population is currently estimated at around 92,000 individuals. The Northwest European population however is classified as Vulnerable (BirdLife International 2004); it is listed as Category A(3)c of the African Eurasian Waterbird Agreement (AEWA), and on Annex I of the EU Birds Directive. Although its numbers increased to a peak of 29,000 birds in the mid 1990s, these dropped to *c.* 21,500 by January 2005 with national trends indicating a continuing decline since then (Rees & Beekman 2010). The reasons for the decrease in numbers is unclear (Rees & Beekman 2010; Nagy *et al.* 2012), but this tendency is currently cause for concern. Further east, the Caspian-wintering population is also listed as Category A(1)c on AEWA because of its smaller population size, estimated at *c.* 1,000–1,500 birds (Syroechkovski 2002; Rees 2006) and the species is included in the Red Data Book for Ukraine (Akimov 2009; Godlevska *et al.* 2010).

Whether the small numbers of Bewick's Swans (generally < 100 birds; Scott & Rose

1996) seen wintering in eastern Europe, Turkey, Greece and Ukrainian parts of the Black Sea constitute part of the Northwest European or the Caspian Population is unclear and cause of some debate. Kistchinski (1979) and Lysenko (1991) considered swans in Ukraine to be part of Northwest European Bewick's Swan population (Kistchinski 1979; Lysenko 1991), and this was supported by a re-sighting on the Evros Delta, Greece, of an individual ringed in the Netherlands (Nagy *et al.* 2012). Two individuals (thought to be young birds) ringed in the UK were however subsequently recovered in Astrakhan, which is within the wintering range for the Caspian Population, thus indicating that limited switching of individuals between flyways may occur (Rees 1991).

In Ukraine, Bewick's Swans have traditionally been observed in small groups during migration and in winter, but larger numbers have been reported in recent years. This coincides with a recent increase in the number of Bewick's Swans wintering in Greece, where 473 birds were counted on the Evros Delta on 18 January 2006 and 2,610 individuals in February 2006 (the most Bewick's Swans ever to have been recorded in Greece at the time: Kalmouki 2014; Katsadorakis *et al.* 2006; Fig. 1). Here we present more detailed analysis of the migratory status of the Bewick's Swan in Ukraine, especially during migration, to try and assess whether these birds are passing through to winter in Greece, and to understand whether swans in Ukraine belong to the Northwest European or to the Caspian Population. We also identify staging sites in Ukraine to focus

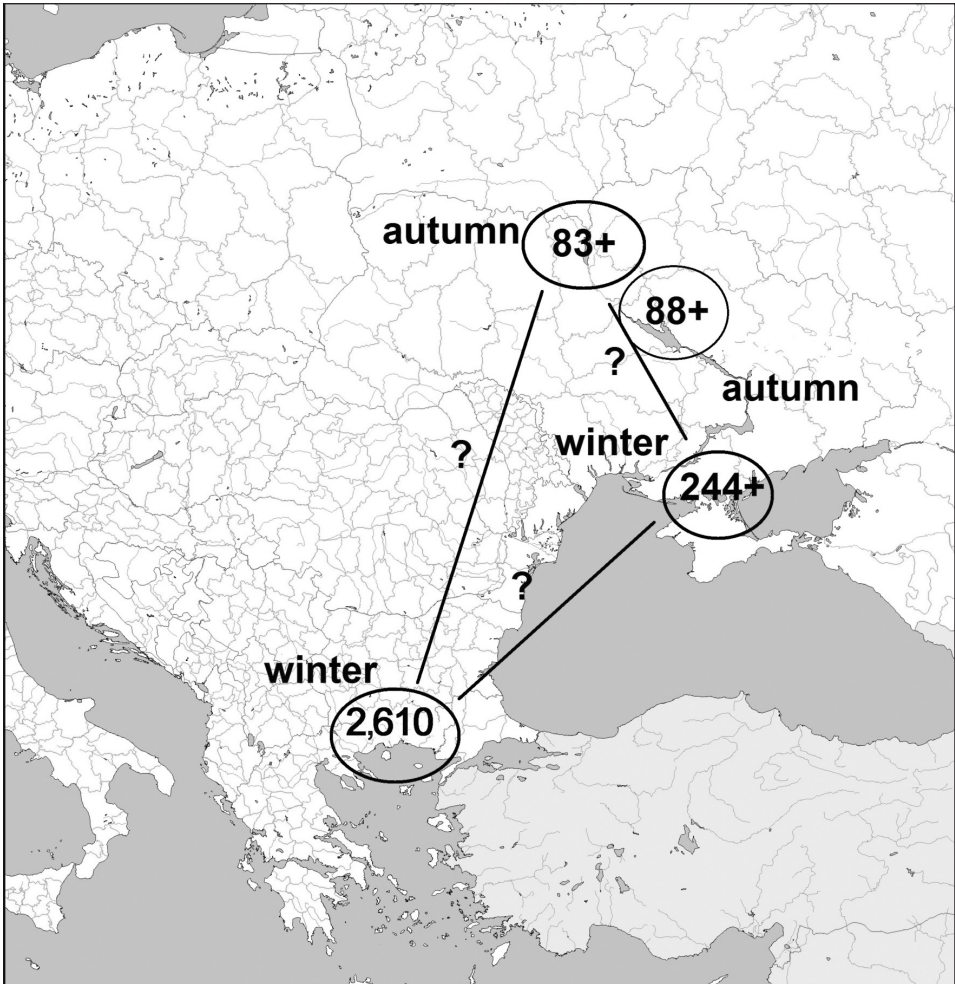


Figure 1. Highest numbers of Bewick's Swan recorded in Ukraine (to 2014) and Greece (to 2014). Queries indicate potential but presently unconfirmed migration routes.

conservation efforts on these areas, and to determine whether their status has changed over time, by comparing recent sightings with existing and published historical data, analysis of which has not been undertaken for *c.* 20 years. The analysis draws upon literature published to date, includes our own counts, and aims to: (1) assess the

present status (both distribution and abundance) of migratory Bewick's Swans in Ukraine (especially in the Dnieper River valley, which is the main waterway in the country), and (2) consider the causes of any potential changes over time in the status and sites used by Bewick's Swans in Ukraine.

Methods

Two methods were used to compile data on Bewick's Swans in Ukraine: (1) a review of published information, and (2) field investigations conducted in northern Ukraine during autumns 2013 and 2014. Historic records were obtained from literature published between the late 19th century up until 2014. The internet search engine "Google" and the social network for scientists "ResearchGate" were also used to source information about Bewick's Swans in Greece and in non-Ukrainian publications.

The Dnieper River is the main migration route for many waterfowl (Poluda 1983, 1992; Poluda & Ilyukha 2012), and we suggest that this river could also be important for Bewick's Swans, since this

species has been observed there with increasing frequency in recent years. Fieldwork (swan counts) therefore was conducted at Kiev Reservoir on the Dnieper River, because earlier reports indicate that its shallow water areas are suitable for swan foraging (Poluda 1996 and see Table 1). Counts of Bewick's, Whooper *Cygnus cygnus* and Mute Swans *C. olor* were mainly conducted in the morning, between 07:00–11:00 h, from vantage points situated along the edge of the reservoir from 27 September to 5 December 2014, with the majority (eight of 18 days) of observations being made during November 2014. Counts were also carried out on four dates in November 2013, when the survey area was more restricted, covering only the small southernmost part of the reservoir, whereas

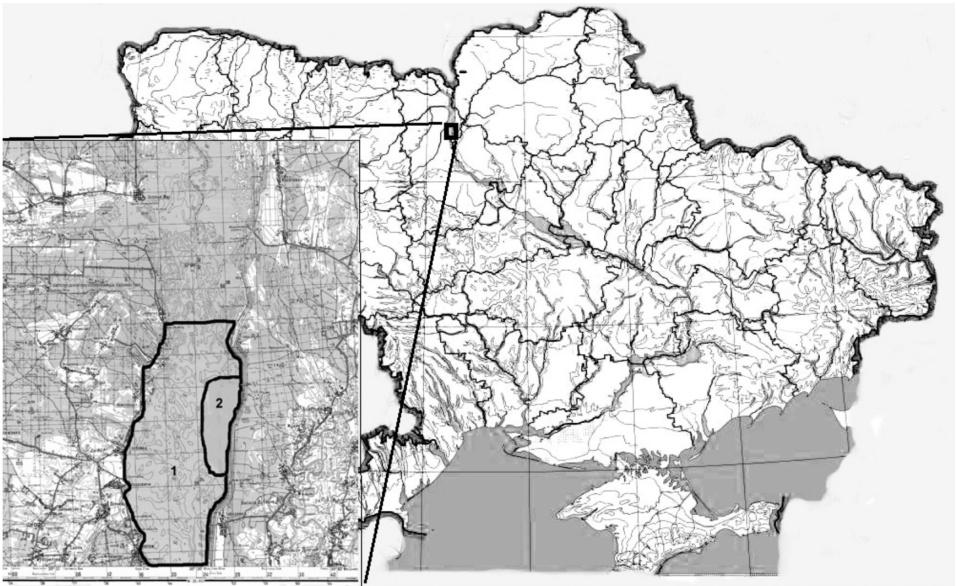


Figure 2. Survey area (section 1) and Bewick's Swan migratory sites (section 2) on Kiev Reservoir, Ukraine, in autumn 2014.

the larger part of the reservoir was covered in 2014. We observed Bewick's Swan flocks only within a single 7 km section of the reservoir and only during November (Fig. 2).

Results

Review of the literature

The first documented observations of Bewick's Swans in Ukraine originate from the end of the 19th century, when they were seen near the village of Somovka in the Kharkiv region and on the Oril River during spring (point 1 in Fig. 3) (Banik 2007). In the 1890s M. Gavrilenko (1925) reported a shot swan on the Orchik River near Brydanyvka

village (Kharkov or Poltava district) (point 2 in Fig. 3). More recently, the species was regarded as a rare winter visitor throughout the 20th century, occurring primarily on the northern coast of the Azov Sea (Lysenko 1991; all reported observations are listed in Table 1, with locations shown in Fig. 3). Ardamat'skaya & Korzyukov (1991) mentioned that up to 10–50 Bewick's Swans occurred on the Black Sea during severe winters in the late 20th century, but did not provide detailed counts. Only in recent years have larger numbers been recorded in the country (Table 1), with a peak count of 244 birds seen in 2007 (Andryushchenko 2011).

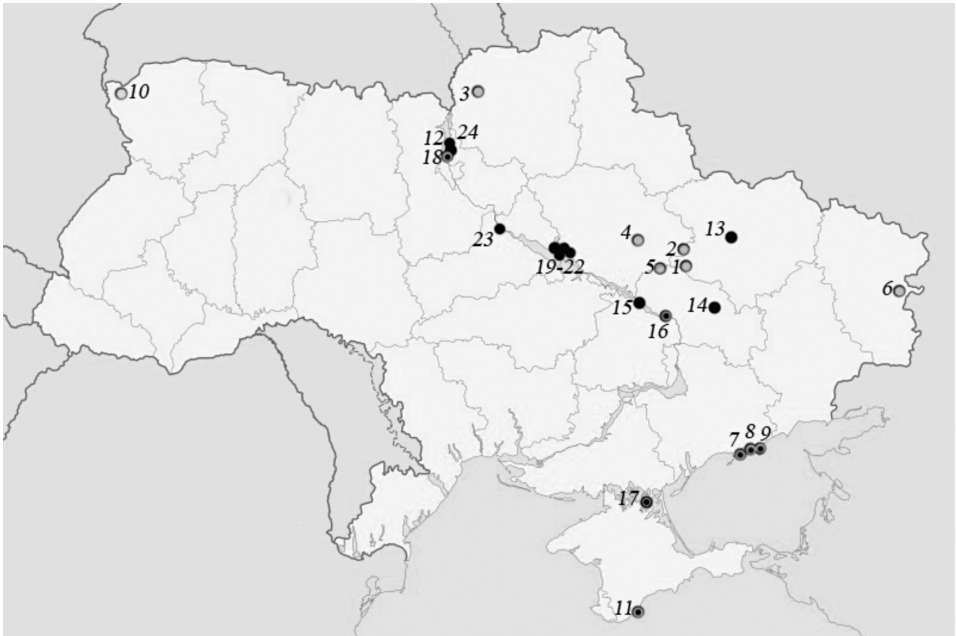


Figure 3. Sites from which Bewick's Swans have been recorded in Ukraine (1890s–2014), from a review of the literature and own data. Site names and counts for each site identified by numbers are listed in Table 1. Points 1–6 & 10 = pre-1990 records of swans on migration; points 7–9, 11 & 16–18 = location of winter sightings; points 12–15 & 19–24 = records of swans on migration from 1990–2014.

Table 1. Numbers of Bewick's Swans recorded in Ukraine, 1931–2014. Locations are indicated in Fig. 3.

Date	Region	Location	Total number of Bewick's Swans (adult/juv.)	Reference
1931	Chernigov	near Chernigov (point 3 in Fig. 3)	1	Sharleman 1936
13.11.1952	Poltava	Malo-Pereschepino village (point 4)	16	Gavrilenko 1960
14.03.1954	Dnipropetrovsk	Gupalivka village (point 5)	4	Gavrilenko 1960
28.03–15.04.1969	Lugansk	Stanichno-Lugansk fish farm (point 6)	4	Banik 2007
14.03.1983	Zaporizhia	Molochni liman (point 7)	3 adults	Lysenko 1991
15–29.01.1984	Zaporizhia	Molochni liman (point 8)	2/2	Lysenko 1991
Jan. 1980–1984	Zaporizhia	Obitohenskaya kosa-Molochni liman (point 9)	rare flocks	Lysenko 1991
22.11.1986	Volyn	Lake Lucimer (point 10)	4	Lysenko 1991
28.01.1994	Crimea	near Yalta (point 11)	1	Beskaravainiy 2008
12.03.1994	Kyiv	Kyiv Reservoir (Dnieper River) (point 12)	11	Poluda 1996
03–16.03.1996	Kharkov	Lake Liman (Zmievsky district) (point 13)	1	Banik 2007
14.03.2001	Dnipropetrovsk	Samara fish farm (point 14)	1	Syzhko & Bradbeer 2005
07.04.2005	Dnipropetrovsk	Dniprodzerginsk Reservoir (Dnieper River) (point 15)	1	Syzhko & Bradbeer 2005

Table 1 (continued).

Date	Region	Location	Total number of Bewick's Swans (adult/juv.)	Reference
125.12.2005	Dnipropetrovsk	Dniprodzerginsk HPP (Dnieper River) (point 16)	1 juvenile	Syzhko & Bradbeer 2005
15–16.01.2007	Zaporizhia	Central Syvash of Azov Sea (point 17)	244	Andryushchenko 2011
Feb. 2007	Kyiv	Kiev HPP (Dnieper River) (point 18)	6/2	Poluda 2007
21.11.2007	Cherkassy	Lypivsky ornithological refuge (Dnieper River) (point 19)	10	Gavrilyuk <i>et al.</i> 2009
22.03.2008	Cherkassy	Lypivsky ornithological refuge (Dnieper River) (point 20)	60	Borysenko <i>et al.</i> 2010
22.11.2009	Cherkassy	Lypivsky ornithological refuge (Dnieper River) (point 21)	59	Gavrilyuk <i>et al.</i> 2012
29.10.2011	Cherkassy	Lypivsky ornithological refuge (Dnieper River) (point 22)	88	Gavrilyuk <i>et al.</i> 2012
28–29.03.2013	Cherkassy	near Kanev (Dnieper River) (point 23)	2	Grishchenko & Yablonovska-Grishchenko 2013
11.11.2014	Kiev	Kiev Reservoir (Dnieper River)	83	own data

Field investigations (2013–2014)

Specific surveys were conducted during the autumns of 2013 and 2014. In November 2013, Bewick's Swans were observed near the shores of Kiev Reservoir (around the villages of Lebedivka and Vishgorod), with nine adults and one juvenile present near Lebedivka on 3 November 2013, and three adults observed at the same place on 27 November 2013. This was the third observation of the species in the area (following sightings recorded in 1994 and 2007; Poluda 1996, 2007) and the first autumn migration record of Bewick's Swans occurring in the Kiev region.

The largest numbers of Bewick's Swans were recorded during November 2014, when 11 flocks of 5–49 swans (mean \pm s.d.

flock size = 19 ± 13 swans) were counted on 7 days during the month (Fig. 4). The first sighting was of 10 birds on the shallow sites of Kiev Reservoir, *c.* 8 km north of Lebedivka village (Vyshgorod district, 50.795N, 30.544E), on 6 November. On 11 November 83 Bewick's Swans were recorded, one of the highest numbers to be observed to date in Ukraine. The largest numbers of Whooper Swans and Mute Swans during November were counts of 300 and 200 swans respectively (Fig. 4). This stretch of the reservoir additionally hosts *c.* 1,000–1,500 Mallard *Anas platyrhynchos* and 200–300 Goldeneye *Bucephala clangula*, which were seen foraging with the swans. Swans remained in this area until December, when the reservoir froze over, although some



Figure 4. Numbers of swans counted on Kiev Reservoir in November 2014.

birds were recorded by different observers on the ice-free sections. For instance, on 27 December nine swans were on the ice near a small ice-free section of water (D. Komarovsky, pers. comm.).

Swan migration was observed in the more northern parts of the reservoir. In particular, movement of swans in various directions was recorded near Rovgy village (50.914N, 30.543E) on 21 November, with 13 individuals observed moving south and six heading north in 4 h of observation. Bewick's Swans flew in flocks with Whooper Swans, with a total of 77 swans counted in seven flocks (mean \pm s.d = 11 ± 6 birds in the flock).

According to the literature, Bewick's Swans have been recorded most frequently on the east bank of Dnieper River (Fig. 3), and in recent years they have been observed on the Dnieper River mainly during the autumn and spring migrations (Gavrilyuk *et al.* 2009, 2012; Borysenko *et al.* 2010; Grishchenko & Yablonovska-Grishchenko 2013; Table 1). We suggest that this may be due to the creation of reservoirs along the Dnieper River in the second half of the 20th century providing extensive shallow areas of water which became important staging sites for migratory waterbirds.

Discussion

The recent increase in the number of Bewick's Swans counted in Ukraine suggests a possible change in migration route at least for some individuals. One can assume that some migrating Bewick's Swans were not identified during the study because of the larger numbers of Mute Swans and

Whooper Swans moving through the country at this time. It is therefore likely that the real number of Bewick's Swans staging and wintering in Ukraine is larger than is currently known, particularly among the large number of swans wintering swans in Azov-Black Sea region, where Bewick's Swans can also be present. According to the literature, Bewick's Swans were recorded sporadically and in very small numbers in the country during the 20th century (Lysenko 1991), but recent records and our own observations show that the species has occurred more regularly from winter 2006/07 onwards, stopping to rest and forage at sites along the Dnieper River, especially the shallow water areas of reservoirs. These more regular sightings may perhaps be linked to the recent increase in the number of Bewick's Swans wintering on the Evros Delta in Greece. It is unclear whether Bewick's Swans in Ukraine and indeed in Greece are from the Northwest European Population or the Caspian Population (Rees 2006), but in either event Ukraine could be providing staging areas for Bewick's Swans wintering in Greece. Alternatively, the Bewick's Swans seen on the Kiev Reservoir may be wintering on the Azov Sea in Ukraine, but the most recent records of this species on the Azov Sea date back to 2007 (Andryushchenko 2011), after which there has been no published evidence of them occurring in this area.

Surveys of the Kiev Reservoir indicated that the shallow waters between the Lebedivka and Rovgy villages were the main areas used by the swans. The Kiev Reservoir shoreline north of Lebedivka is generally an important area for a range of migratory

birds, especially during autumn migration (Poluda 1983, 1992; Poluda & Ilyukha 2012). Further monitoring of other sites in and around Kiev Reservoir, and along the reservoirs of the Dnieper River at Kaniv, Kremenchug, Dniprodzerginsk, Dnipro and Kahovka, are required in order to identify new migratory sites for this species.

Acknowledgements

We would like to thank Dr Eileen Rees for new data on swan distribution and for constructive comments on this paper. We also thank two anonymous referees and Prof Tony Fox for their useful suggestions for improving the text.

References

- AKIMOV, I.A. 2009. *Red Data Book of Ukraine. Animal World*. Globalconsulting, Kiev, Ukraine. [In Ukrainian.]
- ANDRYUSHCHENKO, YU.A. 2011. Number and distribution of waterbirds in the region in winter 2007. *Bulletin Regional Ornithological Monitoring (ROM): Results of midwinter counts of waterbirds of 2005, 2007–2010 in the Azov-Black Sea region of Ukraine* 7: 31–33.
- ARDAMATSKAYA, T.B. & KORZYUKOV, A.I. 1991. Numbers and distribution of Mute Swans *Cygnus olor*, Whooper Swans *C. cygnus* and Bewick's Swans *C. bewickii* in the Black Sea area of the Ukraine, USSR. In J. Sears & P.J. Bacon (eds.), Proceedings of the Third International Swan Symposium, Oxford 1989. *Wildfowl* (Special Supplement No. 1): 53–55.
- BANIK, M.V. 2007. The record of vagrant Bewick's Swan (*Cygnus bewickii* Yarr.) in Kharkiv region, Ukraine. *Birds of the Seversky Donets Basin* 10: 139–141. [In Russian.]
- BELIK, V.P., DEBELO, P.V., MOROZOV, V.V. & SHEVCHENKO, V.L. 1997. Bewick's Swans (*Cygnus bewickii*) in the Volga-Ural interfluvium. *Casarca* 3: 280–285. [In Russian with English summary.]
- BESKARAVAINIY, M.I. 2008. *The Birds of the Coasts of the Southern Crimea*. Lower Orianda, Simferopol, Crimea. [In Russian.]
- BIRDLIFE INTERNATIONAL 2004. *Birds in Europe: Population Estimates, Trends and Conservation Status*. BirdLife Conservation Series No. 12. BirdLife International, Cambridge, UK.
- BIRDLIFE INTERNATIONAL 2010. *Species Factsheet: Cygnus columbianus*. Accessible at <http://www.birdlife.org> (last accessed on 4 October 2010).
- BORYSENKO, M.M., GAVRILYUK, M.N. & ILYUKHA, O.V. 2010. Spring migratory gathering of waterbirds in the Lypivsky ornithological reserve in 2007–2010. *Nature Reserves in Ukraine* 16: 72–75. [In Ukrainian.]
- GAVRILENKO, M.I. 1925. *The Birds of the Government of Poltava*. Poltava Union of Hunters, Poltava, Ukraine. [In Russian.]
- GAVRILENKO, M.I. 1960. The records of arctic and boreal birds in Poltava region. *Ornithologia* 35: 436–439. [In Russian.]
- GAVRILYUK, M.N., BORYSENKO, M.M. & ILYUKHA, O.V. 2009. Number of waterbirds in Lypivsky ornithological reserve (Cherkasy region) in autumn 2006–2008. *Nature Reserves in Ukraine* 15: 60–64. [In Ukrainian.]
- GAVRILYUK, M.N., ILYUKHA, O.V. & BORYSENKO, M.M. 2012. Monitoring the avifauna of the Lypivsky ornithological reserve in autumn periods of 2009–2011. *Vestnik of Cherkasy University Series Biological Sciences* 39: 40–47. [In Ukrainian.]
- GODLEVSKA, O., PARNIKOZA, I., RIZUN, V., FESENKO, H., KUTSOKON, YU., ZAGORODNIUK, I., SHEVCHENKO, I. & INOZEMTSEVA, D. 2010. *Fauna of Ukraine: Conservation Categories. Reference Book*. L. Godlevska & H. Fesenko (eds.), 2nd edition. National Ecological Centre of Ukraine, Kiev, Ukraine. [In Russian.]

- Golovatin, M.G. & Paskhalny, S.P. 1997. Spring migration of Bewick's Swans (*Cygnus bewickii*) at the low Ob River. *Casarca* 3: 286–297. [In Russian.]
- Grishchenko, V.N. & Yablonovska-Grishchenko, E.D. 2013. New data about rare and insufficiently known bird species of the forest-steppe and forest zones of Ukraine. *Berkut* 22: 85–89. [In Ukrainian.]
- Kalmouki N. 2014. Thousands of Tundra Swans in Northern Greece. *Greek Reporter*, accessible at <http://greece.greekreporter.com/2014/02/19/thousands-of-tundra-swans-in-northern-greece/> (last accessed 24 August 2015).
- Katsadorakis, G., Vangeluwe, D., Kazantzidis, S., Poirazidis, K., Handrinos, G., Athanasiadis, A., Terzis, V. & Makrygianni, E. 2006. Observations of rare species approved by the Committee. In G. Handrinos (eds.), *Hellenic Rarities Committee Annual Report No. 1*: 1–2.
- Kistchinski, A.A. 1979. Migration of Bewick's Swans – *Cygnus bewickii* Yarr. In V.D. Illichev (ed.), *Migrations of birds of Eastern Europe and Northern Asia. Ciconiiformes-Anseriformes*, pp. 75–79. Nauka, Moscow, Russia. [In Russian.]
- Lysenko, V.I. 1991. *Anseriformes. Fauna of Ukraine*. Naukova Dumka, Kiev, Ukraine. [In Russian.]
- Nagy, S., Petkov, N., Rees, E., Solokha, A., Hilton, G., Beekman, J., & Nolet, B. 2012. International Single Species Action Plan for the Conservation of the Northwest European Population of the Bewick's Swan *Cygnus columbianus bewickii*. Wetlands International and The Wildfowl & Wetlands Trust (WWT), AEWA Technical Series No. 44. African-Eurasian Migratory Waterbirds Agreement, Bonn, Germany.
- Poluda, A.M. 1983. Some regularities of bird seasonal dynamics in Kiev water reservoir area Ukrainian SSR USSR. *Vestnik Zoologii* 53: 47–53. [In Russian.]
- Poluda, A.M. 1992. General characteristics of observable seasonal migrations of birds at Kyiv Storage Lake. In M.A. Voinstvensky (ed.), *Seasonal Bird Migrations in the Territory of Ukraine*, pp. 24–53. Naukova Dumka, Kiev, Ukraine. [In Russian.]
- Poluda, A.M. 1996. The sight of Bewick's Swan (*Cygnus bewickii*) in the Kiev region. *Materials of Ukrainian Ornithological Society* 1: 221. [In Russian.]
- Poluda, A.M. 2007. The wintering of Bewick's swans, *Cygnus bewickii* Aves, Anseriformes, in the Kiev region. *Vestnik Zoologii* 43: 376. [In Russian.]
- Poluda, A.M. & Ilyukha, O.V. 2012. Importance of Kremenchug reservoir areas of the Dnieper River for migratory birds (analysis of ringing). *Proceedings of Zoological Museum* 43: 78–91. [In Ukrainian.]
- Rees, E.C. 1991. Distribution within the USSR of Bewick's Swans *Cygnus columbianus bewickii* marked in Britain. *Wildfowl* (Special Publication No. 1): 209–213.
- Rees, E.C. 2006. *Bewick's Swan*. T. & A.D. Poyser, London, UK.
- Rees, E.C. & Beekman, J.H. 2010. Northwest European Bewick's Swans: a population in decline. *British Birds* 103: 640–650.
- Scott, D.A. & Rose, P.M. 1996. *Atlas of Anatidae Populations in Africa and Western Eurasia*. Wetlands International Publication No. 41. Wetlands International, Wageningen, The Netherlands.
- Sharleman, N. 1936. *Materials on Fauna of Mammals and Birds of the Chernihiv Region*. Ukrainian Academy of Sciences, Kiev, Ukraine. [In Ukrainian.]
- Syroechkovski, E.E. 2002. Distribution and Population Estimates for Swans in the Siberian Arctic in the 1990s. *Waterbirds* 25: 100–113.
- Syzhko, V.V. & Bradbeer, P. 2005. New bird species of Dnipropetrovsk region. *Berkut* 14: 173–179. [In Ukrainian.]