

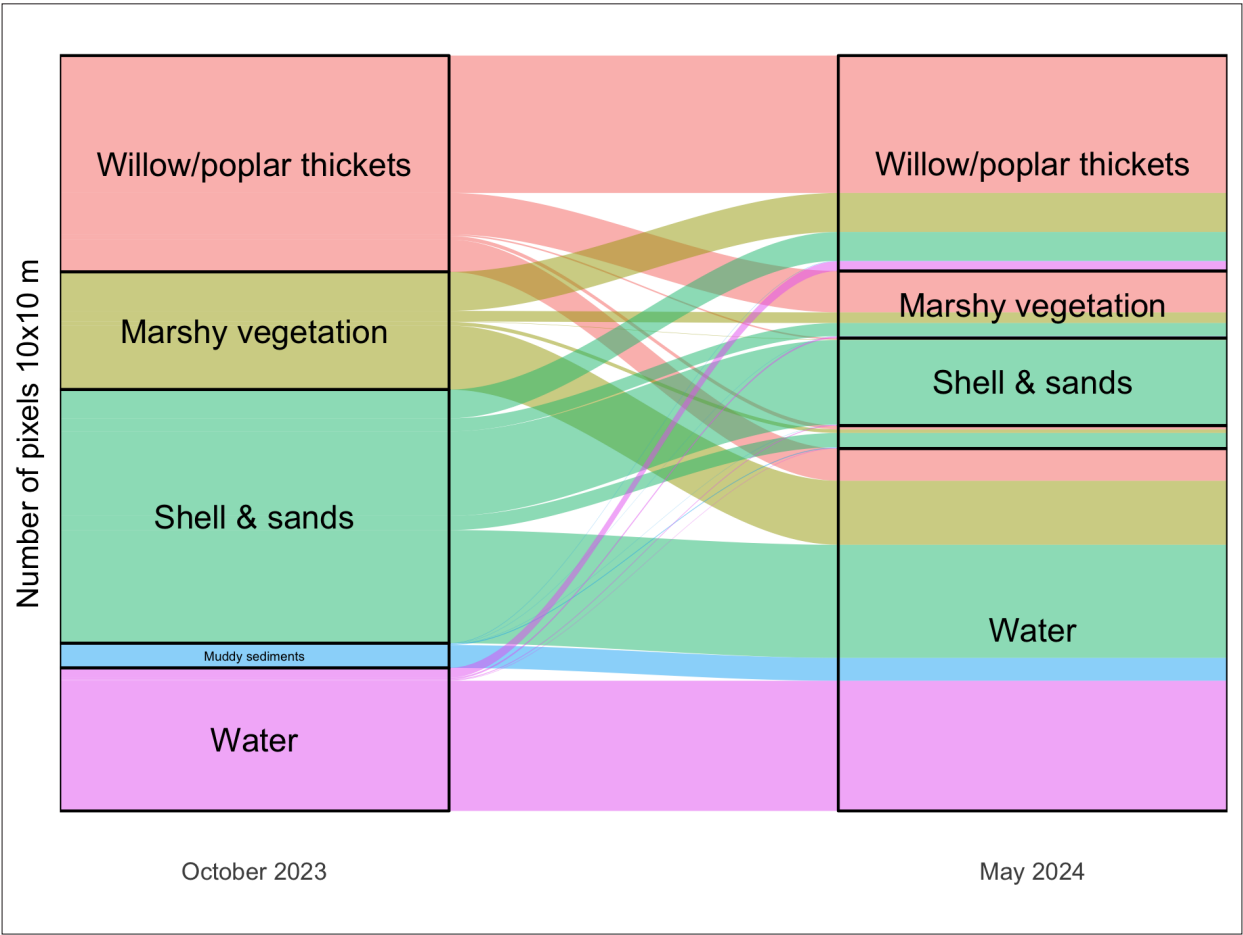


Fig. S1. Habitat transformation between 18 October 2023 and 25 May 2024, based on the results of Random Forest supervised classification of Sentinel-2 satellite images. The width of the flows indicate the number of pixels which were classified as a particular habitat type. The spring flood of 2024 caused flooding over 48% of the reservoir's bed, covered substantial fractions of all terrestrial habitats formed by the end of 2023. At the same time, vegetation establishment, tree growth, and alluvial processes might have caused transmission of some areas from one habitat type to another

Table S1. List of taxa of vascular plants found on the bottom of the former Kakhovka Reservoir, indicating the date of their recording and traits according to FloraVegEU

The presence or absence of a species on a particular survey date is indicated by Y (species present) or N (species absent). When categorizing species by life cycle, the collective group short-lived was introduced for species that can be annuals, biennials, or perennials at the same time, according to the information provided in Flora MUP. When assigning species to the type of diaspora distribution, if the source material contains an additional category of anthropochorous, we removed it from the characterization, as this type of distribution is not currently relevant for this area.

Taxon name	6/30/ 2023	10/19/ 2023	5/21–22/ 2024	Habitat Group
<i>Acer negundo</i> L.	+	+	+	muddy sediments
<i>Achillea pannonica</i> Scheele	-	-	+	willow / poplar thickets
<i>Achillea nobilis</i> L.	-	-	+	willow / poplar thickets
<i>Aegilops cylindrica</i> Host	-	-	+	sands
<i>Agrostis gigantea</i> Roth	-	-	+	willow / poplar thickets
<i>Agrostis stolonifera</i> L.	-	-	+	willow / poplar thickets
<i>Alliaria petiolata</i> (M. Bieb.) Cavara & Grande	-	-	+	willow / poplar thickets
<i>Alopecurus aequalis</i> Sobol.	-	-	+	muddy sediments
<i>Althaea officinalis</i> L.	-	-	+	muddy sediments
<i>Amaranthus albus</i> L.	-	+	+	shell
<i>Amaranthus retroflexus</i> L.	-	+	+	shell
<i>Amorpha fruticosa</i> L.	+	+	+	sands
<i>Bromus sterilis</i> L.	-	-	+	willow / poplar thickets
<i>Bromus tectorum</i> L.	-	-	+	sands
<i>Artemisia absinthium</i> L.	-	-	+	muddy sediments
<i>Artemisia vulgaris</i> L.	-	+	-	muddy sediments
<i>Atriplex prostrata</i> Boucher ex DC.	-	+	+	sands
<i>Crepis foetida</i> subsp. <i>rhoeadifolia</i> (M. Bieb.) Čelak.	-	-	+	willow / poplar thickets
<i>Bidens frondosa</i> L.	+	+	+	muddy sediments
<i>Bolboschoenus maritimus</i> (L.) Palla	-	-	+	willow / poplar thickets
<i>Bolboschoenus planiculmis</i> (F. Schmidt) T.V. Egorova	-	+	+	willow / poplar thickets
<i>Bromus inermis</i> Leyss.	-	-	+	muddy sediments
<i>Calamagrostis epigejos</i> (L.) Roth	-	-	+	sands
<i>Calystegia sepium</i> (L.) R. Br.	-	-	+	willow / poplar thickets
<i>Butomus umbellatus</i> L.	-	+	-	marshy vegetation
<i>Cynanchum acutum</i> L.	-	+	-	willow / poplar thickets
<i>Capsella bursa-pastoris</i> (L.) Medik.	-	+	+	shell
<i>Carduus nutans</i> L.	-	+	-	sands
<i>Carex hordeistichos</i> Vill.	-	-	+	willow / poplar thickets
<i>Carex pseudocyperus</i> L.	-	-	+	muddy sediments
<i>Carex secalina</i> Willd. ex Wahlenb.	-	-	+	willow / poplar thickets
<i>Carex hirta</i> L.	-	-	+	willow / poplar thickets
<i>Carex otrubae</i> Podp.	-	-	+	willow / poplar thickets
<i>Celtis occidentalis</i> L.	-	-	+	willow / poplar thickets
<i>Chenopodium album</i> L. s. l.	-	+	+	muddy sediments
<i>Chenopodium betaceum</i> Andr.	-	+	-	muddy sediments
<i>Lipandra polysperma</i> (L.) S. Fuentes, Uotila & Borsch	-	-	+	willow / poplar thickets

Table S1 (continued)

Taxon name	6/30/ 2023	10/19/ 2023	5/21–22/ 2024	Habitat Group
<i>Chondrilla juncea</i> L.	-	-	+	willow / poplar thickets
<i>Cirsium arvense</i> (L.) Scop.	-	+	+	muddy sediments
<i>Cirsium vulgare</i> (Savi) Ten.	-	+	+	muddy sediments
<i>Convolvulus arvensis</i> L.	-	+	+	shell muddy willow / poplar thickets, sandy
<i>Coronilla varia</i> L.	-	+	-	shell
<i>Crepis ramosissima</i> d' Urv.	-	+	+	willow / poplar thickets
<i>Crepis tectorum</i> L.	-	-	+	sands
<i>Cynodon dactylon</i> (L.) Pers.	-	-	+	sands
<i>Cyperus fuscus</i> L.	-	+	+	willow / poplar thickets
<i>Dactylis glomerata</i> L.	-	+	-	muddy sediments
<i>Descurainia sophia</i> (L.) Webb ex Prantl	-	-	+	willow / poplar thickets
<i>Digitaria sanguinalis</i> (L.) Scop.	-	-	+	shell
<i>Echinochloa crus-galli</i> (L.) P. Beauv.	-	+	+	shell
<i>Eleocharis palustris</i> (L.) Roem. & Schult.	-	+	-	marshy vegetation
<i>Eragrostis minor</i> Host	-	+	-	shell
<i>Elymus repens</i> (L.) Gould	-	-	+	muddy sediments
<i>Epilobium hirsutum</i> L.	-	-	+	willow / poplar thickets
<i>Erigeron annuus</i> (L.) Desf.	-	-	+	willow / poplar thickets, muddy sediments, sands
<i>Erigeron canadensis</i> L.	-	+	+	willow / poplar thickets, muddy sediments, sands
<i>Fraxinus pennsylvanica</i> Marshall	+	+	-	muddy sediments
<i>Fallopia convolvulus</i> (L.) Á. Löve	-	-	+	willow / poplar thickets
<i>Galium aparine</i> L.	-	-	+	willow / poplar thickets, sands
<i>Geranium pusillum</i> L.	-	-	+	sands
<i>Geum rivale</i> L.	-	-	+	muddy sediments
<i>Gleditsia triacanthos</i> L.	+	+	+	muddy sediments
<i>Glycyrrhiza echinata</i> L.	-	+	+	shell
<i>Hyoscyamus niger</i> L.	-	+	-	muddy sediments
<i>Hordeum murinum</i> L.	-	-	+	sands
<i>Hordeum vulgare</i> L.	-	-	+	sands
<i>Iris pseudacorus</i> L.	-	-	+	marshy vegetation
<i>Juncus articulatus</i> L.	-	+	-	marshy vegetation
<i>Juncus compressus</i> Jacq.	-	+	+	willow / poplar thickets, muddy sediments
<i>Juncus tenuis</i> Willd.	-	-	+	willow / poplar thickets
<i>Lactuca serriola</i> L.	-	+	+	muddy sediments
<i>Lactuca tatarica</i> (L.) C.A. Mey.	-	+	+	muddy sediments
<i>Malva thuringiaca</i> (L.) Vis.	-	-	+	muddy sediments
<i>Lycopus europaeus</i> L.	-	+	-	willow / poplar thickets
<i>Lolium perenne</i> L.	-	-	+	sands
<i>Lythrum salicaria</i> L.	-	-	+	willow / poplar thickets, marshy vegetation, sandy

Table S1 (continued)

Taxon name	6/30/ 2023	10/19/ 2023	5/21–22/ 2024	Habitat Group
<i>Malva pusilla</i> Sm.	-	+	+	muddy sediments
<i>Medicago minima</i> (L.) Bartal.	-	+	+	shell
<i>Medicago falcata</i> L.	-	+	-	shell
<i>Silene latifolia</i> subsp. <i>alba</i> (Mill.) Greuter & Burdet	-	-	+	muddy sediments
<i>Melilotus albus</i> (Mill.) Greuter & Burdet	-	-	+	willow / poplar thickets
<i>Melilotus officinalis</i> (L.) Lam.	-	+	-	willow / poplar thickets
<i>Mentha aquatica</i> L.	-	+	+	willow / poplar thickets, marshy vegetation
<i>Myosotis sparsiflora</i> J.C. Mikan ex Pohl	-	-	+	willow / poplar thickets
<i>Nuphar lutea</i> (L.) Sm. (terrestrial form)	-	-	+	muddy sediments
<i>Oenanthe aquatica</i> (L.) Poir.	-	-	+	marshy vegetation
<i>Oenothera biennis</i> L.	-	+	-	muddy sediments
<i>Oxybasis rubra</i> (L.) S. Fuentes, Uotila & Borsch	-	-	+	willow / poplar thickets
<i>Papaver rhoeas</i> L.	-	-	+	willow / poplar thickets
<i>Persicaria hydropiper</i> (L.) Delarbre	-	-	+	marshy vegetation
<i>Persicaria lapathifolia</i> (L.) Delarbre	-	+	+	muddy sediments
<i>Persicaria maculosa</i> Gray	-	+	+	shell
<i>Phalaris arundinacea</i> L.	-	+	+	willow / poplar thickets
<i>Phragmites australis</i> (Cav.) Trin. ex Steud. s. l.	+	+	+	marshy, willow / poplar thickets
<i>Picris hieracioides</i> L.	-	-	+	willow / poplar thickets
<i>Plantago indica</i> L.	-	-	+	sands
<i>Plantago lanceolata</i> L.	-	-	+	willow / poplar thickets
<i>Plantago major</i> subsp. <i>intermedia</i> (Gilib.) Lange	-	+	-	sands
<i>Plantago major</i> L.	-	-	+	willow / poplar thickets
<i>Poa angustifolia</i> L.	-	-	+	sands
<i>Poa annua</i> L.	-	-	+	sands
<i>Poa compressa</i> L.	-	+	+	sands
<i>Poa nemoralis</i> L.	-	-	+	willow / poplar thickets
<i>Poa palustris</i> L.	-	-	+	muddy sediments
<i>Poa trivialis</i> L.	-	-	+	muddy sediments
<i>Polygonum aviculare</i> L.	-	+	+	sands
<i>Populus nigra</i> L.	+	+	+	willow / poplar thickets
<i>Portulaca oleracea</i> L. s. l.	+	+	+	shell, muddy
<i>Potentilla supina</i> L.	-	+	-	shell
<i>Ranunculus repens</i> L.	-	+	-	willow / poplar thickets
<i>Ranunculus sceleratus</i> L.	-	+	+	muddy sediments
<i>Robinia pseudoacacia</i> L.	-	-	+	muddy sediments
<i>Rumex crispus</i> L.	-	+	+	shell
<i>Rumex hydrolapathum</i> Huds.	-	-	+	marshy vegetation
<i>Rumex maritimus</i> L.	-	+	-	willow / poplar thickets
<i>Rumex stenophyllus</i> Ledeb.	-	+	+	willow / poplar thickets
<i>Salix alba</i> L.	+	+	+	willow / poplar thickets
<i>Salix × rubens</i> Schrank	+	+	-	willow / poplar thickets
<i>Salsola tragus</i> L.	-	+	-	shell

Table S1 (continued)

Taxon name	6/30/ 2023	10/19/ 2023	5/21–22/ 2024	Habitat Group
<i>Sanguisorba minor</i> Scop.	-	+	-	sands
<i>Sclerochloa dura</i> (L.) P. Beauv.	-	-	+	willow / poplar thickets
<i>Scutellaria galericulata</i> L.	-	+	+	marshy vegetation, willow / poplar thickets
<i>Senecio vernalis</i> Waldst. & Kit.	-	-	+	willow / poplar thickets, sands
<i>Setaria viridis</i> (L.) P. Beauv.	-	-	+	willow / poplar thickets
<i>Sisymbrium volgense</i> M. Bieb. ex E. Fourn.	-	-	+	muddy sediments
<i>Sonchus arvensis</i> L.	-	-	+	willow / poplar thickets, sands
<i>Sonchus asper</i> (L.) Hill	-	+	+	willow / poplar thickets, sands
<i>Sonchus oleraceus</i> L.	-	-	+	muddy sediments
<i>Stellaria media</i> (L.) Vill.	-	-	+	willow / poplar thickets
<i>Tamarix ramosissima</i> Ledeb.	-	+	+	willow / poplar thickets
<i>Taraxacum</i> sect. <i>Taraxacum</i> F.H. Wigg. (<i>Taraxacum officinale</i> F.H. Wigg. s. l.)	-	-	+	willow / poplar thickets
<i>Torilis arvensis</i> (Huds.) Link	-	-	+	willow / poplar thickets
<i>Trifolium arvense</i> L.	-	-	+	sands
<i>Tribulus terrestris</i> L.	+	+	-	muddy sediments
<i>Trifolium diffusum</i> Ehrh.	-	+	+	sands
<i>Triticum turgidum</i> subsp. <i>durum</i> (Desf.) Husn.	-	-	+	sands
<i>Typha angustifolia</i> L.	-	+	+	marshy vegetation
<i>Typha latifolia</i> L.	-	+	+	marshy vegetation
<i>Ulmus laevis</i> Pall.	-	-	+	willow / poplar thickets
<i>Ulmus minor</i> Mill.	-	-	+	willow / poplar thickets
<i>Verbascum blattaria</i> L.	-	-	+	sands
<i>Veronica arvensis</i> L.	-	-	+	willow / poplar thickets
<i>Veronica hederifolia</i> L.	-	-	+	willow / poplar thickets
<i>Vicia villosa</i> Roth	-	+	+	willow / poplar thickets, sands
<i>Xanthium orientale</i> L.	-	+	+	sands
<i>Funaria hydrometrica</i> Hedw.	-	-	+	willow / poplar thickets
<i>Marchantia polymorpha</i> L.	-	-	+	willow / poplar thickets

Table S2. Confusion matrix for the supervised classification of habitat types, October 2023

Values indicate number of grid cells 10×10 meters within 30% of ground truth data that were not used for Random Forest model fitting (validation data). Rows are classes assigned based on field survey, columns — classification results. Misclassified cells lie apart from the diagonal.

	Closed willow and poplar thickets	Marshy vegetation	Sparse vegetation on shells and sands	Sparse vegetation on muddy sediments	Reservoirs and watercourses
Closed willow and poplar thickets	957	4	0	0	0
Marshy vegetation	3	94	0	0	0
Sparse vegetation on shells and sands	0	0	465	0	0
Sparse vegetation on muddy sediments	0	0	1	39	0
Reservoirs and watercourses	0	0	0	0	9905

Table S3. Confusion matrix for the supervised classification of habitat types, May 2024

Values indicate the number of grid cells 10×10 meters within 30% of ground truth data that were not used for Random Forest model fitting (validation data). Rows are classes assigned based on field survey, columns — classification results. Misclassified cells lie apart from the diagonal.

	Closed willow and poplar thickets	Marshy vegetation	Sparse vegetation on shells and sands	Sparse vegetation on muddy sediments	Reservoirs and watercourses
Closed willow and poplar thickets	772	3	0	0	0
Marshy vegetation	6	78	9	9	0
Sparse vegetation on shells and sands	0	2	485	0	0
Sparse vegetation on muddy sediments	0	0	1	64	0
Reservoirs and watercourses	0	0	0	0	11537