



Биоэртүрлілікті зерттеудегі цифрлық технологиялар
Digital technologies in biodiversity research
Цифровые технологии в исследовании биоразнообразия



ЛЕКЦИЯ 10

Использование массивов объединенных данных в научных исследованиях и практической деятельности



План лекции

Массивы объединенных данных -
новые возможности для анализа

Научное использование данных GBIF:
статистика глобального портала

Как цитировать данные, полученные
через GBIF, в публикациях

2021

Science Review

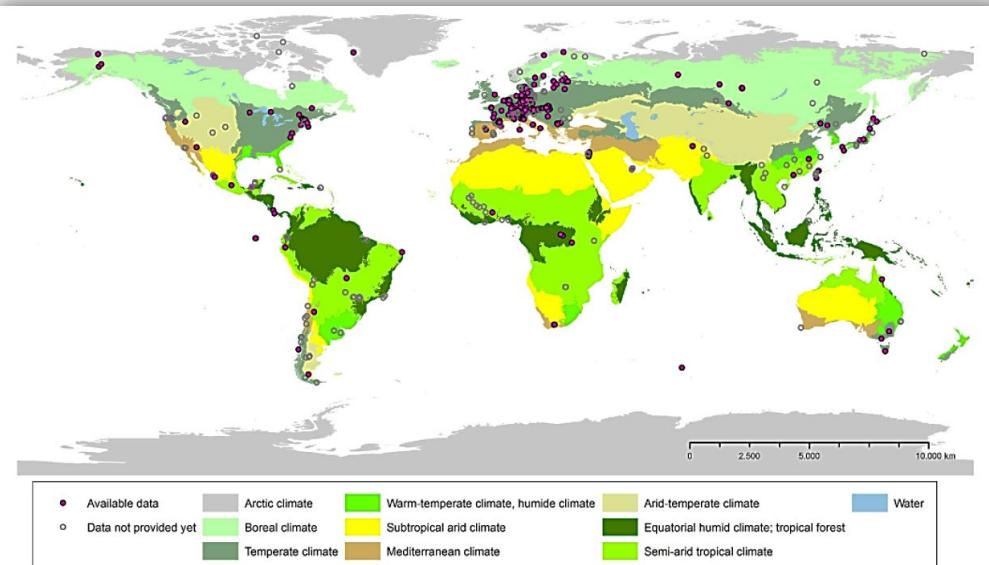




Для чего ученые используют массивы объединенных данных

Чтобы получить данные глобального охвата, которые невозможно
собрать одному коллективу

Получить информацию для новых территорий, или из определенных
источников (коллекций, музеев и т.д.)



Source: Biome map GLORIA network
Species: TeaComposition network
Layout/Copyright: Djukic/Brendle, 2017

570 локаций, в которых проводились эксперименты по разложению
в рамках TeaComposition initiative (Djukic et al., 2018)
<https://doi.org/10.1016/j.scitotenv.2018.01.012>



<http://www.teatime4science.org>



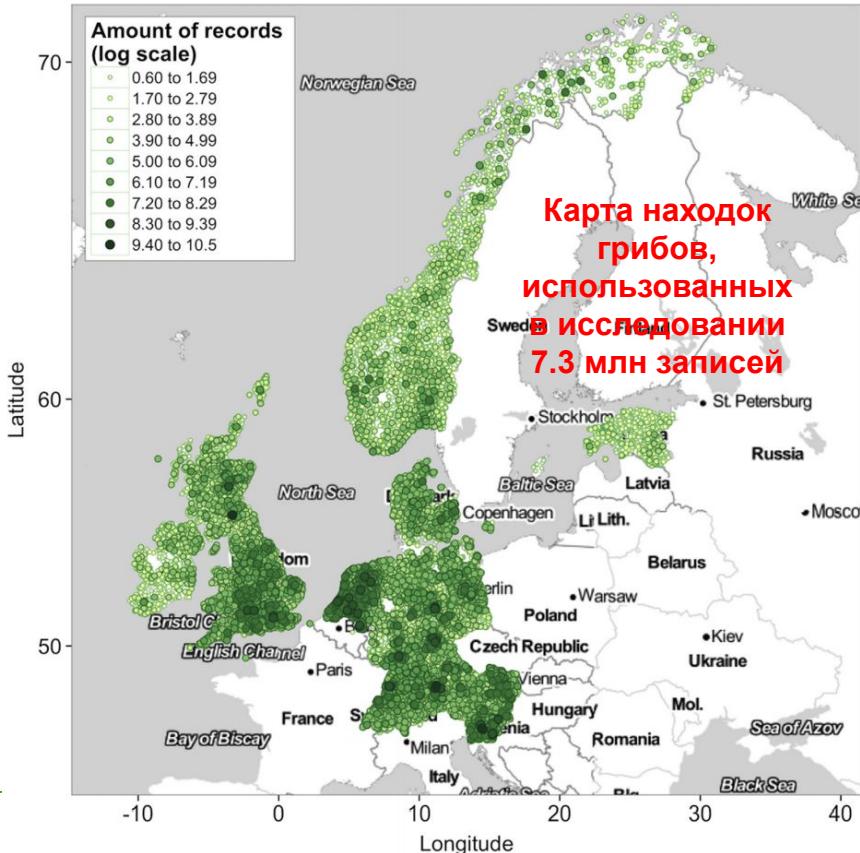
Early stage litter decomposition across biomes

Ika Djukic ^{a,*}, Sebastian Kepfer-Rojas ^b, Inger Kappel Schmidt ^b, Klaus Steenberg Larsen ^b, Claus Beier ^b, Björn Berg ^{c,d}, Kris Verheyen ^e, TeaComposition:

Статья, опубликованная по результатам проекта, в журнале *Science of The Total Environment*. 300 соавторов

Big data integration: Pan-European fungal species observations assembly for addressing contemporary questions in ecology and global change biology

- Таксономический анализ
 - Анализ сходства сообществ грибов в разных регионах
 - Фенология появления плодовых тел
 - Научный потенциал собранного набора данных
 - Анализ данных с позиций глобальных изменений климата



Andrew et al.

Fungal Biology Reviews, 2017

<https://doi.org/10.1016/j.fbr.2017.01.0>

ECOGRAPHY

Research article

Origin of the central European steppe flora: insights from palaeodistribution modelling and migration simulations

Jan Divišek, Martin Věčerá, Erik Wellk, Jiří Danihelka, Kryštof Chytrý, Jan Douda and Milan Chytrý

J. Divišek (<https://orcid.org/0000-0002-5127-5130>)  (divišekjan@sci.muni.cz), M. Věčerá (<https://orcid.org/0000-0001-8507-791X>), J. Danihelka (<https://orcid.org/0000-0002-2640-7867>), K. Chytrý (<https://orcid.org/0000-0003-4113-6564>) and M. Chytrý (<https://orcid.org/0000-0002-8123-3075>), Dept of Botany and Zoology, Faculty of Science, Masaryk Univ., Brno, Czech Republic. JD also at: Dept of Geography, Faculty of Science, Masaryk Univ., Brno, Czech Republic. - E. Wellk (<https://orcid.org/0000-0002-2685-3795>), Dept of Geobotany and Botanical Garden, Inst. for Biology, Martin-Luther-Univ. Halle-Wittenberg, Halle, Germany and German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Leipzig, Germany. KC also at: Dept of Botany and Biodiversity Research, Univ. of Vienna, Vienna, Austria. - J. Douda (<https://orcid.org/0000-0002-1205-364X>), Faculty of Environmental Sciences, Czech Univ. of Life Sciences Prague, Prague, Czech Republic. JD also at: Institute of Botany, Czech Academy of Sciences, Zámeck 1, 252 43 Praha 10, Czech Republic.

Ecography
2022; e06293
doi: 10.1111/ecog.06293
Subject Editor:
Jens-Christian Svenning

The biogeographic origin of the species-rich steppe grasslands in central Europe has long been debated. The alternative hypotheses are long-term species persistence in situ versus immigration from the south-east, either after the last glacial maximum (LGM) or after the Neolithic landscape deforestation. We ask whether macroclimate-based models of habitat suitability support either of these hypotheses and search for macroclimatically suitable 'source areas' from which species could colonise the areas occu-



Review

Selected Aspects of Invasive *Solidago canadensis* with an Emphasis on Its Allelopathic Abilities: A Review

Xunzhi Zhu, Weijie Li, Hua Shao  Shijie Tang 

First published: 02 September 2022 | <https://doi.org/10.1002/cbdv.202200728>

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Science of The Total Environment

Volume 845, 1 November 2022, 157341



Predicted impacts of climate change on wild and commercial berry habitats will have food security, conservation and agricultural implications

Kaede Hirabayashi ^{a, b, 1}, Susan J. Murch ^a, Lauren A.E. Erland ^{a, c, 2} 

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<https://doi.org/10.1016/j.scitotenv.2022.157341>

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ORIGINAL RESEARCH article

Front. Plant Sci., 29 April 2022
Sec. Plant Systematics and Evolution
<https://doi.org/10.3389/fpls.2022.839792>

This article is part of the Research Topic
Plant Biodiversity Science in the Era of Artificial Intelligence
[View all 18 Articles >](#)

Global Estimation and Mapping of the Conservation Status of Tree Species Using Artificial Intelligence

 Sandro Valerio Silva^{1,2},  Tobias Andermann^{1,3},  Alexander Zizka⁴,  Gregor Kozlowski¹ and  Daniele Silvestro^{1,3,5*}

ИСТОЧНИК



SAMPLING EVENT | REGISTERED JANUARY 16, 2021

Relevés of Main Vegetation Types of the Prioksko-Terrasnyi Biosphere Reserve (2019-2020)

Published by [Prioksko-Terrasnyi Biosphere Reserve](#)

Shovkun M

[DATASET](#) [METRICS](#) [ACTIVITY](#) [DOWNLOAD](#)

9,174 OCCURRENCES

46 CITATIONS

Vegetation study is one of the essential research branches for investigating natural biological processes occurring in ecosystems of the study area. Monitoring changes in the species composition and vegetation cover structure provides data for the study of these processes. This ongoing project aimed at vegetation study in the Reserve was started in 2019. This dataset includes georeferenced vegetation relevés collected in 2020. It contains representative information on each of the types of plant ... [More](#)



National nature biosphere
Prioksko-Terrasnyi
zapovednik

Project ID: N-Eurasia-Russia2021

Publication date: February 11, 2022

Metadata last modified: February 11, 2022

Hosted by: Institute of Mathematical Problems of
Biology RAS – the Branch of Keldysh Institute of Applied
Mathematics of Russian Academy of Sciences

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[How to cite](#) [DOI](#) [10.15468/y2yuq8](#)



9,174
Occurrences



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100%
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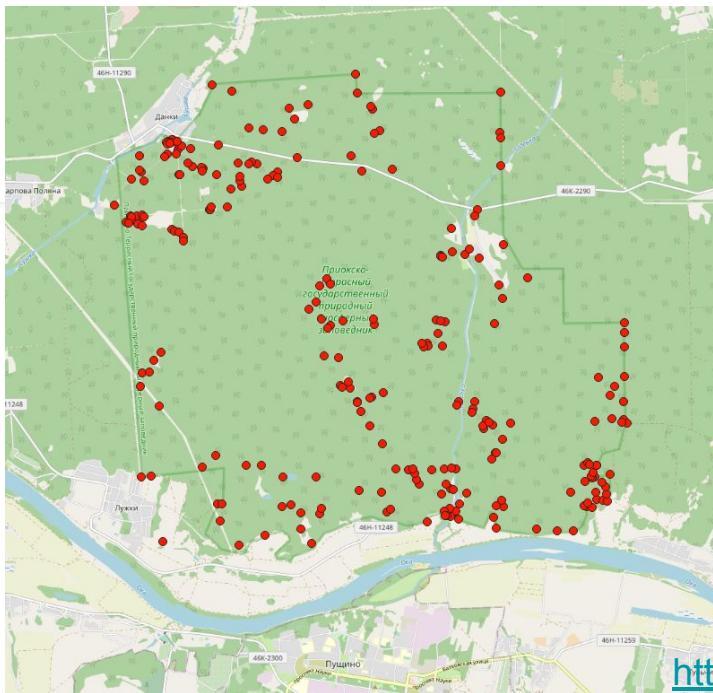
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With year

<https://www.gbif.org/dataset/bb6249ca-2e0b-449e-bd68-8d88bab4ed2b>



SAMPLING EVENT | REGISTERED JANUARY 16, 2021

Relevés of Main Vegetation Types of the Prioksko-Terrasnyi Biosphere Reserve (2019-2020)



Published by [Prioksko-Terrasnyi Biosphere Reserve](#)

Shovkun M

9,174 OCCURRENCES

46 CITATIONS

- 9 174 записи
- 543 вида
- 46 цитирований за 2 года

<https://www.gbif.org/dataset/bb6249ca-2e0b-449e-bd68-8d88bab4ed2b>



GBIF | Global Biodiversity Information Facility

Free and open access to biodiversity data

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Natrix natrix (Linnaeus, 1758) observed in Troita, Moldova by andrei_ghean (CC BY-NC 4.0)



2,250,492,159

Occurrence records



79,263

Datasets



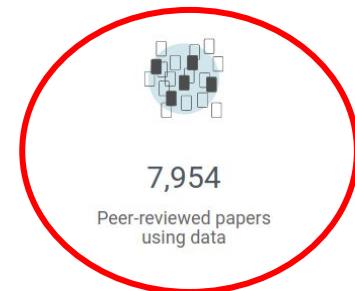
1,928

Publishing institutions



7,954

Peer-reviewed papers using data

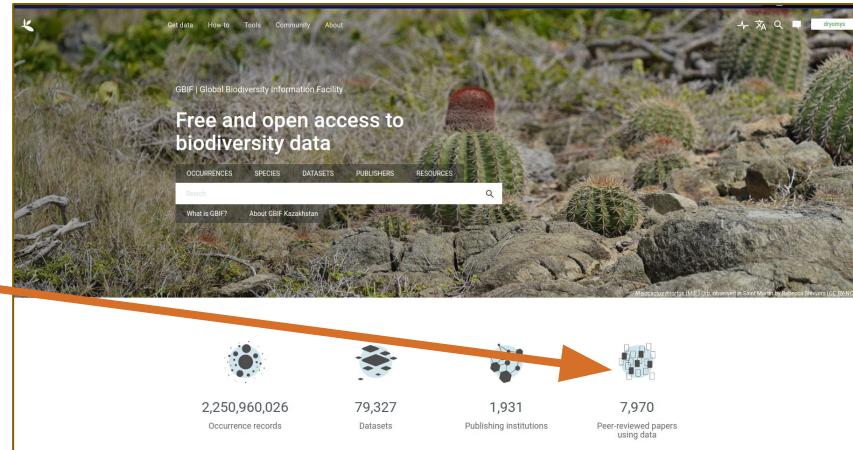


2022-11-13

Как GBIF отслеживает использование данных

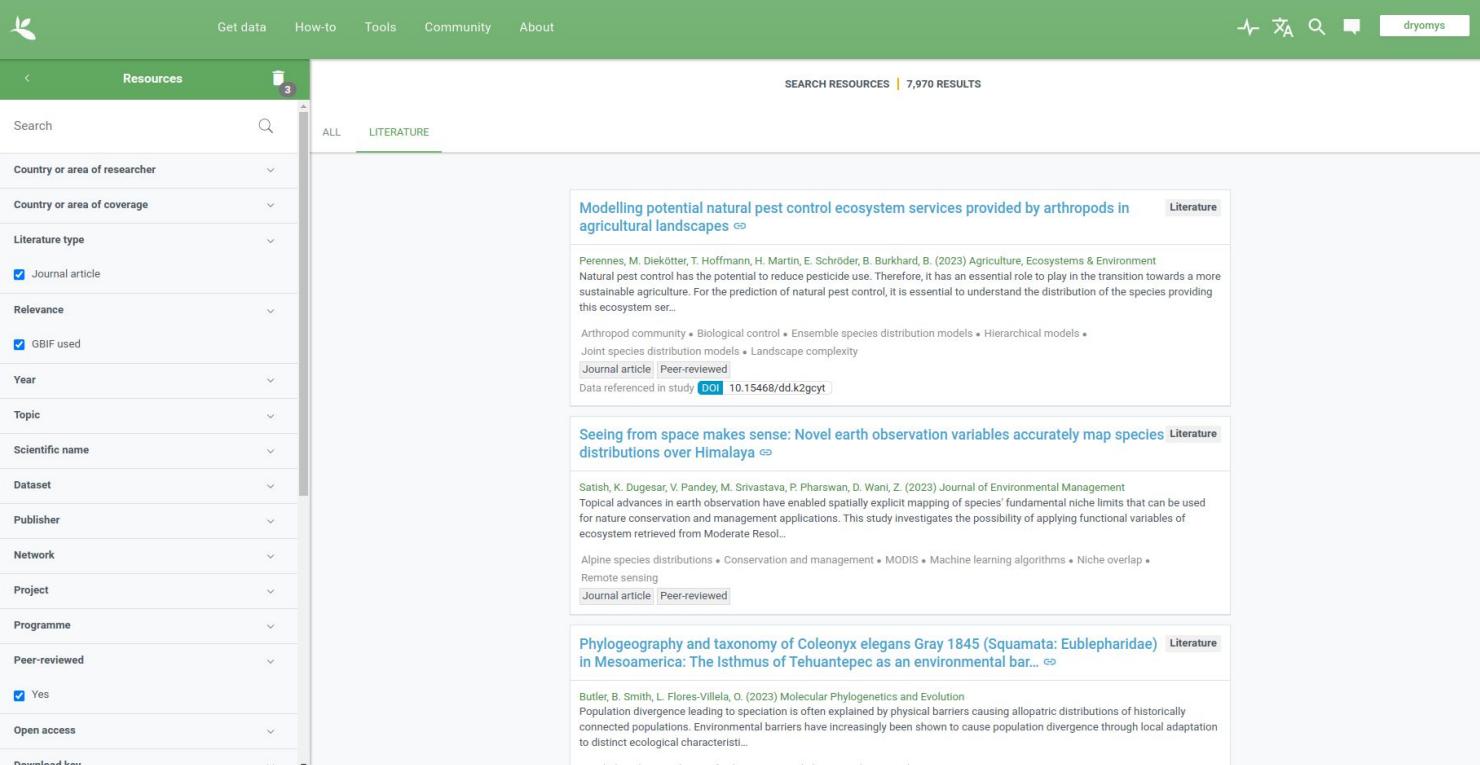
Автоматический поиск по ключевым словам или префиксу DOI в базах научных публикаций

- Google Scholar
- Scopus
- Wiley Online Library
- SpringerLink
- NCBI Pubmed
- bioRxiv



<https://www.gbif.org/literature-tracking>

Раздел портала GBIF, предоставляющий информацию о публикациях

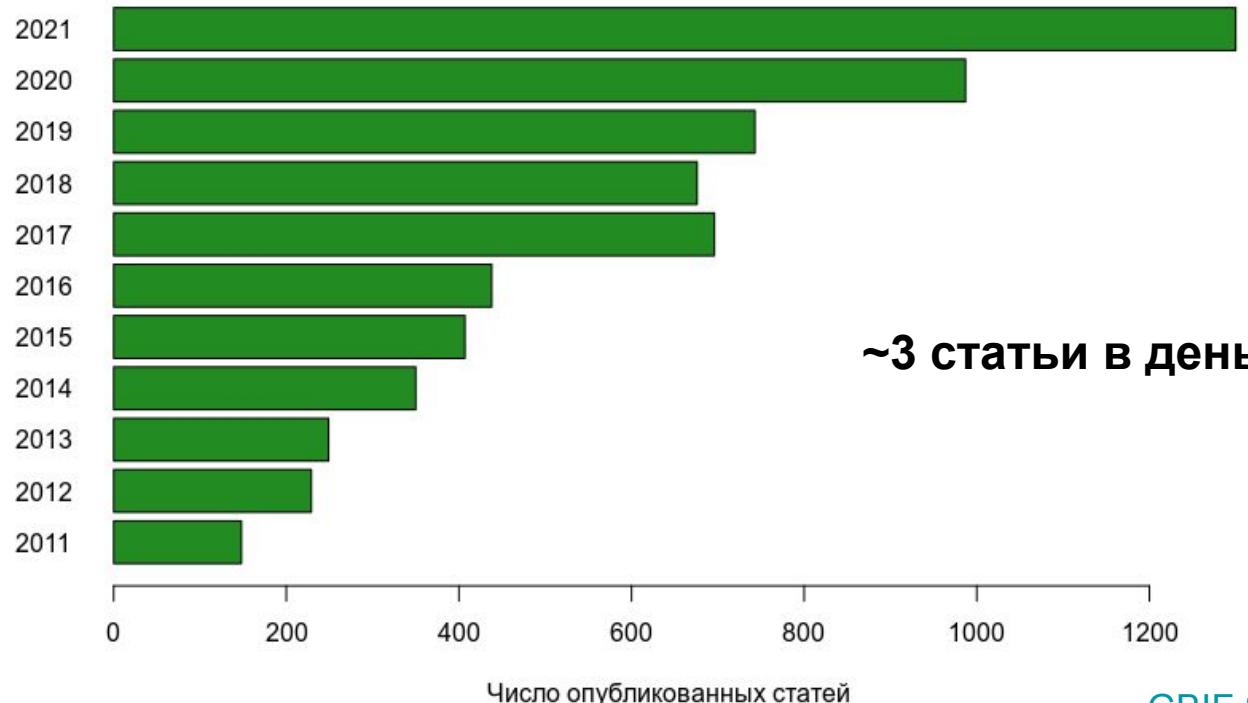


The screenshot shows the GBIF Resources page. The top navigation bar includes links for 'Get data', 'How-to', 'Tools', 'Community', and 'About'. The search bar contains the text 'dryomys'. The main search results are displayed under the heading 'SEARCH RESOURCES | 7,970 RESULTS'. The results are filtered by 'LITERATURE'. The first result is a journal article titled 'Modelling potential natural pest control ecosystem services provided by arthropods in agricultural landscapes'. The second result is 'Seeing from space makes sense: Novel earth observation variables accurately map species distributions over Himalaya'. The third result is 'Phylogeography and taxonomy of Coleonyx elegans Gray 1845 (Squamata: Eublepharidae) in Mesoamerica: The Isthmus of Tehuantepec as an environmental bar...'. Each result card includes a 'Literature' link, a brief abstract, and a 'Journal article | Peer-reviewed' link.

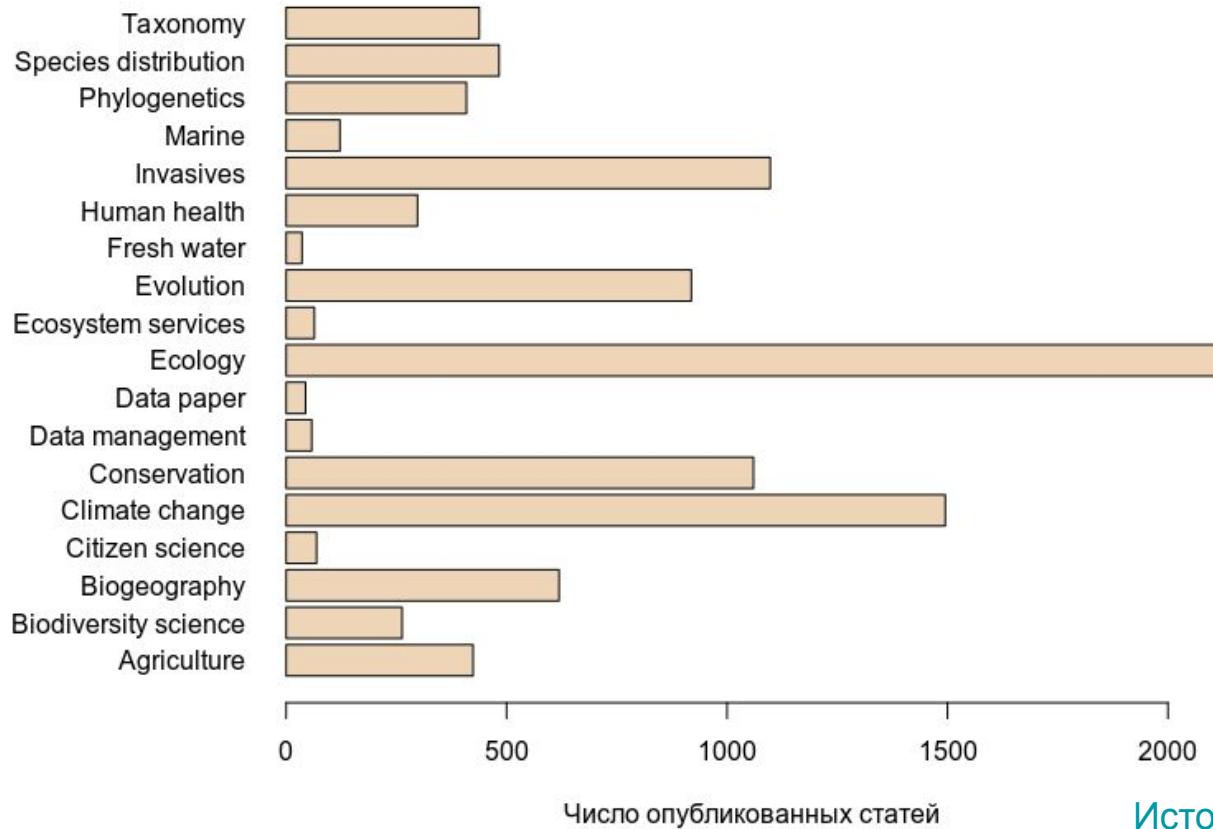
Посмотрим, как это работает

[ссылка](#)

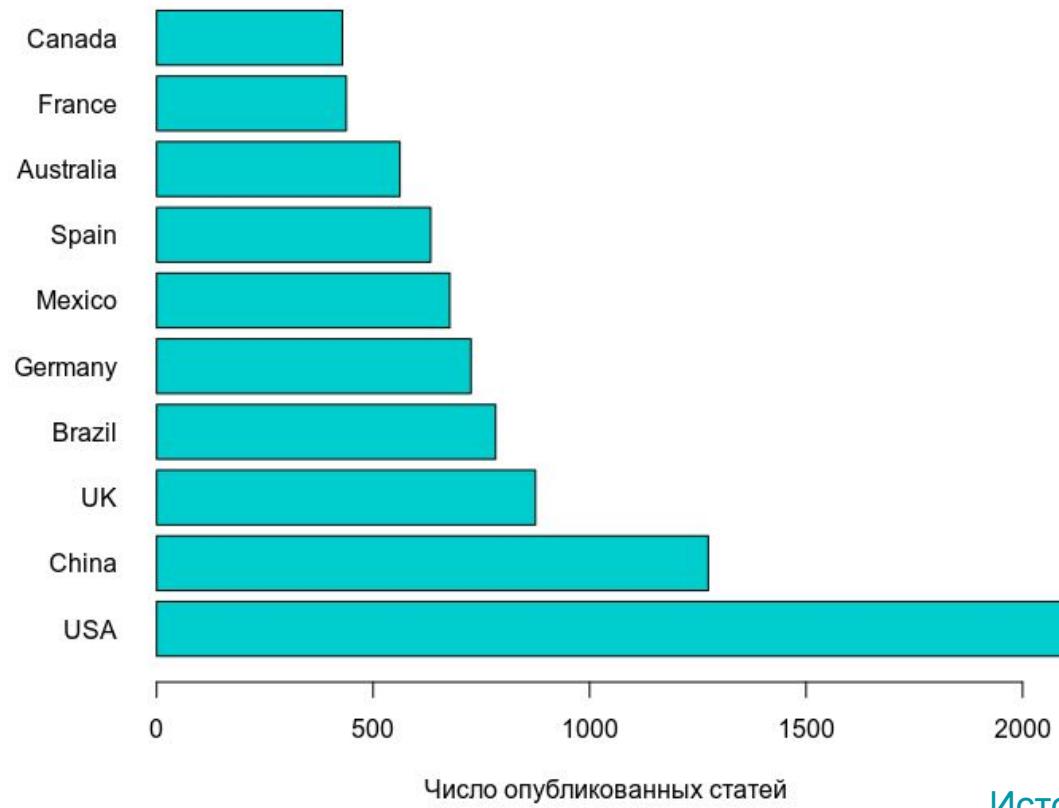
Цитирование GBIF и данных из GBIF в научной литературе



Тематика исследований, связанных с GBIF-данными



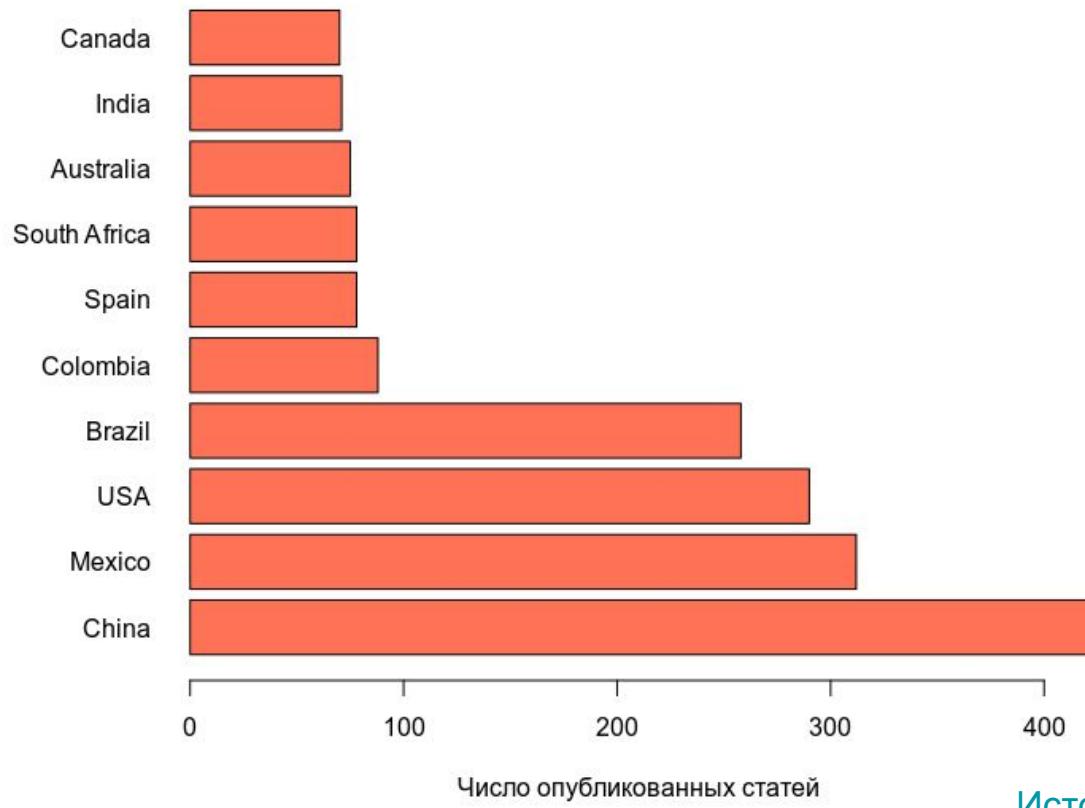
Страны авторов (первые 10)



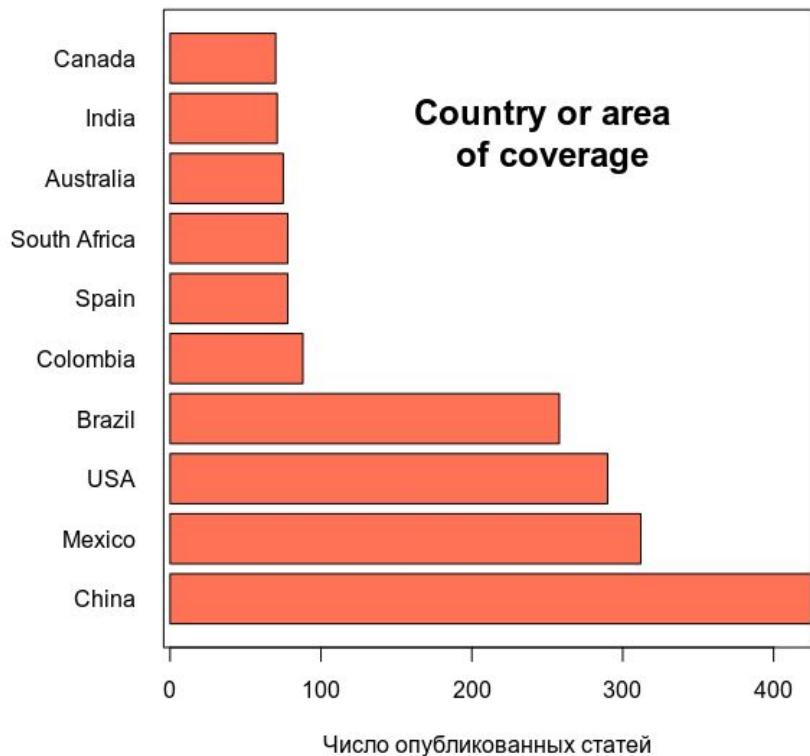
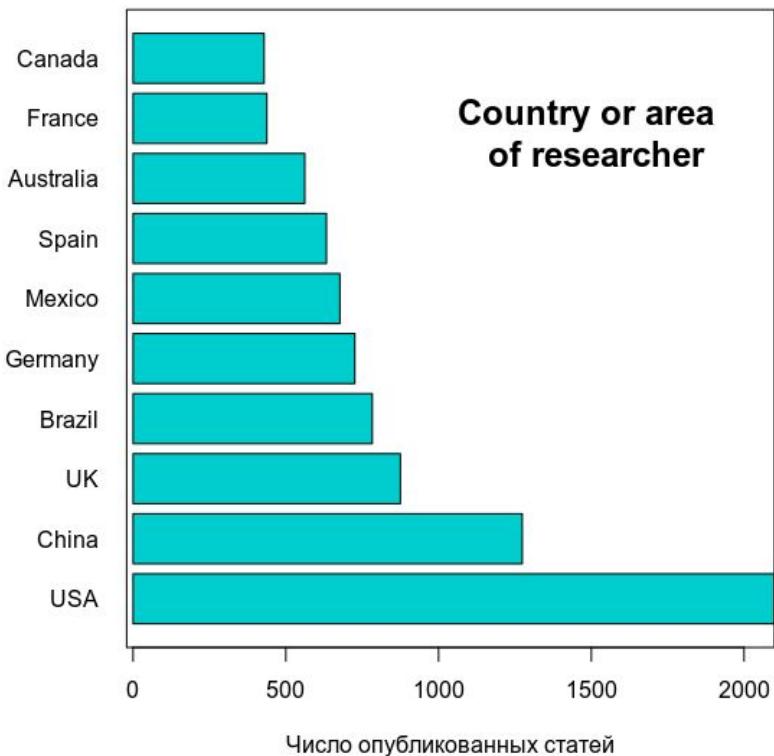
Число опубликованных статей

[Источник](#) (2022-11-17)

Территории исследований (первые 10)



[Источник](#) (2022-11-17)



Исследования с использованием данных GBIF о Казахстане или (и) выполненные авторами из Казахстана

Biodiversity and Conservation (2021) 30:1705–1730
<https://doi.org/10.1007/s10531-021-02165-z>

ORIGINAL PAPER



Central Asian wild tulip conservation requires a regional approach, especially in the face of climate change

Brett Wilson¹ · Aibek Dolotbakov² · Benjamin J. Burgess³ · Colin Clubbe⁴ ·
Georgy Lazkov² · Kairyluk Shalpykov² · Myskalai Ganybaeva² ·
Ormon Sultangaziev² · Samuel F. Brockington¹

Received: 16 November 2020 / Revised: 2 March 2021 / Accepted: 9 March 2021 /
Published online: 27 March 2021
© The Author(s) 2021

insects

Article

Predictions Based on Different Climate Change Scenarios: The Habitat of Typical Locust Species Is Shrinking in Kazakhstan and Xinjiang, China

Rui Wu¹, Jing-Yun Guan^{1,2} , Jian-Guo Wu³, Xi-Feng Ju¹, Qing-Hui An¹ and Jiang-Hua Zheng^{1,*}

¹ Key Laboratory of Oasis Ecology of Xinjiang, Institute of Arid Ecology and Environment, College of Geography and Remote Sensing Science, Xinjiang University, Urumqi 830046, China
² College of Tourism, Xinjiang University of Finance and Economics, Urumqi 830012, China
³ Locust and Rodent Control Headquarters of Xinjiang Uygur Autonomous Region, Urumqi 830001, China
* Correspondence: zheng.jianghua@xjtu.edu.cn

Keywords *Tulipa* · Wild tulips · Climate change · Species distribution · MaxEnt · Central Asia



widely appreciated plants worldwide, nevertheless often poorly understood. Most wild tulips inhabit ened biodiversity hotspot, and a centre of tulip country-level endemic *Tulipa* species, most taxa no globally Red Listed. *Tulipa* species are an important resource, especially climate distributional information records from the Global Biodiversity Information Facility, to undertake species distributional modelling. This work showed an understanding of species distributional limits and limitations in protecting its kind for tulips, suggesting that the range size of all species add climate change to the habitat already includes invest in the future work that a more crucial not just for tulip conservation in general.



Original Paper | Published: 21 October 2022

Predicting the changes in suitable habitats for six common woody species in Central Asia

Zexing Tao 

[International Journal of Biometeorology \(2022\) | Cite this article](https://doi.org/10.1007/s00363-022-02381-1)

70 Accesses | 1 Altmetric | [Metrics](#)

Труды Зоологического института РАН
Том 326, № 3, 2022, с. 211–238
10.31610/trudzgin/2022.326.3.211



Журналы (первые 10)

PLOS ONE	3.752	Q1	Global Ecology and Biogeography	6.909	Q1
Journal of Biogeography	4.810	Q1	Biological Conservation	7.497	Q1
Ecology and Evolution	3.17	Q1	Biological Invasions	3.906	Q1
Scientific Reports	4.996	Q1	Global Ecology and Conservation	3.969	Q1
Diversity and Distributions	5.717	Q1	Biodiversity and Conservation	4.416	Q1

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Study uses machine-learning approach to produce risk hotspot maps for pest introductions with high predictive accuracy ... Invasive plant pests have a massive social impact in Europe, costing billions ...

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Automated species identification using 19th-century zoological illustrations

Study explores large-scale zero-shot learning for automated classification of scientific illustrations to reduce time needed for digitization ... Scientific illustrations have historically served as pe...

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Spice cargo reveals historical trade patterns and shipping routes

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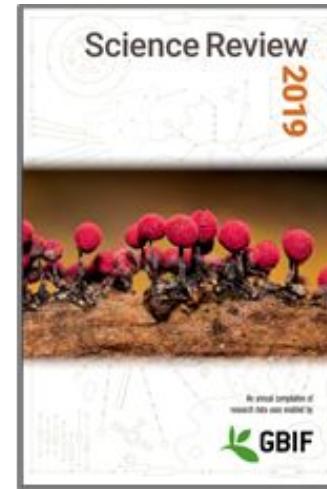
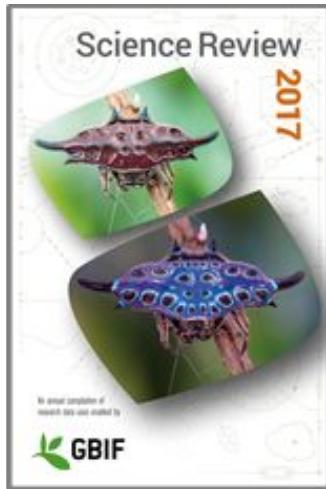
Study explores large-scale zero-shot learning for automated classification of scientific illustrations to reduce time needed for digitization ... Scientific illustrations have historically served as pe...

Published October 27, 2022

Urban greenery facing climate risks

<https://www.gbif.org/resource/search?contentType=dataUse>

GBIF Science Review: ежегодный отчет о самых интересных исследованиях, выполненных с использованием GBIF-данных





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Sunfly (*Helophilus pendulus*) on Chicory (*Cichorium intybus*) by Donald Hobern. Photo licensed under CC BY 4.0.

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OCCURRENCE DATASET | REGISTERED OCTOBER 13, 2022

Distribution of marsh frogs (*Pelophylax ridibundus* complex) in Kazakhstan

Published by [Institute of Zoology of the Republic of Kazakhstan](#)

Dujsebayeva T • Kaptyonkina A • Arifulova I • Ualiyeva D • Akhmedenov K • Ivanov A • Khromov V • Krainyuk V • Sarzhanov F • Tarasovskaya N • Titov S • Timoshenko A • Ermakov O • Malakhov D • Starikov S • Morozov V

DATASET

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110 OCCURRENCES

The presented data are the result of the generalization and reconciliation of literary, museum, and archival information on the distribution of lake frogs of the *P. ridibundus* complex in Kazakhstan, and new data were obtained during fieldwork in 2021-2022. Based on the collected material, a database has been compiled for all the frog finds known today for the period from the end of the XX century to the present.

Publication date: October 13, 2022

Metadata last modified: October 13, 2022

Hosted by: GBIF Secretariat

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How to cite DOI 10.15468/et4dus



110
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Citation

Dujsebayeva T, Kaptyonkina A, Arifulova I, Ualiyeva D, Akhmedenov K, Ivanov A, Khromov V, Krainyuk V, Sarzhanov F, Tarasovskaya N, Titov S, Timoshenko A, Ermakov O, Malakhov D, Starikov S, Morozov V (2022). Distribution of marsh frogs (*Pelophylax ridibundus* complex) in Kazakhstan. Version 1.2. Institute of Zoology of the Republic of Kazakhstan. Occurrence dataset <https://doi.org/10.15468/et4dus> accessed via GBIF.org on 2022-11-17.



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- Geometry: `POLYGON((43.99 58.80209,43.96572 58.80312,43.9661 58.80576,43.94123 58.80676,43.93784 58.80684,43.93723 58.80478,43.93568 58.80348,43.93312 58.80244,43.93193 58.80142,43.93143 58.80044,43.93176 58.79973,43.93281 58.79936,43.93433 58.79906,43.93518 58.79918,43.93632 58.79953,43.93746 58.79944,43.93804 58.79892,43.93777 58.79757,43.93735 58.79714,43.93566 58.79679,43.93514 58.79638,43.93534 58.79524,43.93591 58.79389,43.93882 58.78933,43.9419 58.78485,43.94728 58.78452,43.98596 58.78249,43.99 58.80209))`
- Has coordinate: true
- Has geospatial issue: false
- Occurrence status: present



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Как правильно цитировать данные, полученные из GBIF, в публикациях

у About

The range of marsh frogs (complex *Pelophylax ridibundus*, *Amphibia*, *Ranidae*) in Kazakhstan: Progressive dispersal or cyclic fluctuations? Literature

Kaptynkina, A. Dujsebayeva, T. Akhmedenov, K. Khromov, V. Krainyuk, V. Sarzhanov, F. ... - (2022) Proceedings of the Zoological Institute RAS
According to 2005 data, during the second half of the 20th century, the range of marsh frogs (*Pelophylax ridibundus* complex) in Kazakhstan almost doubled, which was facilitated by the unintentional introduction of these amphibians in the central and eastern regions of the country against the backdrop...
Pelophylax cf. *bedriagae* • Казахстан • внутренние водоёмы • динамика ареала • озёрные лягушки
Journal article | Peer-reviewed
Data referenced in study DOI: [10.15468/dl.j8n77j](https://doi.org/10.15468/dl.j8n77j)

Central Asian wild tulip conservation requires a regional approach, especially in the face of climate change Literature

Wilson, B. Dolotbakov, A. Burgess, B. Clubbe, C. Lazkov, G. Shalpykov, K. ... - (2021) Biodiversity and Conservation
Tulips (*Tulipa* spp.) are one of the most widely appreciated plants worldwide, nevertheless species taxonomy and biogeography are often poorly understood. Most wild tulips inhabit the mountains of Central Asia, a recognised biodiversity hotspot, and a centre of tulip diversity. Despite the presence o...
Central Asia • Climate change • Ent • Max • Species distribution modelling • Tulipa
Journal article | Open access | Peer-reviewed
Data referenced in study DOI: [10.15468/dd.mc5tvz](https://doi.org/10.15468/dd.mc5tvz)

[ССЫЛКА](#)

Труды Зоологического института РАН
Том 326, № 3, 2022, с. 211–238
10.31610/trudyzin/2022.326.3.211

УДК 597.8: 591.9 (574)

Ареал озёрных лягушек (комплекс *Pelophylax ridibundus*, *Amphibia*, *Ranidae*) в Казахстане: прогрессивное расселение или циклические колебания?

А.Г. Каптёнкина¹, Т.Н. Дүйсебаева^{1*}, К.М. Ахмеденов², В.А. Хромов³, В.Н. Крайнюк⁴, Ф. Саржанов⁵, С.В. Стариков⁶, Н.Е. Тарасовская⁷, А.Ю. Тимошенко⁸ и С.В. Титов^{1,9}

¹ Институт зоологии Министерства образования и науки РК, пр. аль-Фараби 93, 050060 Алматы, Казахстан; e-mail: alyonakaptynkina@gmail.com; tatjana.dujsebayeva@zool.kz, dujsebayeva@mail.ru

² Западно-Казахстанский университет им. М. Утемисова, пр. Назарбаева 162, 090000 Уральск, Казахстан; e-mail: kazhmirat78@mail.ru

³ Университет им. Шакарима г. Семей, Казахстан, 071412, Семей, ул. Глинки, 20А; e-mail: khromov-victor1955@yandex.kz

⁴ Северный филиал Научно-производственного центра рыбного хозяйства, ул. Кенесары, 43, 010000 Нур-Султан, Казахстан; e-mail: karagan-da@mail.ru

⁵ Международный Казахско-Турецкий университет им. Ходжа Ахмеда Ясави, ул. Б. Саттарханова, 161200 Туркестан, Казахстан; e-mail: fakhreddin.sarjanov@gmail.com

⁶ Восточно-Казахстанский областной историко-краеведческий музей, ул. К. Кайсенова 40, 070004 Усть-Каменогорск, Казахстан; e-mail: starikov60@mail.ru

⁷ Павлодарский педагогический университет, ул. Мира 60, 140000 Павлодар, Казахстан; e-mail: mikhailk99@gmail.com

⁸ Казахстанская ассоциация сохранения биоразнообразия Казахстана, ул. Бейбитшилик 18, офис 406, 010000 Астана, Казахстан; e-mail: pauz_timoshenko@mail.ru

⁹ Научно-исследовательский экологический центр «Мониторинг», Торайғыров Университет, ул. Ломова 64, 140008 Павлодар, Казахстан; e-mail: sandipta@yandex.kz

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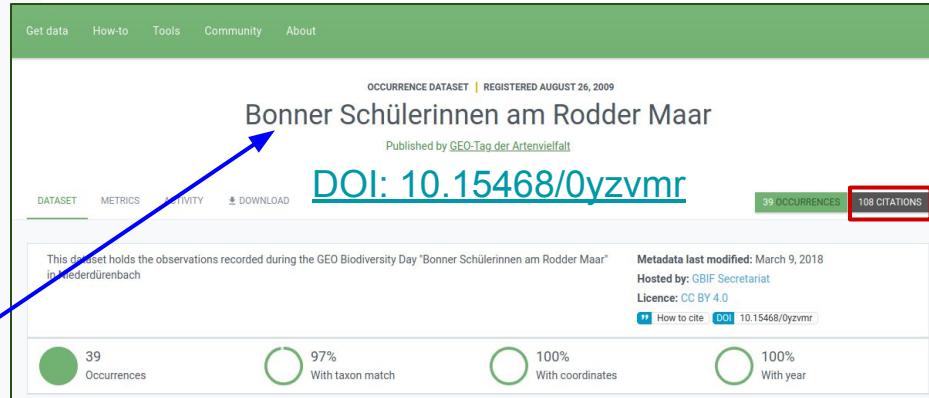
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Literature

Kaptyonkina, A., Dujsebayeva, T., Akhmedenov, K., Khromov, V., Krainyuk, V., Sarzhanov, F., ... - (2022) Proceedings of the Zoological Institute RAS

According to 2005 data, during the second half of the 20th century, the range of marsh frogs (*Pelophylax ridibundus* complex) in Kazakhstan almost doubled, which was facilitated by the unintentional introduction of these amphibians in the central and eastern regions of the country against the backdro...

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New models for wild ungulates occurrence and hunting yield abundance at European scale 

Literature

Acevedo, P., Apollonio, M., Blanco-Aguilar, J., Brivio, F., Croft, S., ENETWILD-consortium, ., ... - (2022) EFSA Supporting Publications

The goal of this report is i) to model the occurrence and hunting yield (HY) density of wild ungulates not only for widely distributed species in Europe, but also for those ones which have a constrained distribution and ii) to compare the output of occurrence with

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