

Areas of high conservation value in Georgia: present and future threats by invasive alien plants

Biological Invasions

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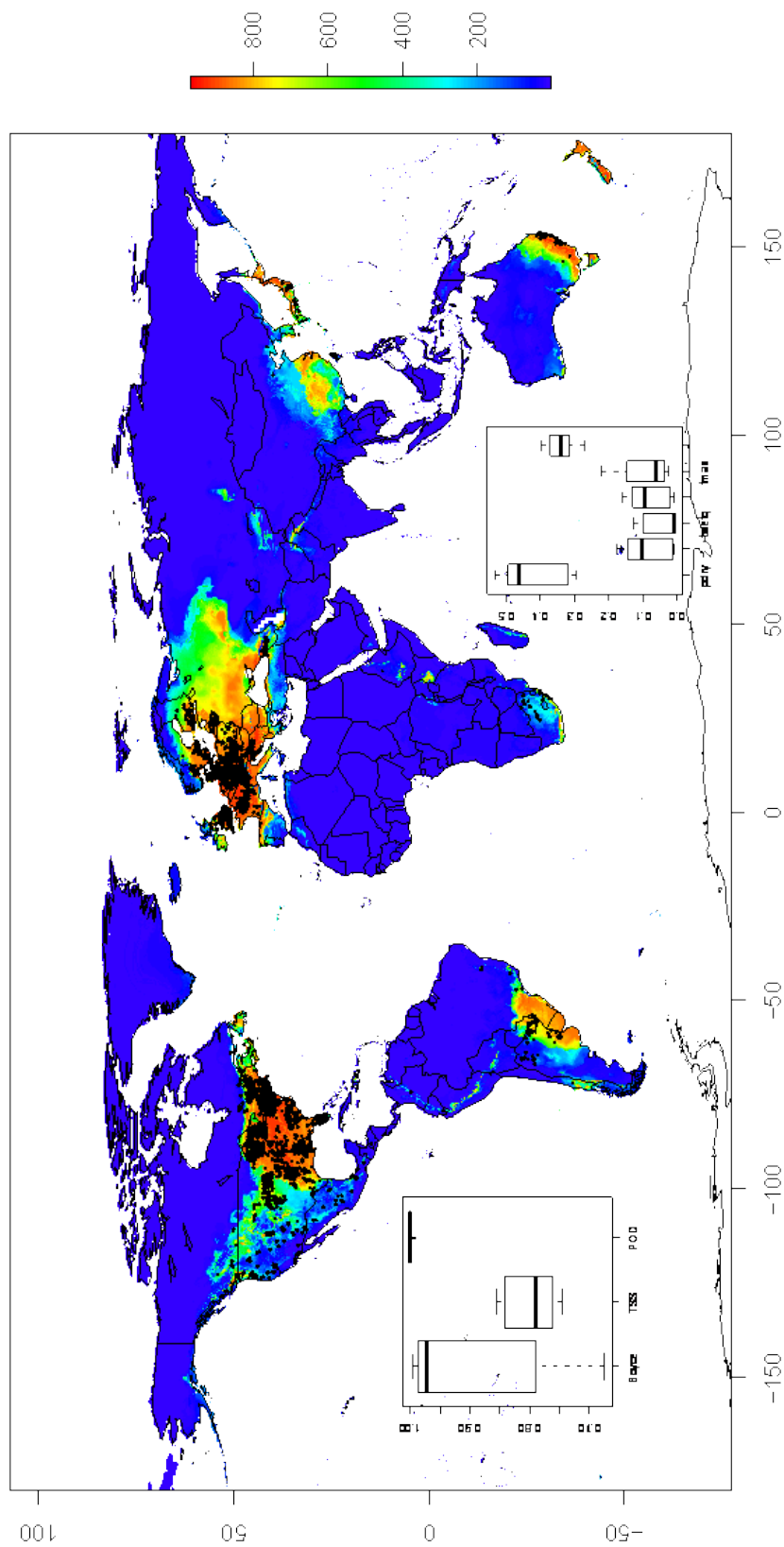
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Annex 2: Occurrence data collected by source for the selected nine alien invasive species in Georgia.

Species	Amount of records by website	Amount of records by herbar	Amount of records by field survey
<i>Ailanthus altissima</i>	4255	2	47
<i>Ambrosia artemisiifolia</i>	7826	27	26
<i>Clerodendron bungei</i>	76	19	8
<i>Miscanthus sinensis</i>	773	5	6
<i>Opuntia humifusa</i>	676	0	29
<i>Opuntia phaeacantha</i>	489	0	22
<i>Robinia pseudoacacia</i>	24862	4	50
<i>Spiraea japonica</i>	633	6	6
<i>Vitex rotundifolia</i>	348	1	2

Annex 3. The global model for *Ambrosia artemisiifolia* and its statistics cf. text for details. The fitted models were first projected on the whole world and were then projected on Georgia at a resolution of 1x1 Km.



Annex 4. Evaluation of the species distribution models. Mean and standard deviation (over 3 techniques x 10 iterations) of Boyce, TSS and POD evaluation metrics are provided for each species (cf. details in the text).

Species	Boyce	TSS	POD
<i>Ambrosia artemisiifolia</i>	0.96 ± 0.034	0.77 ± 0.03	0.99 ± 0.002
<i>Robinia pseudoacacia</i>	0.91 ± 0.11	0.80 ± 0.04	0.99 ± 0.001
<i>Ailanthus altissima</i>	0.63 ± 0.29	0.80 ± 0.13	0.99 ± 0.022
<i>Clerodendrum bungei</i>	0.87 ± 0.14	0.75 ± 0.06	0.99 ± 0.010
<i>Opuntia phaeacantha</i>	0.88 ± 0.11	0.81 ± 0.03	0.99 ± 0.005
<i>Spiraea japonica</i>	0.85 ± 0.14	0.67 ± 0.06	0.99 ± 0.006
<i>Miscanthus sinensis</i>	0.90 ± 0.13	0.87 ± 0.02	0.99 ± 0.003
<i>Opuntia humifusa</i>	0.76 ± 0.20	0.83 ± 0.04	0.99 ± 0.004
<i>Vitex rotundifolia</i>	0.64 ± 0.25	0.78 ± 0.12	0.99 ± 0.017

Annex 1: Sources of occurrence data used for the species distribution models of the selected nine alien invasive species in Georgia.

Data_publisher	Dataset	Website
ABH	Biocase	http://search.biocase.org/synh-ui/index/session
Acadia University	EC Smith Herbarium (ACAD)	http://data.gbif.org/occurrences/465894598
Alien species in Poland	ASP	http://www.iop.krakow.pl/ias
Anthos DataBase	ANTHOS	www.anthos.es
ArtDatabanken	Artdata	http://data.gbif.org/occurrences/382456117
Atlas of Florida Vascular Plants		www.plantatlas.usf.edu
Australian National Herbarium (CANB)	Australian National Herbarium (CANB)	http://data.gbif.org/occurrences/117523879
BDBCv	Biocase	http://search.biocase.org/synh-ui/index/session
BeBIF Provider	Miscellaneous Vascular Plants	http://data.gbif.org/occurrences/234014781
Berkeley Natural History Museums	UCJEPS TAPIR Provider	http://data.gbif.org/occurrences/67272438
BerkeleyMapper		http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl
Berkley University		http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl
Bernice Pauahi Bishop Museum	Bishop Museum Natural Sciences Data	http://data.gbif.org/occurrences/39656317
BfN/ZePhyD	Biocase	http://search.biocase.org/synh-ui/index/session
BIO	Biocase	http://search.biocase.org/synh-ui/index/session
biodiver.bio.ub.es/biocat	BIOCAT	biodiver.bio.ub.es/biocat
Biodiversity data bank of Catalonia		http://biodiver.bio.ub.es/biocat/
Biogeomancer		http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl
Biologiezentrum Linz Oberoesterreich	Biologiezentrum Linz	http://data.gbif.org/occurrences/6881142

Bioversity International	EURISCO, The European Genetic Resources Search Catalogue	http://data.gbif.org/occurrences/136433176
Botanic Garden and Botanical Museum Berlin-Dahlem	GEO Biodiversity Day	http://data.gbif.org/occurrences/401089
Botanical Society of the British Isles	Biocase	http://search.biocase.org/synth-ui/index/session
British Petroleum Project	BP	
Bundesamt für Naturschutz / Netzwerk Phytodiversität Deutschland	Bundesamt fuer Naturschutz / Netzwerk Phytodiversitaet Deutschland	http://data.gbif.org/occurrences/1768055
Calflora: Information on California plants for education, rese		http://www.calflora.org
Canadian Museum of Nature	Canadian Museum of Nature Herbarium	http://data.gbif.org/occurrences/471480216
Centre du Reseau Suisse de Floristique	CRSF	www.crsf.ch
Claude Lavoie, Universite Laval Pavillon COA	Biocase	NA http://search.biocase.org/synth-ui/index/session
Colorado State University Herbarium (CSU)	Colorado State University Herbarium	http://data.gbif.org/occurrences/185864558
Comisión nacional para el conocimiento y uso de la biodiversidad	Herbario del Instituto de Ecología, A.C., México (IE-BAJIO)	http://data.gbif.org/occurrences/126245518
Conservatoire botanique national du Bassin parisien	Observations du Conservatoire botanique national du Bassin parisien.	http://data.gbif.org/occurrences/124809312
Consortium of California Herbaria		http://ucjeps.berkeley.edu/interchange.html
Czech National Phytosociological Database:	CNPDB	www.sci.muni.cz/botany/database.htm
Data obtained from Zigmantas Gudzinskas	LNISD	http://www.ku.lt/lisd/index.html
Digital Atlas of the Vascular Plants of Utah		http://earth.gis.usu.edu/plants
EcoPlant Database France	ECOPLANT	NA
Environment and Heritage Service	Biocase	http://search.biocase.org/synth-ui/index/session
FCO		
Field Records Daniela		
Field Records Davit		
Finnish Museum of Natural History	Botanic Garden of Finnish Museum of Natural History	http://data.gbif.org/occurrences/143039922
Flora Croatica Database	CDF	
Flora of Texas		http://129.116.69.198:427/Texas.html
Flora of the Washington-Baltimore Area		http://persoon.si.edu/dcflora/dcspecimens/dcherbariumquery.cfm
Floraine	Atlas des plantes vasculaires de Lorraine	http://data.gbif.org/occurrences/177557887
FUND. BIODIVERSIDAD		
GBIF (Global Biodiversity Info. Facility)		www.gbif.org
GBIF New Zealand	New Zealand National Plant Herbarium (CHR)	http://data.gbif.org/occurrences/91341782
GBIF Swiss Node	Global Mountain Biodiversity Assessment GMBA	http://data.gbif.org/occurrences/346501751
GBIF-SE:ArtDatabanken	Biocase	http://search.biocase.org/synth-ui/index/session
GBIF-Spain	Catálogo Florístico Histórico de Navarra. Gobierno de Navarra	http://data.gbif.org/occurrences/357664361
GBIF-Sweden	Lund Botanical Museum (LD)	http://data.gbif.org/occurrences/1001642

GEO-Tag der Artenvielfalt	Mönchspark	http://data.gbif.org/occurrences/296571326
Geolocate (copied from CAS352724)		http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl
Global Mountain Biodiversity Assessment - GMBA	The Himalayan Uplands Plant database (HUP Version 1)	http://data.gbif.org/occurrences/615389944
GoogleMaps via BerkeleyMapper		http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl
GZU	Biocase	http://search.biocase.org/synth-ui/index/session
Harvard University Herbaria	Vascular plants of south-central China	http://data.gbif.org/occurrences/147022307
Herbar Record Batumi		
Herbar Record Tbilisi		
Herbario SANT, Universidade de Santiago de Compostela	SANT herbarium vascular plants collection	http://data.gbif.org/occurrences/60037440
HGI	Biocase	http://search.biocase.org/synth-ui/index/session
HSS	Biocase	http://search.biocase.org/synth-ui/index/session
HUAL	Biocase	http://search.biocase.org/synth-ui/index/session
Illinois Natural History Survey		http://www.inhs.uiuc.edu/cbd/collections
inatura - Erlebnis Naturschau Dornbirn	inatura - Erlebnis Naturschau Dornbirn	http://data.gbif.org/occurrences/99534559
Info Folra		
Institute of Botany Slovak academy of Sciences	SAVBA	http://ibot.sav.sk/page/
Institute of Ecology and Botany of the Hungarian Academy of Sciences	META	
Instituto de Botánica Darwinion - CONICET	Instituto de Botánica Darwinion	http://data.gbif.org/occurrences/416837998
Instituto de Ciencias Naturales	Instituto de ciencias naturales	http://data.gbif.org/occurrences/416343598
Invasive Plant Atlas of New England		nbin.ciesin.columbia.edu/ipane/datamaps
Israel Nature and Parks Authority	Israel Nature and Parks Authority	http://data.gbif.org/occurrences/48563863
JYV	Biocase	http://search.biocase.org/synth-ui/index/session
Jyvaskyla University Museum - The Section of Natural Sciences	Vascular plant collection of Jyvaskyla University Museum	http://data.gbif.org/occurrences/57726123
Karl Franzens University of Graz, Insitute for Botany - Herbarium GZU	Herbarium GZU	http://data.gbif.org/occurrences/164357826
Karl Franzens University of Graz, Insitute for Botany - Herbarium GZU	Herbarium GZU	http://data.gbif.org/occurrences/684387779
KBIF Data Repository	Plant (NHMK-PL)	http://data.gbif.org/occurrences/238271418
Louisiana State University Herbarium	Herbarium	http://data.gbif.org/occurrences/176988913
Marine Science Institute, UCSB	Paleobiology Database	http://data.gbif.org/occurrences/34906115
Missouri Botanical Garden		http://mobot.mobot.org/W3T/Search/vast
MNHN - Museum national d'Histoire naturelle	Herbarium specimens of Museum national d'Histoire Naturelle	http://data.gbif.org/occurrences/439121832
Mountain Invasion Research Network - MIREN_ETH	Mountain Invasion Research Network (MIREN) survey	http://data.gbif.org/occurrences/614970384
Musée national d'histoire naturelle Luxembourg	Biological and palaeontological collection and observation data	http://data.gbif.org/occurrences/199694072

	MNHNL	
National Biodiversity Data Centre	BSBI tetrad data for Ireland	http://data.gbif.org/occurrences/372796834
National Herbarium of New South Wales	NSW herbarium collection	http://data.gbif.org/occurrences/153797667
National Institute of Genetics, ROIS	Forestry and Forest Products Research Institute, Japan	http://data.gbif.org/occurrences/360270425
National Museum of Natural History	NMNH Botany Collections	http://data.gbif.org/occurrences/243088853
National Museum of Nature and Science, Japan	Herbarium Specimens of Tokushima Prefectural Museum, Japan	http://data.gbif.org/occurrences/43215342
National Science Museum of Korea	National Science Museum of Korea Plant	http://data.gbif.org/occurrences/78829187
Natural History Museum, Vienna - Herbarium W	Natural History Museum, Vienna - Herbarium W	http://data.gbif.org/occurrences/367056221
Netherlands Biodiversity Information Facility (NLBIF)	Nijmegen Natural History Museum (NL) – Herbarium	http://data.gbif.org/occurrences/230816921
New Mexico Biodiversity Collections Consortium	New Mexico Biodiversity Collections Consortium database	http://data.gbif.org/occurrences/239199157
New York Natural Heritage Program		http://www.nynhp.org
New York State Museum		www.nysm.nysed.gov/collections/biology
NSW Department of Environment, Climate Change, and Water	OEH Atlas of NSW Wildlife	http://data.gbif.org/occurrences/162257623
Department of Premier and Cabinet representing the State of New South Wales	OEH Atlas of NSW Wildlife	http://data.gbif.org/occurrences/490649425
Oklahoma Vascular Plants Database		http://www.biosurvey.ou.edu/atlasdesc.html
Online Atlas of Michigan Plants		http://herbarium.lsa.umich.edu
Oregon State University	Vascular Plant Collection	http://data.gbif.org/occurrences/51743395
Pennsylvania Flora Database		www.paflora.org
Research Institute for Nature and Forest	Florabank1	http://data.gbif.org/occurrences/373861095
Rocky Mountain Herbarium		http://www.rmh.uwyo.edu/index.html
Royal Alberta Museum		www.royalalbertamuseum.ca/natur
Royal Botanic Garden Edinburgh	Royal Botanic Garden Edinburgh Herbarium (E)	http://data.gbif.org/occurrences/575206642
Royal Botanic Gardens, Kew	Royal Botanic Gardens, Kew	http://data.gbif.org/occurrences/231240655
SALA	Biocase	http://search.biocase.org/synth-ui/index/session
SANT	Biocase	http://search.biocase.org/synth-ui/index/session
Service du Patrimoine naturel, Muséum national d'Histoire naturelle, Paris SOPHY Database	Inventaire national du Patrimoine naturel (INPN) SOPHY	http://data.gbif.org/occurrences/32798094 http://sophy.u-3mrs.fr
South African National Biodiversity Institute	PRECIS_KZN	http://data.gbif.org/occurrences/616232648
South Australia, Department of Environment and Natural Resources	SA Flora	http://data.gbif.org/occurrences/479323092
Southwest Environmental Information Network		http://seinet.asu.edu/collections
Staatliche Naturwissenschaftliche Sammlungen Bayerns	IBF Monitoring of Vascular Plants	http://data.gbif.org/occurrences/296384968
STOWA	Biocase	http://search.biocase.org/synth-ui/index/session

SysTax	SysTax	http://data.gbif.org/occurrences/199123368
Taiwan Biodiversity Information Facility (TaiBIF)	National vegetation diversity inventory and mapping plan	http://data.gbif.org/occurrences/238687030
Taiwan Forestry Research Institute	Herbarium of Taiwan Forestry Research Institute	http://data.gbif.org/occurrences/237057374
TELDAP	ENDEMIC SPECIES RESEARCH INSTITUTE	http://data.gbif.org/occurrences/622280069
Terrain Navigator		http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl
The Natural Resource Projects Inventory		http://www.ice.ucdavis.edu/nrpi
The New York Botanical Garden	Herbarium of The New York Botanical Garden	http://data.gbif.org/occurrences/234580640
The Norwegian Biodiversity Information Centre (NBIC)	The Norwegian Species Observation Service - Botany	http://data.gbif.org/occurrences/246035073
Tiroler Landesmuseum Ferdinandeum	Tiroler Landesmuseum Ferdinandeum	http://data.gbif.org/occurrences/296499416
trs2LL		http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl
UK National Biodiversity Network	Staffordshire Ecological Record - SER Site-based Surveys	http://data.gbif.org/occurrences/254062314
UNIBIO, IBUNAM	MEXU/Colección de Plantas Acuáticas	http://data.gbif.org/occurrences/218969459
Université de Montréal Biodiversity Centre	Marie-Victorin Herbarium (MT)	http://data.gbif.org/occurrences/442247429
University of Alabama Biodiversity and Systematics	Herbarium (UNA)	http://data.gbif.org/occurrences/217039136
University of Alberta	University of Alberta Museums, Vascular Plant Herbarium	http://data.gbif.org/occurrences/239818030
University of Arizona Herbarium	UA Herbarium	http://data.gbif.org/occurrences/175898059
University of Berkley		http://ucjeps.berkeley.edu/IJM_index_O.html
University of Białystok, Institute of Biology	Lichens of North-Eastern Poland	http://data.gbif.org/occurrences/354273371
University of British Columbia Department		http://herbarium.botany.ubc.ca/
University of Colorado Museum		http://cumuseum.colorado.edu/Research/Botany
University of Connecticut herbarium		http://bgbaseserver.eeb.uconn.edu/databases/simple.html
University of Helsinki Botanical Garden at Kaisaniemi	BCK	http://www.fmnh.helsinki.fi/english/exhibitions/botanic
University of Kansas Biodiversity Research Center	Botany Vascular Plant Collection	http://data.gbif.org/occurrences/78426881
University of Malaga	Universidad de Málaga: MGC-Cormof	http://data.gbif.org/occurrences/199456739
University of Mississippi Pullen Herbarium Specimen Database		http://herbarium.olemiss.edu/projects.html
University of Nebraska State Museum		http://www-museum.unl.edu/research/botany/botany
University of New Hampshire Hodgdon Herbarium		http://www.unh.edu/herbarium
University of North Carolina Herbarium		http://www.herbarium.unc.edu
University of Washington Burke Museum	Vascular Plant Collection - University of Washington Herbarium (WTU)	http://data.gbif.org/occurrences/70426531
UPS	Biocase	http://search.biocase.org/synth-ui/index/session
US National Plant Germplasm System	United States National Plant Germplasm System Collection	http://data.gbif.org/occurrences/41897043

USDA PLANTS	USDA PLANTS Database	http://bgbaseserver.eeb.uconn.edu/databases/simple.html
Utah State University	USU-UTC Specimen Database	http://data.gbif.org/occurrences/211292857
VAL	Biocase	http://search.biocase.org/synth-ui/index/session
VegBank		www.vegbank.com
Washington University Burke museum		http://www.washington.edu/burkemuseum
Western Australian Herbarium	WAHerb	http://data.gbif.org/occurrences/441562543
Wisconsin State Herbarium		http://www.botany.wisc.edu/wisflora
Yale University Peabody Museum	Peabody Botany DiGIR Service	http://data.gbif.org/occurrences/176988920
	Biocase	http://search.biocase.org/synth-ui/index/session
