S1 File. Supporting figures and tables for "Effects of land-use change and related pressures on alien and native subsets of island communities"

Table 1. External sources that were used to determine the status of species in the PREDICTS database at either island or country level.

Source acronym	Citation/Description	Access to data	Species status in
AGDAWR	Australian Government Department of Agriculture and Water Resources.	Search for specific species at: http://www.agriculture.gov.au/ [Accessed March 2017]	Country
ALA	Atlas of Living Australia.	Search for specific species at: https://www.ala.org.au/ [Accessed March 2017]	Country
AntMaps	Janicki J, Narula N, Ziegler M, Guénard B, Economo EP. Visualizing and interacting with large-volume biodiversity data using client–server web-mapping applications: The design and implementation of antmaps.org. Ecol Inform. 2016;32:185–93.	Search for specific species at: http://antmaps.org/ [Accessed March 2017]	Country
AntWeb	AntWeb, Version 8.0.5. Database: AntWeb [Internet]. Available https://www.antweb.org	Search for specific species at: https://www.antweb.org [Accessed May 2017]	Country
BirdLife	BirdLife Australia.	Downloaded from: http://birdlife.org.au/conservation/science/taxonomy [Accessed April 2015]	Country
	BirdLife International.	Downloaded from: http://datazone.birdlife.org/species/search [Accessed March 2017] (Search for endemic species in countries included in PREDICTS database)	Country
C.Vink, Canterbury Museum, NZ	Taxonomic expert at Canterbury Museum, New Zealand	Direct contact with taxonomic expert to classify species from the order Araneae in New Zealand	Country
CITES	UNEP. The Species + Website. Nairobi, Kenya. Compiled by UNEP-WCMC, Cambridge, UK. Database: Species + [Internet]. Available from: https://www.speciesplus.net/species	Downloaded from: https://www.speciesplus.net/species [Accessed March 2017]	Country
CMS			
DLO	Discover Life.	Search for specific species at: http://discoverlife.org [Accessed March 2017]	Country
ORIG-NATIVE	Data from Flora Europaea (http://rbg-web2.rbge.org.uk/FE/fe.html) and different web APIs.	Data accessed through R package 'originr' function 'is_native') [Accessed March 2019]	Country
GAVIA	Dyer EE, Redding DW, Blackburn TM. The global avian invasions atlas, a database of alien bird distributions worldwide. Sci Data. 2017;4(1):170041.	Downloaded from: https://figshare.com/articles/Data_from_The_Global_Avian_Invasions_Atl	Country

		as_-_A_database_of_alien_bird_distributions_worldwide/4234850 [Accessed May 2017]	
GIFT	Weigelt P, König C, Kreft H. GIFT – A Global Inventory of Floras and Traits for macroecology and biogeography. J Biogeogr. 2020;47:16–43.	Data provided by the GIFT team (July, 2017)	Island
GISD	ISSG. The Global Invasive Species Database, Version 2015.1. Database: Global Invasive Species Database [Internet]. Available from: http://www.iucngisd.org/gisd/	Data accessed through R package 'originr' function 'gisd' [Accessed March 2019]	Country
GloNAF	van Kleunen M, Pyšek P, Dawson W, Essl F, Kreft H, Pergl J, et al. The Global Naturalized Alien Flora (GloNAF) database. Ecology. 2019;100(1):e02542.	Data provided by the GloNAF team (July 2017)	Island
GloNAF-country		Data provided by the GloNAF team (September 2015)	Country
GRIIS	Pagad S, Genovesi P, Carnevali L, Schigel D, McGeoch MA. Introducing the Global Register of Introduced and Invasive Species. Sci Data. 2018;5(1):170202.	Downloaded from: http://www.griis.org/ [Accessed May 2017] (Selected terms: "terrestrial", "freshwater", "verified record")	Country
IUCN	IUCN. IUCN Red List of Threatened Species, Version 2017-1. Database: The IUCN Red List of Threatened Species [Internet]. Available from: https://www.iucnredlist.org	Data accessed through R package 'rredlist' function 'rl_occ_country' [Accessed March 2019]	Country
Knight (1974)	Knight WJ. Leaf hoppers of New Zealand: Subfamilies Aphrodinae, Jassinae, Xestocephalinae, Idiocerinae, and Macropsinae (Homoptera: Cicadellidae). New Zeal J Zool. 1974;1(4):475–493.	Data taken from publication	Country
LCR-NZ	Landcare Research New Zealand.	Search for specific species at: https://www.landcareresearch.co.nz/science/plants-animals-fungi [Accessed May 2017]	Country
N.Wyatt, NHM, UK	Taxonomic expert at the Natural History Museum, United Kingdom.	Direct contact with taxonomic expert to classify species from the order Diptera in different countries	Country
NZTCS	New Zealand Threat Classification System. Database: NZ Threat Classification System (NZTCS) [Internet]. Available from: https://nztcs.org.nz	Search for specific species at: https://nztcs.org.nz/ [Accessed March 2017]	Country
OSF	Orthoptera Species File, Version 5.0. Database: Orthoptera Species File Online [Internet]. Available from: http://orthoptera.speciesfile.org/HomePage/Orthoptera/HomePage.aspx	Search for specific species at: http://orthoptera.speciesfile.org/HomePage/Orthoptera/HomePage.aspx [Accessed May 2017]	Country
TEARA	Te Ara: The encyclopedia of New Zealand.	Search for specific species at: https://teara.govt.nz/en [Accessed March 2017]	Country
TIBD-IAS	TIB Partners. The Threatened Island Biodiversity Database: developed by Island Conservation, University of California Santa	Data provided by the TIB team (May 2017) (Invasive species on islands)	Island

TIBD-TSpl	Cruz Coastal Conservation Action Lab, BirdLife International and IUCN Invasive Species Specialist Group, Version 2017. Database: The Threatened Island Biodiversity Database [Internet]. Available from: http://tib.islandconservation.org	Data provided by the TIB team (May 2017) (Threatened species on islands)	Island
WCSP	World Checklist of Selected Plant Families.	Search for specific species at: http://wcsp.science.kew.org [Accessed March 2017]	Country
WPB	Checklist of the Western Palaearctic Bees (Hymenoptera: Apoidea: Anthophila).	Search for specific species at: http://westpalbees.myspecies.info. [Accessed March 2017]	Country

Table 2. Number of biodiversity records per species status for island data in the PREDICTS database.

Status	Number of records
Alien	89472
Native	607586
Not classified	642281

Table 3. Number of biodiversity records that were classified by external sources or data sources in the PREDICTS database. The table shows the number of records classified by each external source (first row shows the total records classified by all external sources), but only the total records classified by all PREDICTS data sources (bottom row). Full names of the external sources are provided in Table 1. If a source in Table 1 is not listed, there were no matches for the species-country combinations in that data source or matching combinations were classified first by other sources.

Source	Records
All external sources	281981
AGDAWR	52
ALA	20
AntMaps	281
AntWeb	1934
BirdLife	33704
C.Vink, Canterbury Museum, NZ	1830
CITES	10399
CMS	735
DLO/NZH	86
GAVIA	3833
GIFT	122833
GISD	13612
GloNAF	11508
GloNAF-Nature	1165
GRIIS	16497
IUCN	58467
Knight (1974)	20
LCR-NZ	360
N.Wyatt, NHM, UK	2326
NZTCS	236
OSF	754
TEARA	360
TIBD-IAS	440
TIBD-TSpI	379
WCSP	10
WPB	140
PREDICTS data sources	415077

Table 4. Variability of different attributes of PREDICTS studies that were included in our analyses (i.e., island data discarding records for species that could not be classified). The first four rows show the minimum/maximum values and the median of calculations performed for each study (e.g., N sites= number of sites sampled in a study). The last two rows show values calculated across all sites of all studies. LMLE= largest maximum linear extent (in meters) across sites within a study (MLE is the length of the maximum distance between multiple sampling points within a site).

	min	max	median
N sites	2	529	18
N species sampled	1	893	21
Sampling start	1986	2015	2006
LMLE	0.15	14142.136	95
Site's species richness	0	135	3
Site's total abundance	0	96337	7

Table 5. Number of sites across UN regions including data for major taxonomic groups (for island data that was used in our analyses). Numbers in brackets show the number of studies (first value) and islands (second value) from which data came from. One island can include several studies and in some cases, a single study sampled several islands.

Taxon	Africa	Americas	Asia	Europe	Oceania
Vertebrates	606 (10; 5)	63 (3; 3)	721 (23; 16)	0 (0; 0)	853 (21; 18)
Invertebrates	82 (2; 2)	22 (4; 11)	166 (12; 7)	2519 (37; 16)	935 (22; 4)
Plants	300 (1; 1)	249 (3; 3)	400 (10; 5)	354 (10; 4)	448 (5; 3)

Table 6. Number of native and alien species (by major taxonomic group) included in the PREDICTS island data that could be classified. Numbers in brackets show the number of studies (first value) and islands (second value) including data for species of each major taxonomic group.

Taxon	Native species	Alien species
Vertebrates	1248 (57; 42)	112 (38; 22)
Amphibia	107	2
Aves	794	84
Mammalia	183	22
Reptilia	164	4
Invertebrates	2125 (69; 39)	384 (33; 17)
Annelida	13	1
Arachnida	63	51
Archaeognatha	3	0
Blattodea	2	0
Chilopoda	12	2
Coleoptera	1315	185
Collembola	1	0
Dermaptera	1	2
Diplopoda	5	13

Diptera	190	26
Hemiptera	54	23
Hymenoptera	232	26
Lepidoptera	73	33
Malacostraca	5	0
Mollusca	45	9
Neuroptera	3	0
Odonata	61	0
Onychophora	2	0
Orthoptera	30	5
Pauropoda	1	0
Psocodea	8	5
Thysanoptera	4	3
Trichoptera	2	0
Plants	2144 (29; 16)	298 (27; 14)
Bryophyta	3	0
Equisetopsida	4	0
Gnetopsida	11	0
Liliopsida	549	84
Lycopodiopsida	5	0
Magnoliopsida	1449	207
Pinopsida	18	5
Polypodiopsida	99	1
Psilotopsida	6	1

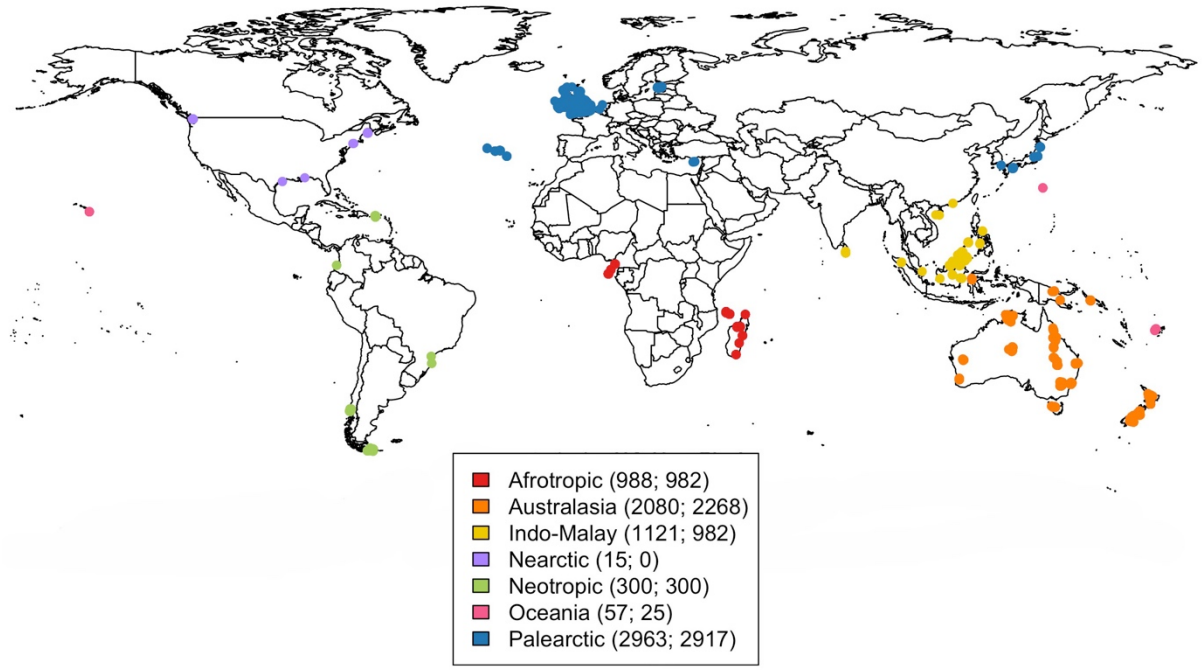

Figure 1. Locations of sites included in the PREDICTS island data that was used for our analyses. Sites are coloured according to the biogeographical realm where they are located. Numbers in brackets show the number of sites per biogeographic realm including data for native (first value) and alien species (second value). Calculations for the number of sites was performed after adding zero measurements for the missing group (aliens or natives) in studies that sampled entire communities (see Methods).

Table 7. Final datasets for the abundance and richness models for alien and native species. The table shows the number of sites, (and in parentheses) studies (first value) and islands (second value) including alien and native data across land use/use intensity categories (LUI). The difference between the number of sites, studies and islands for alien and native data is the result of including data from studies only focusing on sampling a few species (classified as either aliens or natives) either in the native or alien datasets (see Methods).

	Abundance dataset		Richness dataset	
LUI	Native	Alien	Native	Alien
Primary Vegetation Minimal use	833 (64; 32)	912 (61; 27)	1168 (74; 35)	1247 (71; 30)
Primary Vegetation	534 (34; 26)	448 (31; 11)	600 (38; 30)	514 (35; 15)
Secondary Vegetation	1595 (93; 34)	1573 (87; 33)	1824 (103; 37)	1802 (97; 36)
Plantation forest	675 (40; 21)	674 (39; 21)	796 (47; 24)	795 (46; 24)
Cropland	363 (32; 29)	330 (29; 14)	370 (34; 30)	337 (31; 15)
Pasture	1938 (45; 15)	2027 (45; 15)	2135 (48; 17)	2224 (48; 17)
Urban	491 (14; 6)	484 (12; 6)	509 (15; 6)	502 (13; 6)

Table 8. Akaike's information criterion (AIC) values for the initial models of total abundance and richness of aliens and natives using the four different random-effects structures that were tested. ΔAIC values are shown relative to the best model. SS= study, SSB= block nested within study, Obs= observation.

Random-effects structure	d.f.	AIC	ΔAIC
Abundance model			
(1+LandUse|SS) + (1|SSB) + (1|Island)	101	284.44	--
(1+LandUse|SS) + (1|SSB)	100	294.29	9.85
(1|SS) + (1|SSB) + (1|Island)	74	582.15	297.71
(1|SS) + (1|SSB)	73	591.86	307.42
Richness model			
(1+LandUse|SS) + (1|SSB) + (1|Island) + (1|Obs)	101	35200.65	--
(1+LandUse|SS) + (1|SSB) + (1|Obs)	100	35220.26	19.61
(1|SS) + (1|SSB) + (1|Island) + (1|Obs)	74	35404.72	204.07
(1|SS) + (1|SSB) + (1|Obs)	73	35427.03	226.38

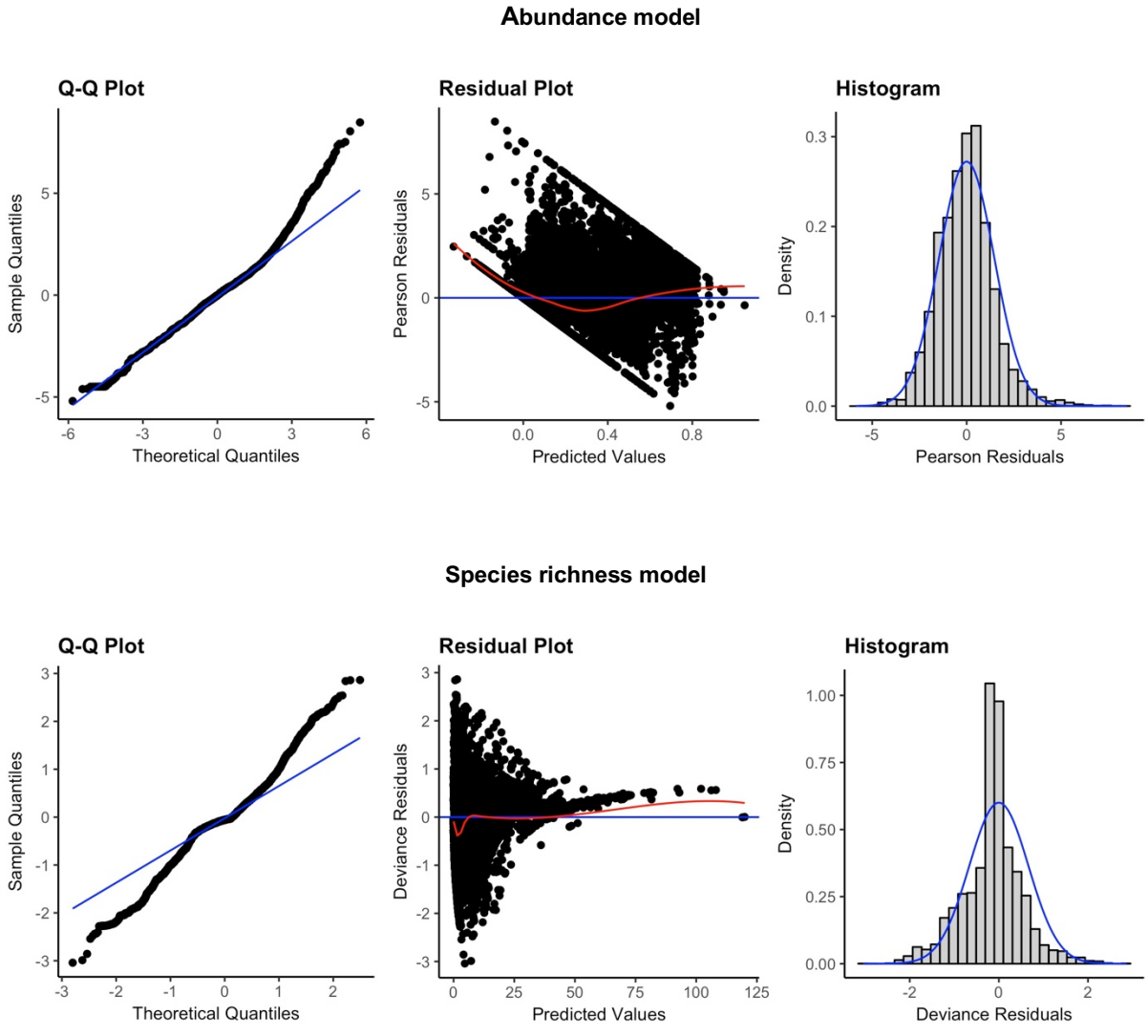

Figure 2. Diagnostic plots for the final models of total abundance and species richness of alien and native species.

Table 9. ANOVA table for the minimum adequate model of total abundance of alien and native species. LUI= land use/use intensity, HPD= human population density, DistRd= distance to the nearest road. Stars indicate the level of significance (Sig): <0.05* and <0.001***

Term	χ^2	d.f.	Sig
LUI	8.641	6	
Alien/Native	10917.632	1	***
HPD	4.917	2	
DistRd	0.553	2	
LUI × Alien/Native	339.194	6	***
HPD × Alien/Native	30.713	2	***
LUI × HPD	25.463	12	*
DistRd × Alien/Native	22.667	2	***
LUI × DistRd	34.150	12	***
LUI × HPD × Alien/Native	344.261	12	***
LUI × DistRd × Alien/Native	86.880	12	***

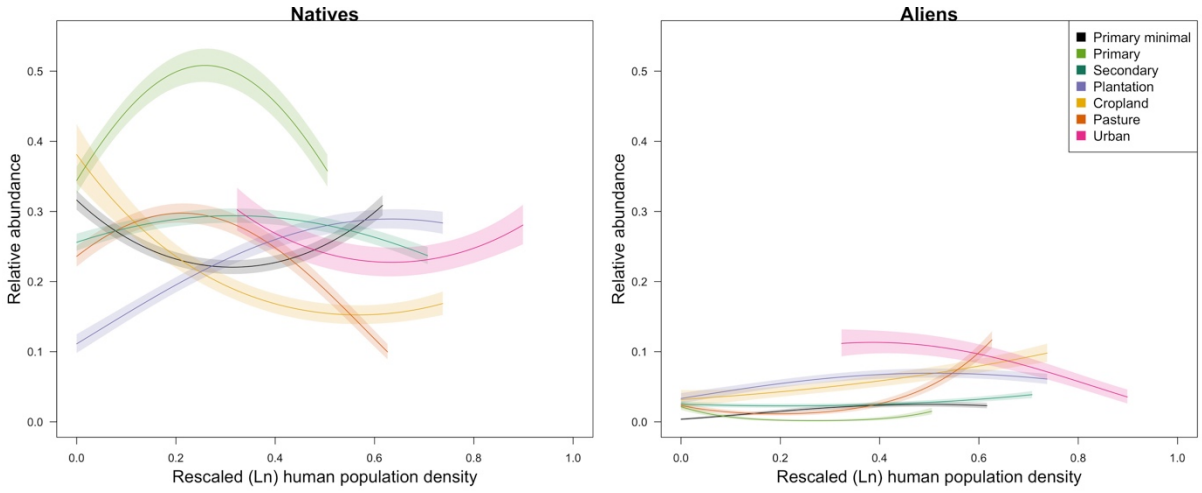

Figure 3 . Response of total abundance of natives and aliens to human population density (HPD) across land uses. The x limits of each coloured line indicate the 2.5th and 97.5th percentiles for the values of HPD represented in each land use in the model dataset. For clarity, the error bars show half the standard error. HPD values are shown on a rescaled axis (as fitted in the models). Abundance is shown on a zero-to-one scale (i.e., abundance rescaled within studies but back-transformed from the square-root scale).

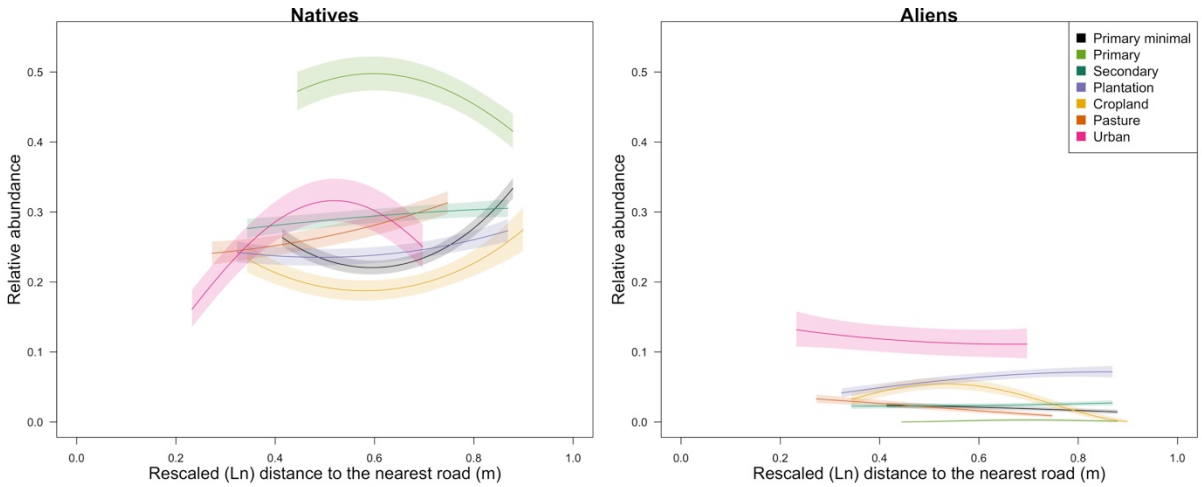

Figure 4. Response of total abundance of aliens and natives to distance to the nearest road (DistRd) across land uses. The x limits of each coloured line indicate the 2.5th and 97.5th percentiles for the values of DistRd represented in each land use in the model dataset. For clarity, the error bars show half the standard error. DistRd values are shown on a rescaled axis (as fitted in the models). Abundance is shown on a zero-to-one scale (i.e., abundance rescaled within studies but back-transformed from the square-root scale).

Table 10. ANOVA table for the minimum adequate model of richness of alien and native species. LUI= land use/use intensity, HPD= human population density, DistRd= distance to the nearest road. Stars indicate the level of significance (Sig): <0.05* and <0.001***

Term	χ^2	d.f.	Sig
LUI	26.292	6	***
Alien/Native	11588.342	1	***
HPD	5.061	2	
DistRd	2.484	2	
LUI × Alien/Native	350.059	6	***
HPD × Alien/Native	299.623	2	***
LUI × HPD	23.891	12	*
DistRd × Alien/Native	39.828	2	***
LUI × DistRd	12.982	12	
LUI × HPD × Alien/Native	292.893	12	***
LUI × DistRd × Alien/Native	76.5157	12	***

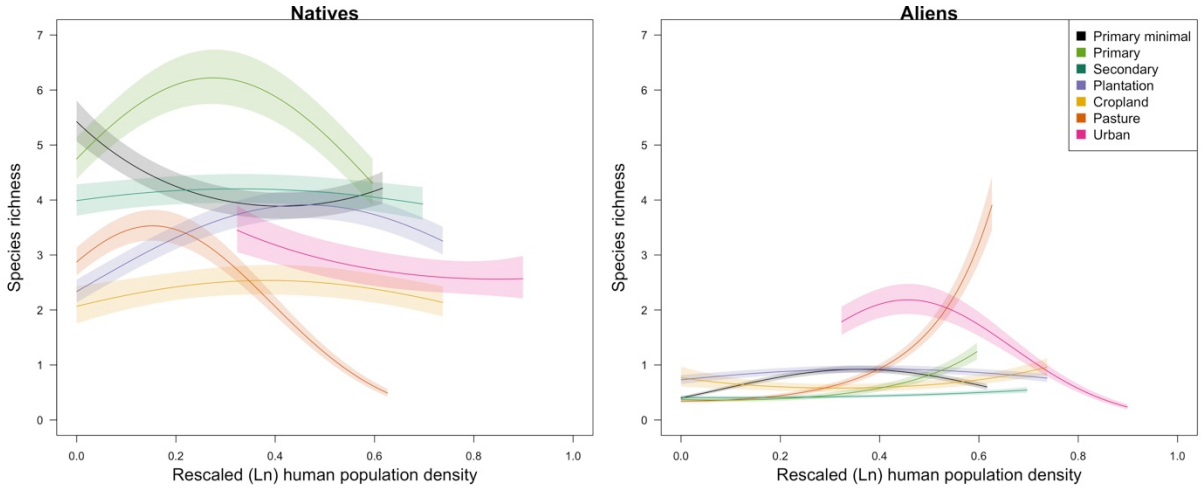

Figure 5. Response of species richness of aliens and natives to human population density across land uses.

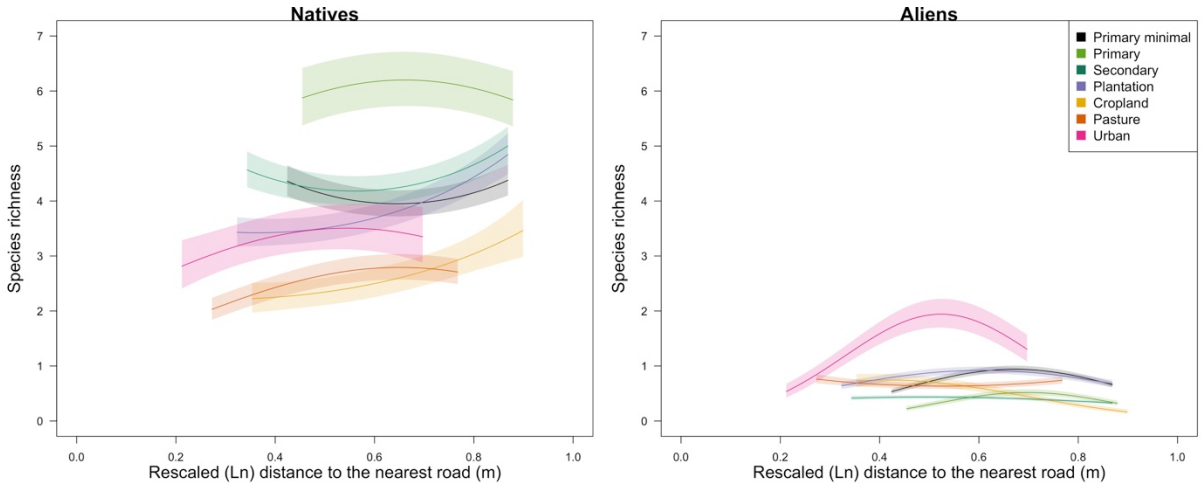

Figure 6. Response of species richness of aliens and natives to distance to the nearest road across land uses.

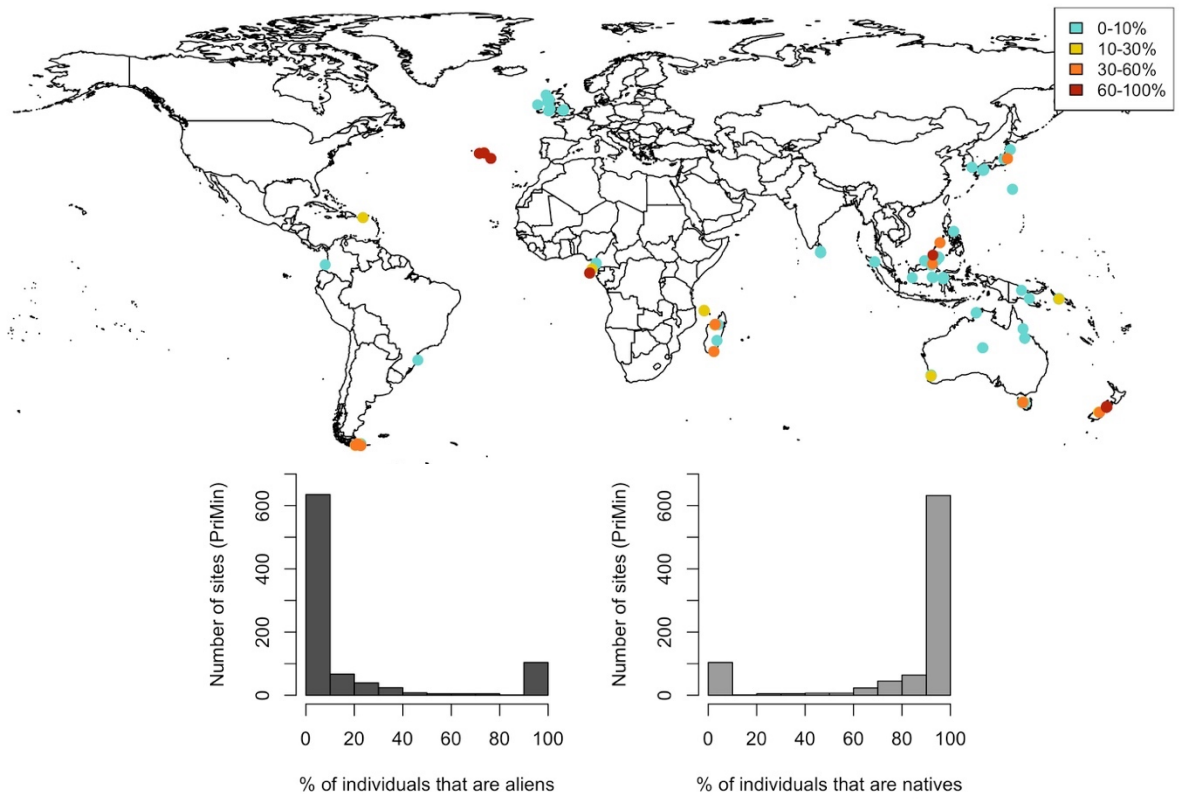

Figure 7. Percentage of individuals that are aliens in sites in minimally-disturbed primary vegetation. Percentages were calculated using exclusively data for alien and native species; species that could not be classified were excluded from these calculations. Only sites that were included in the abundance model are shown. Sites with higher percentages were the last to be plotted, so that they would be highlighted. Histograms show the percentage of individuals that are aliens and natives across sites in minimally-disturbed primary vegetation.

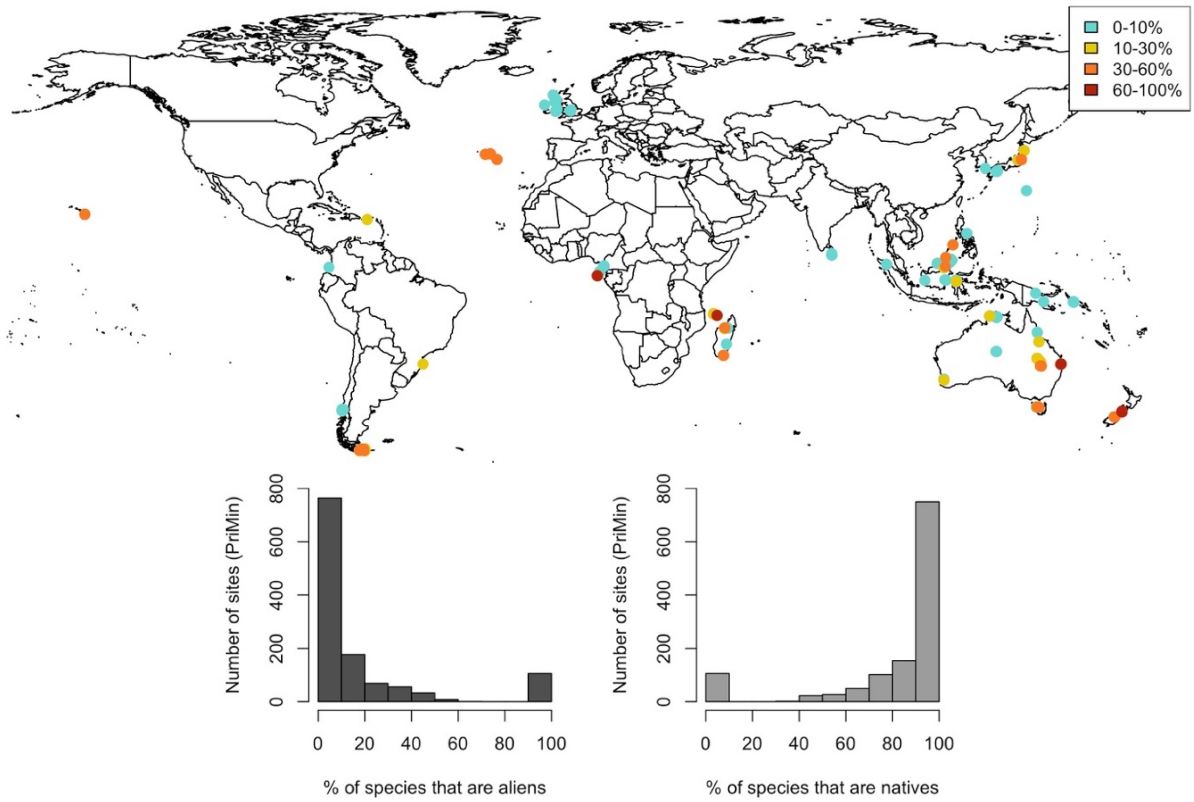

Figure 8. Percentage of species that are aliens in sites in minimally-disturbed primary vegetation. Percentages were calculated using exclusively data for alien and native species; species that could not be classified were excluded from these calculations. Only sites that were included in the richness model are shown. Histograms show the percentage of species that are aliens and natives across sites in minimally-disturbed primary vegetation.

Table 11. Islands included in the models for abundance and richness of aliens using island traits as explanatory variables. Islands marked with a star were included in the abundance and richness models, the rest were only included in richness models. The four islands with missing data for surrounding landmass (i.e., no data in Weigelt et al., 2013) were not included in the models including this variable. In total, the models relating alien abundance to island area or GDP per capita used data from 84 studies in 30 islands, whereas the corresponding species-richness models used data from 98 studies and 39 islands. The model relating landmass to alien abundance used data from 64 studies from 26 islands, whereas the alien richness model used 75 studies from 35 islands. The country listed for each island corresponds to where sites (with data for aliens) in the PREDICTS database are located; i.e., only sites in Borneo were located in two different countries.

Island	Country	Island area (km^2)	Surrounding landmass (summed proportions)	Country per capita GDP (current USD – year 2005)
Anijima *	Japan	7.879	NA	37217.649
Anjouan	Comoros	426.580	0.706	1068.600
Australia *	Australia	7588924.738	NA	33961.682
Balambangan	Malaysia	103.175	0.704	5593.823
Banggi	Malaysia	431.372	0.723	5593.823
Bintan	Indonesia	1169.873	0.806	1260.929
Borneo *	Malaysia	732289.104	0.501	5593.823
Borneo *	Indonesia	732289.104	0.501	1260.929
Chichijima *	Japan	23.757	NA	37217.649
Faial *	Portugal	172.857	0.46	18784.949
Flores *	Portugal	140.943	0.438	18784.949
Grande Comoro *	Comoros	1015.564	0.736	1068.600
Great Britain *	United Kingdom	218670.015	0.858	41732.641
Hainan *	China	34023.685	0.946	1753.418
Hawai'i	United States	10431.594	0.245	44307.921
Honshu *	Japan	227947.264	0.573	37217.649
Ilha das Rosas *	Brazil	3.066	1.644	4770.184
Ireland *	Ireland	83531.769	0.692	50878.640
Kolombangara *	Solomon Islands	693.585	0.384	880.875
Madagascar *	Madagascar	587926.700	0.46	274.820
Mallawalli	Malaysia	38.321	0.785	5593.823
New Guinea *	Papua New Guinea	777319.960	0.38	770.565
Nishi-jima *	Japan	0.484	NA	37217.649
North Island *	New Zealand	113707.769	0.171	27750.725
Osel	Estonia	2891.685	1.548	10338.313
Palawan *	Philippines	11448.371	0.494	1194.697
Principe *	Sao Tome and Principe	138.754	0.86	804.128
Puerto Rico *	Puerto Rico	8703.443	0.381	21959.323
Pulau Mangalum	Malaysia	5.165	0.739	5593.823
Pulau Mantanai Besar	Malaysia	2.118	0.857	5593.823

Santa Catharina *	Brazil	422.290	1.203	4770.184
Santa Maria *	Portugal	96.926	0.459	18784.949
Sao Tome *	Sao Tome and Principe	849.266	0.753	804.128
South Island *	New Zealand	150437.674	0.163	27750.725
Sri Lanka *	Sri Lanka	65724.996	0.569	1250.005
Sulawesi*	Indonesia	168821.235	0.51	1260.929
Tasmania *	Australia	63584.062	0.346	33961.682
Terceira *	Portugal	400.714	0.46	18784.949
Tierra del Fuego *	Argentina	47419.119	0.59	5076.884
Wight *	United Kingdom	381.948	1.394	41732.641

Table 12. AIC values for models of total abundance of aliens (including island traits) using the two different random-effects structures that were tested. ΔAIC values are shown relative to the best model. SS= study.

Random-effects structure	d.f.	AIC	ΔAIC
Model including area			
(1|SS) + (1|Island)	17	555.259	--
(1|SS)	16	560.728	5.469
Model including surrounding landmass			
(1|SS) + (1|Island)	17	-120.244	--
(1|SS)	16	-117.707	2.537
Model including country GDP per capita			
(1|SS) + (1|Island)	17	544.996	--
(1|SS)	16	551.138	6.142

Table 13. ANOVA tables for models of total abundance of aliens including island traits as explanatory variables. LUI= land use/use intensity. Stars indicate the level of significance (Sig): <0.001***

Term	χ^2	d.f.	Sig
Model including area			
LUI	92.1	6	***
Area	0.039	1	
LUI × Area	91.771	6	***
Model including surrounding landmass			
LUI	95.615	6	***
Landmass	0.077	1	
LUI × Landmass	97.171	6	***
Model including country GDP per capita			
LUI	92.004	6	***
Country GDP	0.033	1	
LUI × Country GDP	89.801	6	***

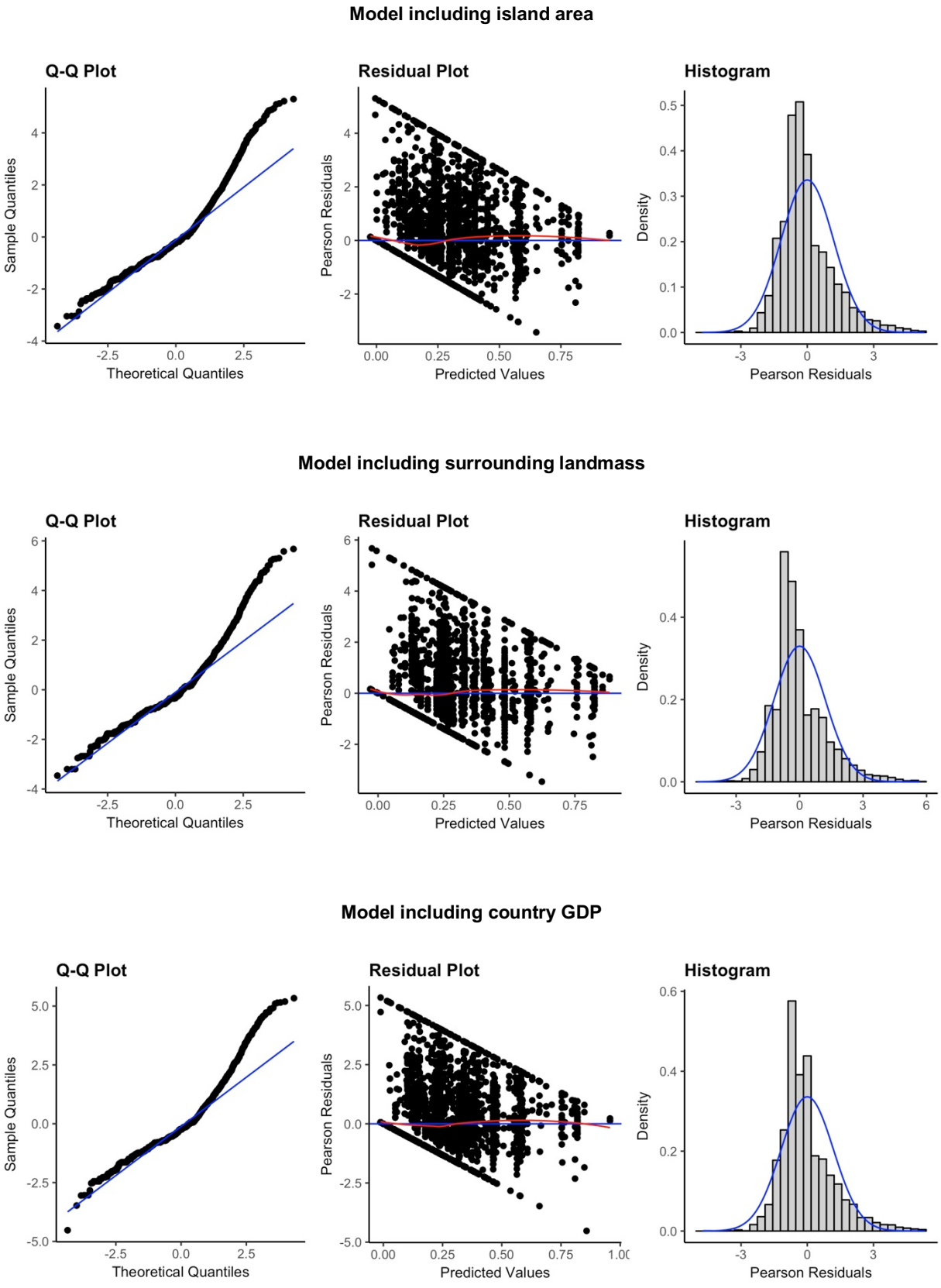

Figure 9. Diagnostic plots for the three models of total abundance of aliens including the different island traits as explanatory variables.

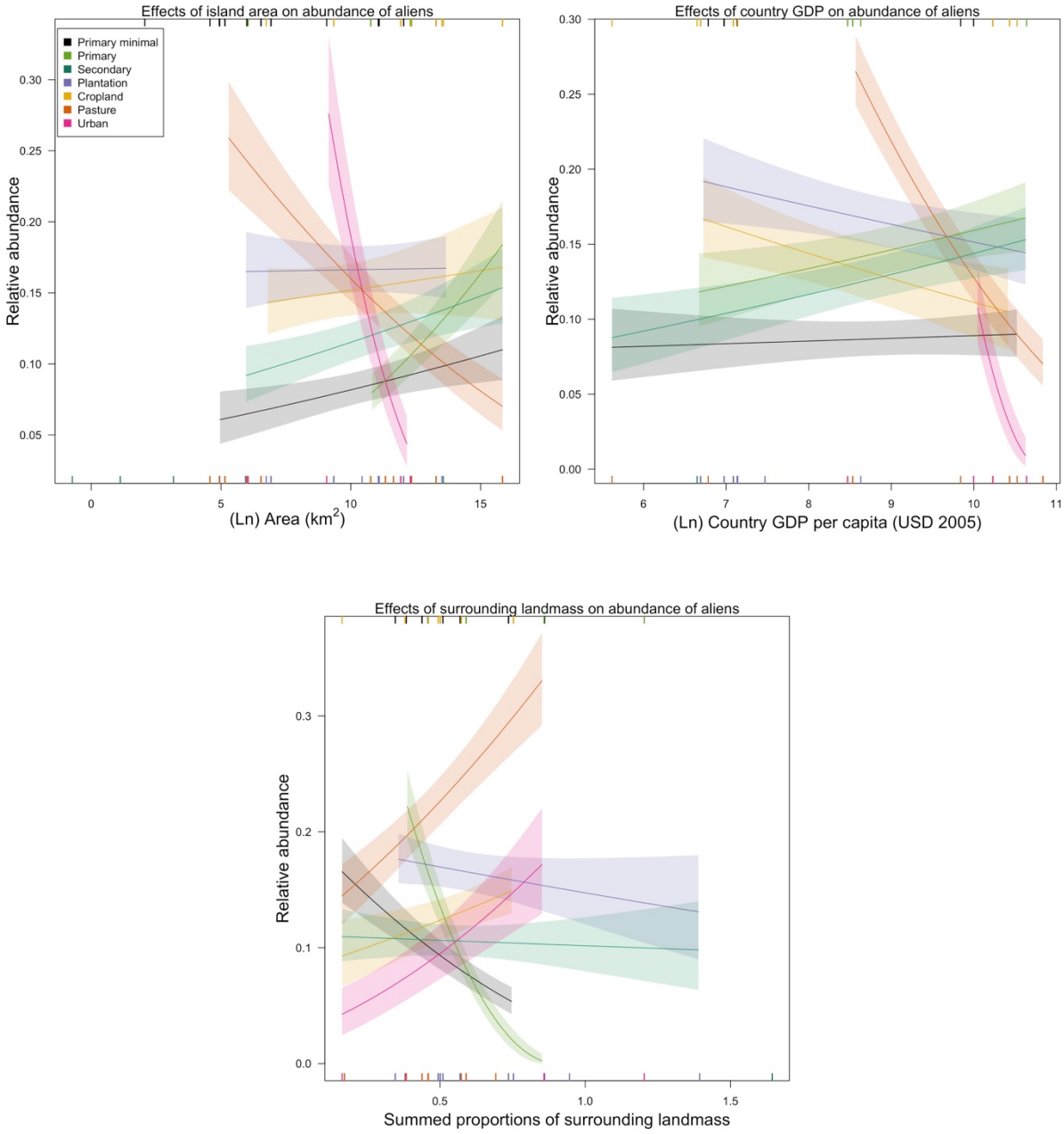

Figure 10. Effects of island area, country-level GDP per capita and surrounding landmass on total abundance of aliens. For clarity, the error bars show half the standard error. Rugs along the horizontal margins show values of the explanatory variables represented (across land uses) in the model data set (rugs for minimally-used primary vegetation, primary vegetation and croplands along the top margin and rugs for the rest of the land uses along the bottom margin). Rugs for land uses can overlap, therefore some data are not visible. The slopes that are significantly different from zero in each model are: Primary (est= 0.03, SE= 0.007, Chisq= 5.5, P= <0.05), Pasture (est= -0.02, SE= 0.005, Chisq= 4.1, P= <0.05) and Urban (est= -0.1, SE= 0.03, Chisq= 8.8 , P= <0.01) in model including island area; Pasture (est= -0.11, SE= 0.01, Chisq= 17.8, P= <0.001) and Urban (est= -0.4, SE= 0.11, Chisq= 12.1, P= <0.001) in model including country GDP; PriMin (est= -0.3, SE= 0.14, Chisq= 4.3, P=<0.05) and Primary Vegetation (est= -0.91, SE= 0.23, Chisq= 13.9, P= <0.001) in model including surrounding landmass

Table 14. AIC values for models of alien species richness (including island traits) using the two different random-effects structures that were tested. ΔAIC values are shown relative to the best model.

Random-effects structure	d.f.	AIC	ΔAIC
Model including area			
(1|SS) + (1|Island)	16	9300.875	--
(1|SS)	15	9344.505	43.63
Model including surrounding landmass			
(1|SS) + (1|Island)	16	6555.943	--
(1|SS)	15	6624.479	68.536
Model including country GDP per capita			
(1|SS) + (1|Island)	16	9315.733	--
(1|SS)	15	9397.701	81.968

Table 15. ANOVA tables for models of alien species richness including island traits as explanatory variables. LUI= land use/use intensity. Stars indicate the level of significance (Sig): <0.01** and <0.001***

Term	χ^2	d.f.	Sig
Model including area			
LUI	364.134	6	***
Area	0.006	1	
LUI × Area	74.247	6	***
Model including surrounding landmass			
LUI	362.936	6	***
Landmass	7.136	1	**
LUI × Landmass	62.746	6	***
Model including country GDP per capita			
LUI	360.277	6	***
Country GDP	0.063	1	
LUI × Country GDP	61.518	6	***

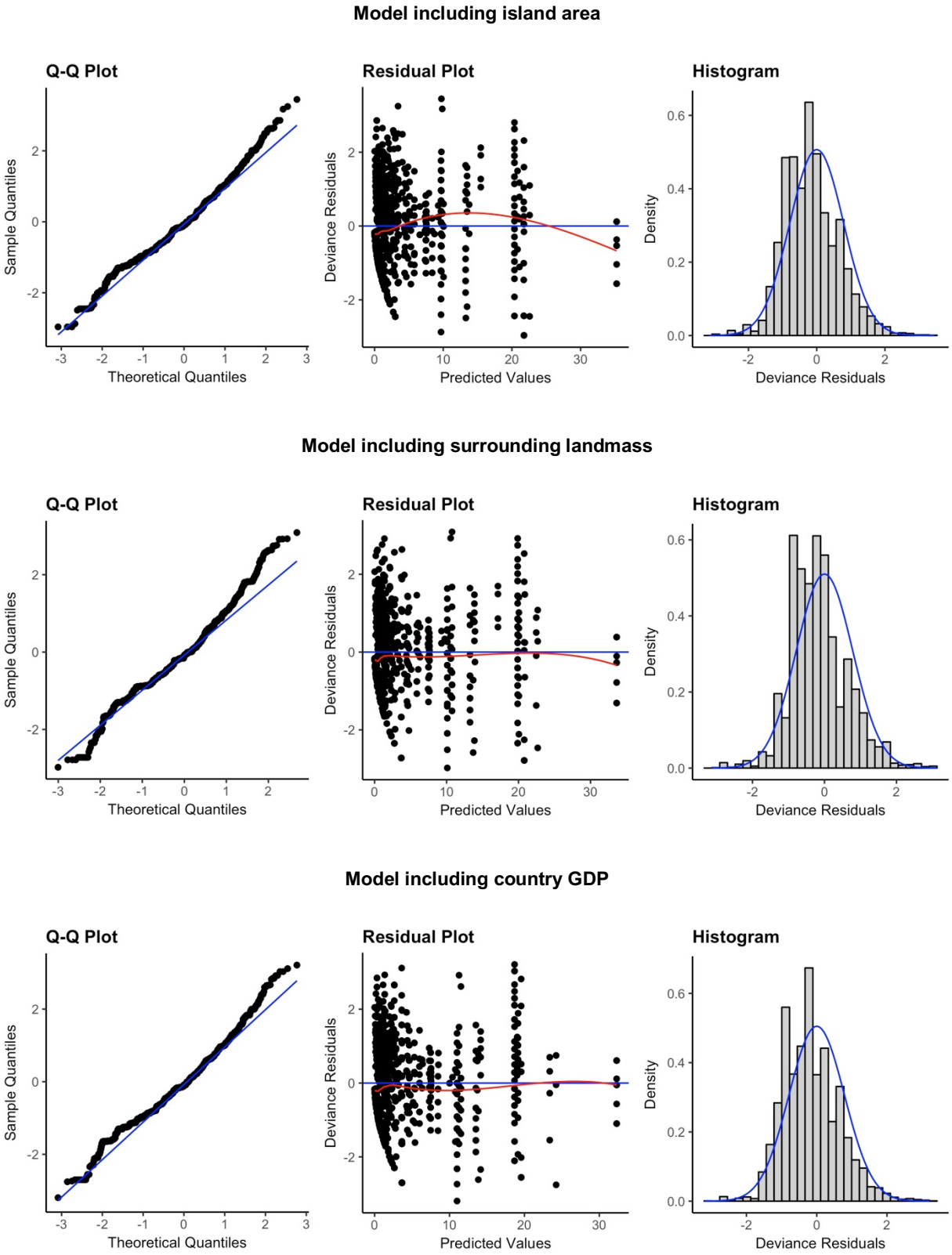

Figure 11. Diagnostic plots for the three models of alien species richness including the different island traits as explanatory variables

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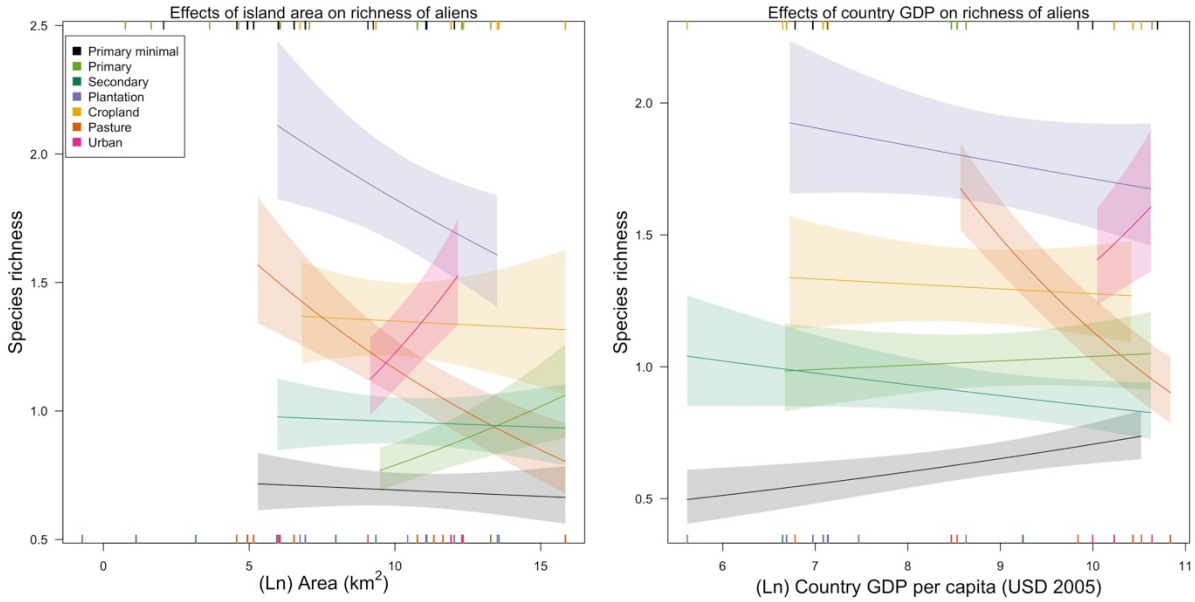

Figure 12. Effects of island area and country-level GDP per capita on species richness of aliens. Rugs along the horizontal margins show values of the explanatory variables represented (across land uses) in the model data set (rugs for minimally-used primary vegetation, primary vegetation and croplands along the top margin and rugs for the rest of the land uses along the bottom margin). Rugs for land uses can overlap, therefore some data are not visible. No slopes were significantly different from zero in the model including island area. In the model including country GDP only Pasture (est= -0.27, SE= 0.05, Chisq= 5.9, P= <0.05) had a slope significantly different from zero.

Table 16. Final dataset for the compositional similarity models for alien and native assemblages. The table shows the number of pair of sites per each land-use contrast generated from pairwise comparisons within studies in the PREDICTS database. Numbers in brackets show the number of studies (first value) and islands (second value) from which data came from. Only land-use contrasts of interest are shown. In total, the models included 91 studies, 53 having data for alien assemblages (from 2,421 sites, 24 islands, and for 591 species) and 89 having data for natives (from 4,274 sites, 32 islands, and for 3,198 species).

Land-use contrast	Aliens	Natives
PriMin- PriMin	10986 (18; 16)	19053 (35; 20)
PriMin- Primary	4139 (8; 6)	5627 (12; 7)
PriMin- Secondary	6405 (19; 14)	12847 (32; 21)
PriMin- Plantation	8994 (11; 8)	10718 (17; 10)
PriMin- Cropland	2712 (7; 5)	3477 (9; 6)
PriMin- Pasture	8390 (6; 8)	9066 (10; 11)
PriMin- Urban	2 (1; 1)	50 (2; 2)
Primary-Primary	8149 (8; 5)	22714 (18; 8)
Secondary- Secondary	10326 (26; 15)	31367 (53; 23)
Plantation - Plantation	28139 (14; 10)	33374 (22; 14)
Cropland - Cropland	3720 (5; 4)	4975 (6; 5)
Pasture - Pasture	19006 (14; 11)	117398 (24; 12)
Urban - Urban	1901 (6; 3)	14906 (10; 4)

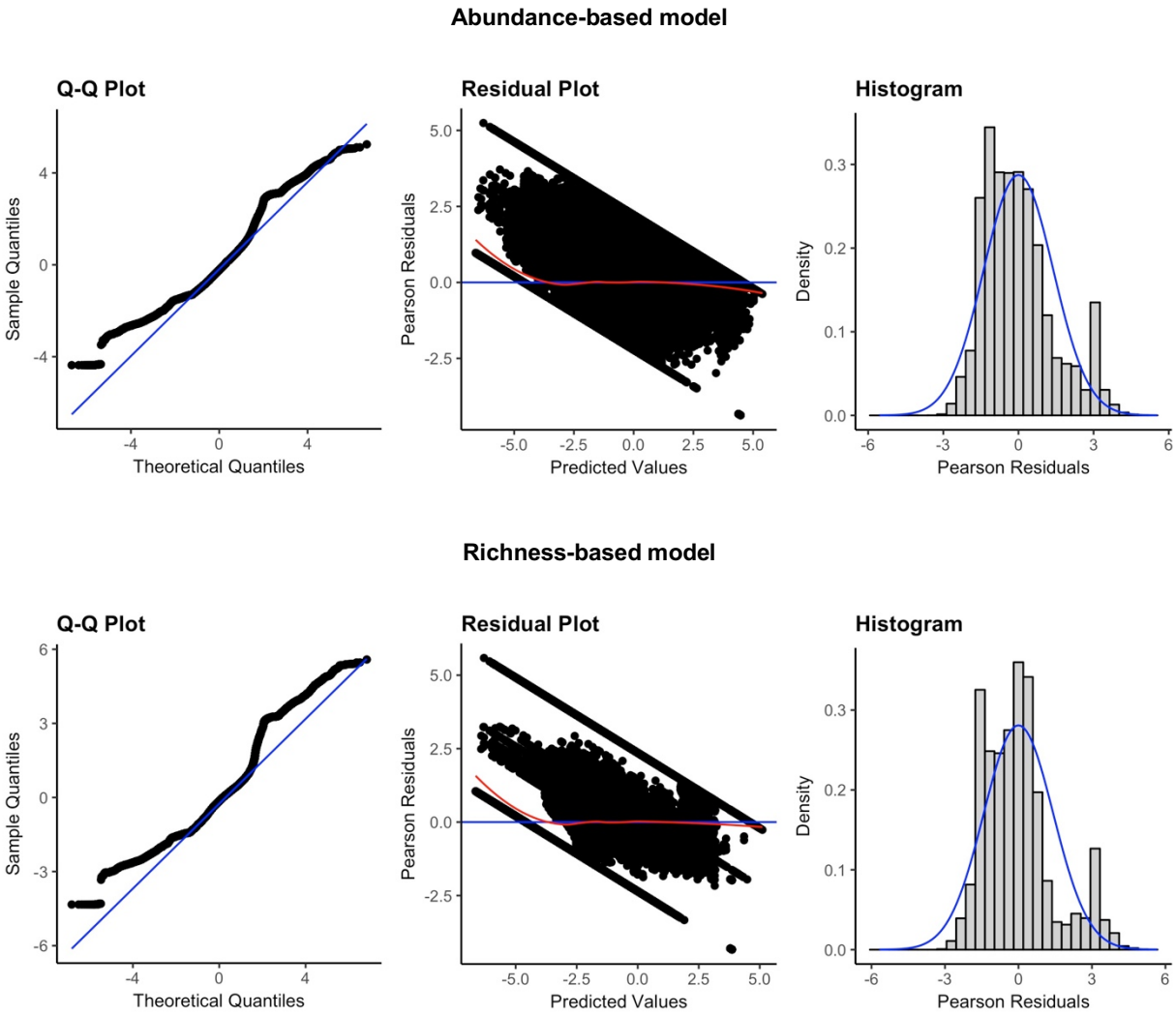

Figure 13. Diagnostic plots for the minimum adequate models of abundance-based and richness-based compositional similarity for alien and native assemblages.

Table 17. Coefficients from the final compositional similarity models (abundance-based and richness-based) for native and alien assemblages. Coefficients for native species (i.e., interaction coefficients) are expressed as the difference from the alien coefficients. Significance (indicated by stars) is shown for the coefficients of interest (first section of the table), for which "two-tailed" tests were performed to compare the observed values against null distributions. Although we only reported significance for the interaction coefficients, we also tested for significance of alien coefficients (baseline in model). The coefficient for the effects of environmental distance on native assemblages is shown as NA for the richness-based model since this variable did not interact significantly with the alien/native term. Significance codes: >0.05 ¨, <0.05**, and 0.005***

	Abundance-based model		Richness-based model	
	Aliens	Natives	Aliens	Natives
PriMin-PriMin	0.604 ***	0.774 ***	0.073 ***	0.64 ***
Geographic distance	-0.155 ***	0.019 **	-0.128 ***	0.017 **
Environmental distance	-1.371 ***	-0.709 ***	-1.56 ***	NA
PriMin-Primary	-0.67 ***	0.221 ***	-0.486 ***	0.201 ***
PriMin-Secondary	-0.874 ***	1.175 ***	-0.502 ***	0.765 ***
PriMin-Plantation	-1.82 ***	2.443 ***	-1.566 ***	2.093 ***
PriMin-Cropland	-2.951 ***	3.288 ***	-2.743 ***	3.084 ***
PriMin-Pasture	-1.324 ***	0.382 ***	-0.719 ***	0.09 **
PriMin-Urban	0.376 ¨	-1.087 ¨	-0.134 ¨	-0.954 ¨
Primary-Primary	0.256 ***	0.198 ***	0.495 ***	0.076 ¨
Secondary-Secondary	-0.009 ¨	0.369 ***	0.221 ***	0.188 ***
Plantation-Plantation	1.428 ***	-0.61 ***	1.294 ***	-0.528 ***
Cropland-Cropland	-0.1 ¨	0.135 ¨	-0.047 ¨	0.158 **
Pasture-Pasture	0.132 ***	0.347 ***	0.309 ***	-0.048 ¨
Urban-Urban	-0.071 ¨	0.118 ¨	0.484 ***	-0.38 ***
Cropland-Pasture	1.331	-2.909	1.674	-3.138
Cropland-Plantation	-0.558	0.396	-0.345	0.168
Cropland-PriMin	-1.195	0.343	-0.96	0.108
Cropland-Primary	2.364	-2.212	2.557	-2.386
Cropland-Secondary	-0.809	0.226	-0.59	0.03
Cropland-Urban	-0.02	-1.221	0.36	-1.682
Pasture-Cropland	0.844	-1.648	1.275	-2.098
Pasture-Plantation	-0.202	-1.153	0.038	-1.362
Pasture-PriMin	-0.36	-0.603	-0.052	-0.613
Pasture-Primary	-0.083	-0.455	0.117	-0.409
Pasture-Secondary	-0.624	-0.444	0.065	-0.894
Pasture-Urban	0.416	-0.884	0.929	-1.377
Plantation-Cropland	-1.492	2.275	-1.376	2.187
Plantation-Pasture	-0.04	-0.479	0.613	-1.046
Plantation-PriMin	-0.362	0.323	-0.067	-0.03
Plantation-Primary	-2.028	1.495	-1.419	1.062
Plantation-Secondary	0.418	-0.035	0.635	-0.26
Plantation-Urban	0.321	-0.693	1.087	-1.688
Primary-Cropland	0.334	-0.124	0.582	-0.505
Primary-Pasture	-0.345	0.023	-0.09	-0.04
Primary-Plantation	-2.258	2.446	-1.877	2.107
Primary-PriMin	-0.491	0.045	-0.329	0.136

Primary-Secondary	-0.078	0.471	0.229	0.295
Primary-Urban	0.364	-1.655	2.607	-3.695
Secondary-Cropland	-2.53	3.321	-2.355	3.183
Secondary-Pasture	-1.197	0.293	-0.351	-0.125
Secondary-Plantation	-1.113	1.903	-0.832	1.547
Secondary-PriMin	0.246	-0.228	0.406	-0.466
Secondary-Primary	-0.718	0.917	-0.409	0.754
Secondary-Urban	-4.406	4.715	-3.011	3.371
Urban-Cropland	1.118	-1.197	1.783	-1.787
Urban-Pasture	0.788	-1.016	1.806	-1.934
Urban-Plantation	0.899	-0.936	1.064	-1.21
Urban-PriMin	0.842	-0.988	3.112	-3.241
Urban-Primary	0.359	-2.305	0.219	-1.766
Urban-Secondary	-5.243	5.048	-3.723	3.592

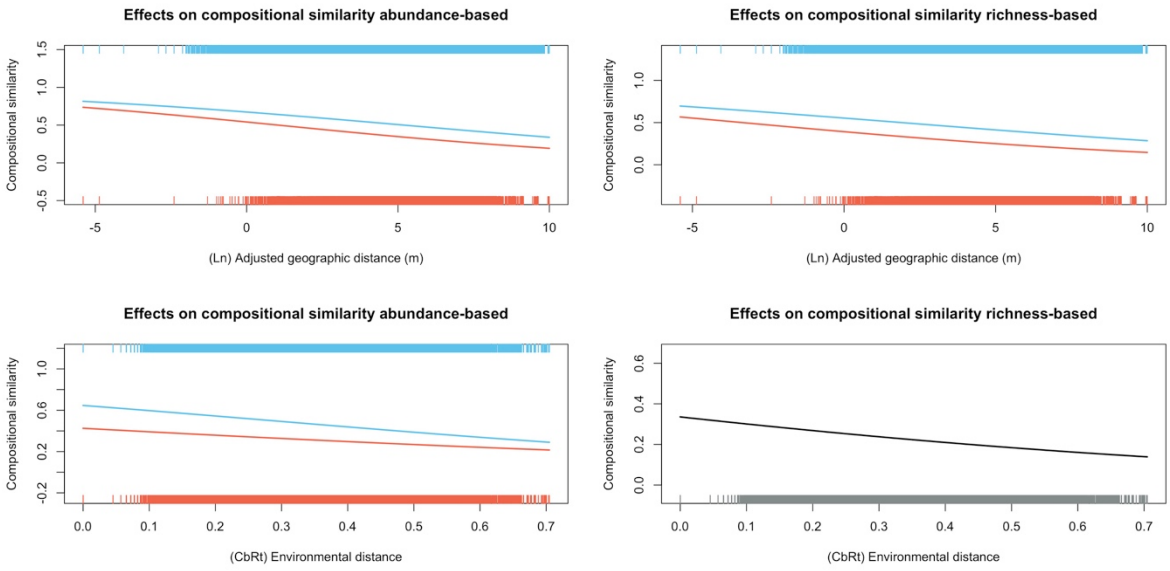

Figure 14. Effects of geographic and environmental distance between sites on compositional similarity (J_A and J_R) of alien (orange) and native (blue) assemblages. The rugs in the figures show the distribution of data for aliens and natives. Significance (indicated by stars) corresponds to p-values calculated from "two-tailed" tests using the interaction coefficients (to compare the observed values against null distributions) to test for significant differences between responses of aliens and natives. In the case of the richness-based model, the p-value for environmental distance was calculated for the coefficient of the single term since this variable did not interact significantly with the alien/native term. Significance code: <0.05**, 0.005***

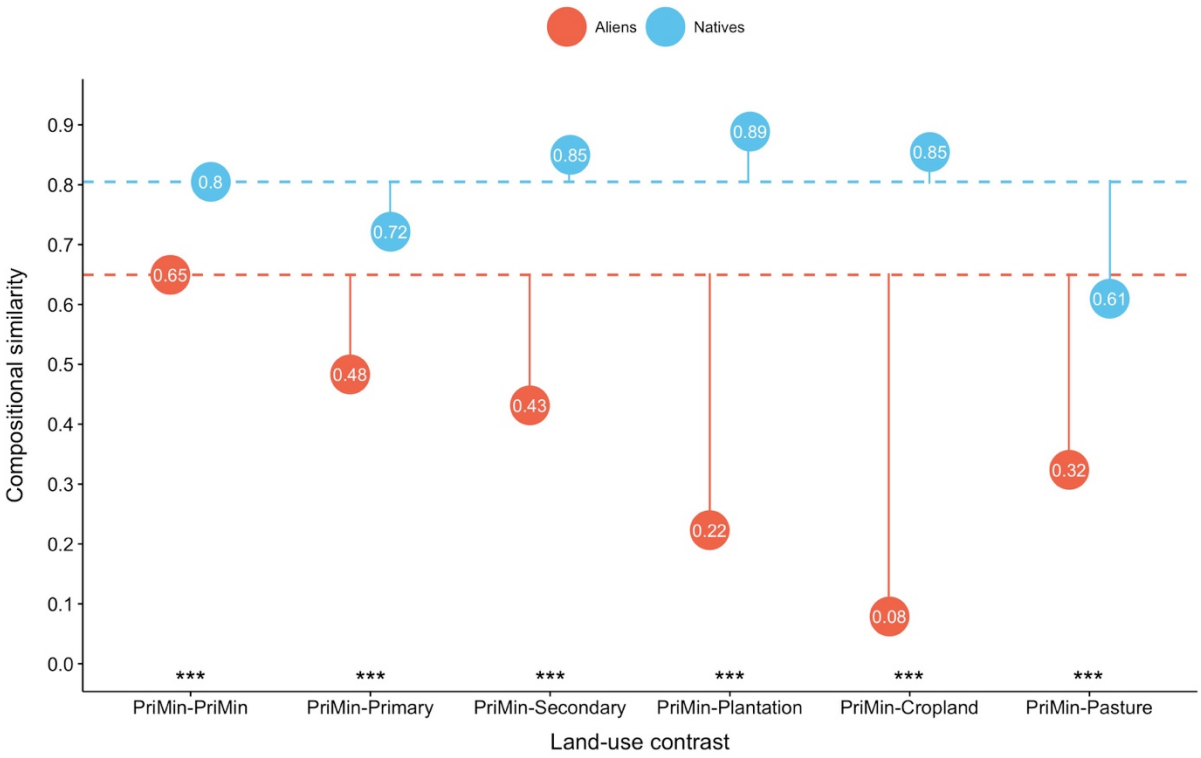

Figure 15. Abundance-based (J_A) compositional similarity estimates for land-use contrasts where site *i* is in PriMin. Solid lines show the magnitude of change in J_A driven by change to different land uses; the baseline is compositional similarity between PriMin sites for alien and native assemblages respectively (dashed lines). Significance (indicated by stars) is shown for alien/native differences for J_A changes from PriMin-PriMin on a logit scale (results from "two-tailed" tests comparing the coefficients for interaction between alien/native and land-use contrast to null distributions). Results for the PriMin-Urban contrast are not shown because sample sizes for this contrast were very small (but see the coefficients in Table 16) Significance code: 0.005***

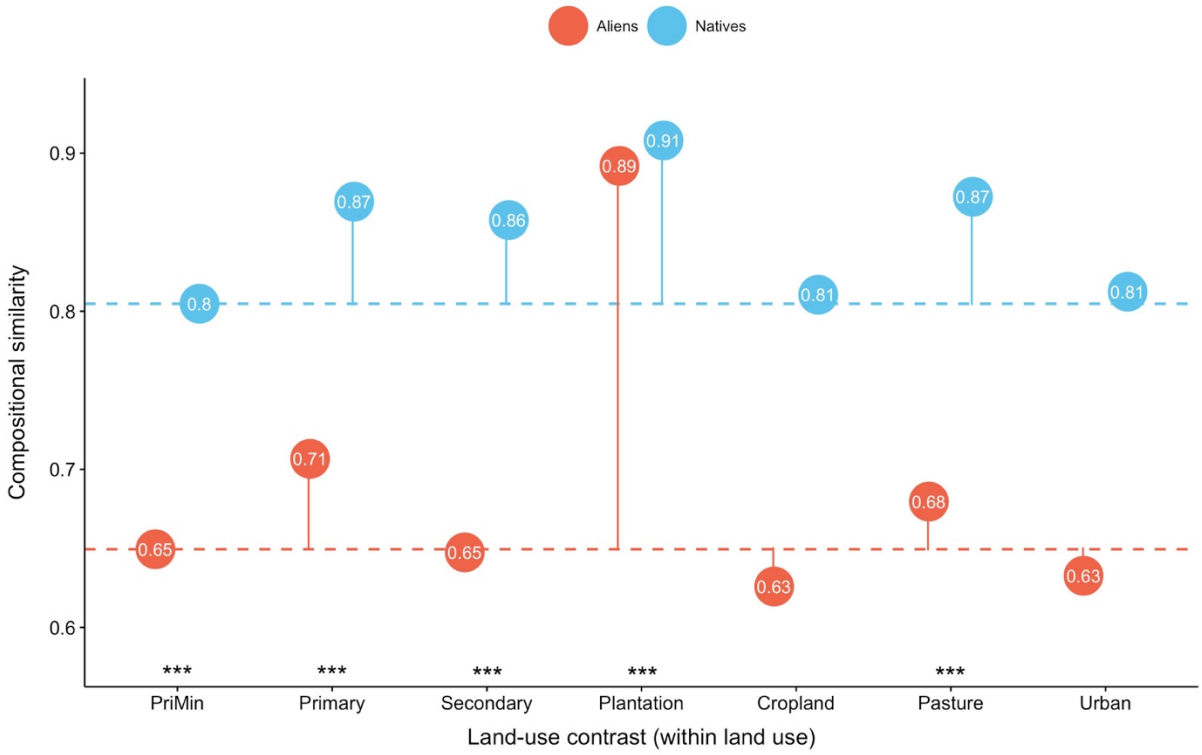

Figure 16. Abundance-based (J_A) compositional similarity estimates for alien and native assemblages in sites within the same land use. Each category corresponds to a land-use contrast (i.e., Cropland= Cropland-Cropland). Solid lines show the magnitude of change in J_A using PriMin-PriMin compositional similarity as baseline (dashed lines). Significance connotation and codes as in Figure 15.