Appendix S1 Precise geographical coordinates (n = 1,829) of *Batrachochytrium dendrobatidis* were attained from a combination of three sources: 1) the Global Bd-Mapping Project (http://www.bd-maps.net/, accessed 23 October 2011), 2) a survey of amphibians in China for five years from 2006 to 2010 (65 positive locations), and an extensive literature search. Some locations from these literatures have been updated by the http://www.bd-maps.net/. We re-checked, compared and removed those duplicates if both the web page and scientific publications reported the data.

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Appendix S2 Data collection of 27 predictor variables used to model the distribution of *B. dendrobatidis* at the global scale.

We collected 27 predictor variables (electronic supplementary material, table S1) from different publications and public databases. These predictors can be grouped into seven categories. The first group included 19 climatic variables and elevational data attained from the WorldClim for 2.5 arc-min map grid cell, a resolution commonly used in previous studies at the global scale (http://www.worldclim.org/, accessed 22 June 2011). The second category was global land use data collected from the Global Land Cover (GLC) 2000 Project at 1-km^2 resolution for all lands except Antarctica, and was reclassified into grid cells with water and without water using Spatial Analyst tools in ArcGIS 9.2 considering that *Bd* is a pathogen mainly dependent on water environment although it can persist out of water for some time. The third category was introduced amphibian host species and included all available records of the 28 most widely-distributed introduced amphibians, which are known to *Bd* carriers (See electronic supplementary material, appendix S3). We incorporated occurrence data for both the native and introduced ranges of these exotic species as they not only might carry *Bd* into introduced areas, but also might transmit *Bd* into naïve areas in their native ranges. The fourth category reflected trade factors that might move *Bd* and included total available global trade data from 2001 to 2010 for each country from the International Trade Center (http://www.intracen.org/trade-support/trade-statistics/, accessed 10 March 2011) and total available frog leg trade from 1988 to 2009 for each country from UN Commodity Trade Statistics Database (http://comtrade.un.org/db,

accessed 4 March 2011). We collected the overall trade data at state-level, territory-level, and province-level for the US, Australia, and China from US Census Bureau (http://www.census.gov/foreign-trade/statistics/state/, accessed 12 October 2012), Australian Government Department of Foreign Affairs and Trade (http://www.census.gov/foreign-trade/statistics/state/, accessed 9 October 2012) and Ministry of Commerce of the People's Republic of China (http://www.mofcom.gov.cn/, accessed 9 October 2012). Both of the overall trade and frog legs trade data were $\log_{10}(x+1)$ transformed to meet the assumption of a normal distribution before rescaling. The fifth category was the "human footprint" as an index of biome-type-corrected human influence on the surface of the Earth at 30 arc-second grid cell size (http://www.ciesin.columbia.edu/wild_areas/, accessed 12 October 2008). The sixth was the vegetation variable using normalized difference vegetation index (NDVI) obtained from the Advanced Very High Resolution Radiometer (AVHRR) carried on the National Oceanic and Atmospheric Administration (NOAA) (http://edit.csic.es/Soil-Vegetation-LandCover.html, accessed 23 September 2010). Data were collected monthly for an 18-year period from 1982 to 2000 (excluding 1994) with 1 km spatial resolution. *Bd* is believed to be an amphibian specialist pathogen, and thus, the final variable was amphibian species richness, at each 2.5 arc minute grid across the globe. These data were obtained by overlaying GIS historical range maps of 6,188 amphibian species from the IUCN Global Amphibian Assessment (GAA, accessed 24 May 2011).

Appendix S3 Website database and literatures used to collection of spatial presence data of the 28 introduced hosts species. We limited our analyses to records with precise geographical coordinates and compiled a total of 32,447 locality records of 28 introduced amphibian species known to carry *B. dendrobatidis*. Grid cells were defined as having an introduced host species present if there was a record of at least one of the 28 species in the grids.

List of 28 global introduced amphibian host species:

Acris crepitans, Alytes muletensis, Alytes obstetricans, Ambystoma tigrinum, Anaxyrus americanus, Rhinella marina, Dendrobates auratus, Eleutherodactylus coqui, Hymenochirus boettgeri, Limnodynastes dumerilii, Litoria aurea, Litoria caerulea, Litoria ewingii, Litoria raniformis, Ichthyosaura alpestris, Necturus maculosus, Pelophylax esculenta, Pelophylax lessonae, Pelophylax ridibundus, Pseudacris regilla, Lithobates berlandieri, Lithobates blairi, Lithobates catesbeianus, Lithobates clamitans, Lithobates pipiens, Lithobates sphenocephalus, Taricha granulosa, Xenopus laevis.

Website database:

GBIF (Global Biodiversity Information Facility, available at http://www.gbif.org/), accessed 3 October 2010.

USGS (U.S. Geological Survey, available at http://www.usgs.gov/), accessed 3 October 10 2010

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Appendix S4 Description of the method used to minimize the *B. dendrobatidis* sampling bias.

We used the FactorBiasOut method to account for the potential problem of *Bd* sampling bias. It is an approach to ensure that the bias in the presence and pseudo-absence data are the same so that, under reasonable assumptions, they cancel one another out [1, 2]. To accomplish this, we used the default MaxEnt setting of random selection of 10,000 sites from the whole study area as background data, which consisted of both presence and pseudo-absence localities. Hence, both the background data and species presence were biased in the same manner [1, 3]. The bias grid approach more explicitly corrects for sampling bias by providing a grid of the total number of amphibians sampled in each cell as a proxy for sampling effort. This approach can be implemented for *Bd* because researchers generally reported sample sizes (the number of amphibian individuals examined) for *Bd* positive (1,829 localities) and negative samples (2,125 localities) (electronic supplementary material, figure S1). The bias file thus describes the number of amphibian individuals examined for Bd in surveyed grids, and uses a mask variable to remove un-surveyed grids.

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Appendix S5 Description of the method used to generate pseudo-absence data in generalized least-squares (GLS) models.

We created 150 km radius buffer zones around each presence point, which was recommended as an optimal distance in a previous *Bd* study [1], and then generated pseudo-absences randomly outside the buffer areas with the same number of *Bd* presence data [1] using Hawth's Analysis Tools [2] for ArcGIS [3]. This is regarded as a robust pseudo-absence generation method and has higher explanatory power than a model where pseudo-absences are simply selected at random from the whole range [1].

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Figure S1 The global sampling effort of *B. dendrobatidis* at the global scale. Red dots show *Bd* positives used for SDM building and green dots are *Bd* negatives. Some points are superimposed.

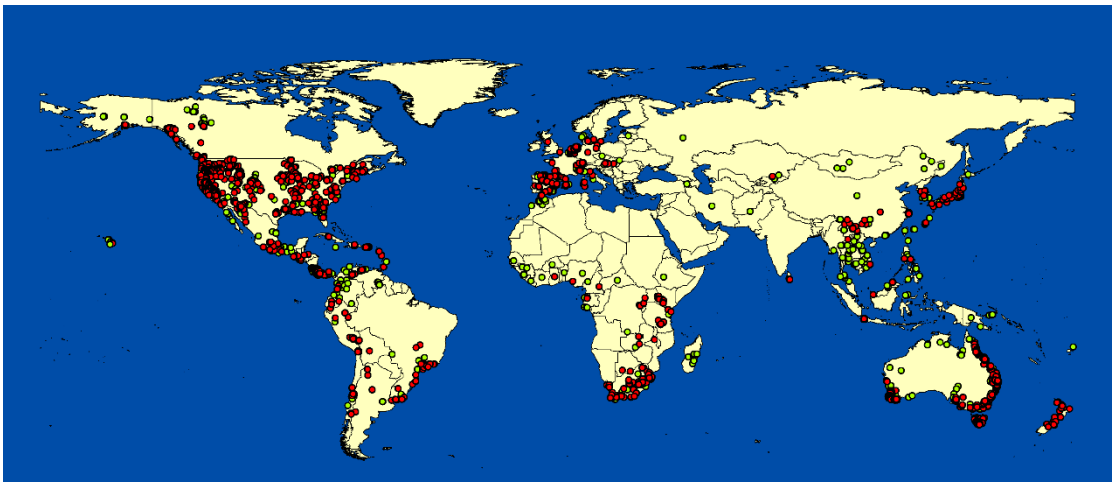


Figure S2 The first two components of the principle component analysis based on eight pruned variables at 1,829 locations of *B. dendrobatidis* records at the global scale.

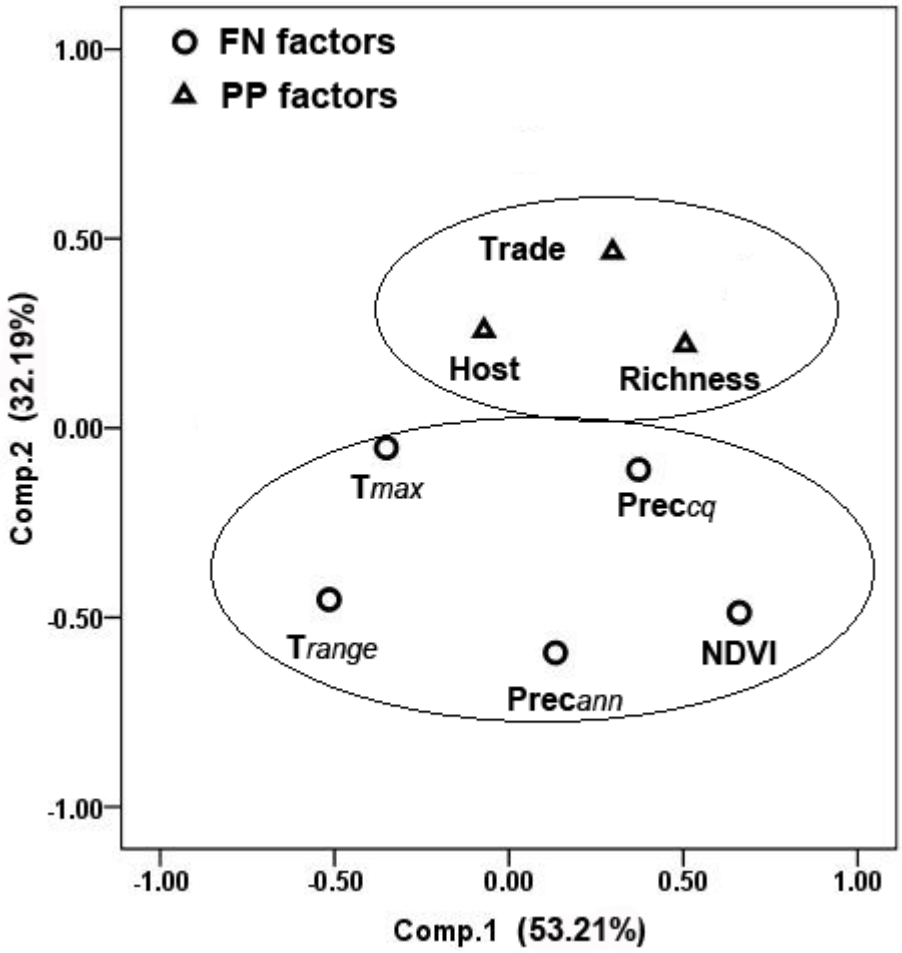


Figure S3 Results of the pruned variable selection according to contribution to AUC of the full model with fundamental niche and propagule pressure factors based on a jackknife test. 'With only' indicates the results of the model when a single variable is run in isolation; 'without' indicates the effect of removing a single model from the full model. Values are means from 10-fold cross-validation replicates. See table S1 for definitions of variable abbreviations.

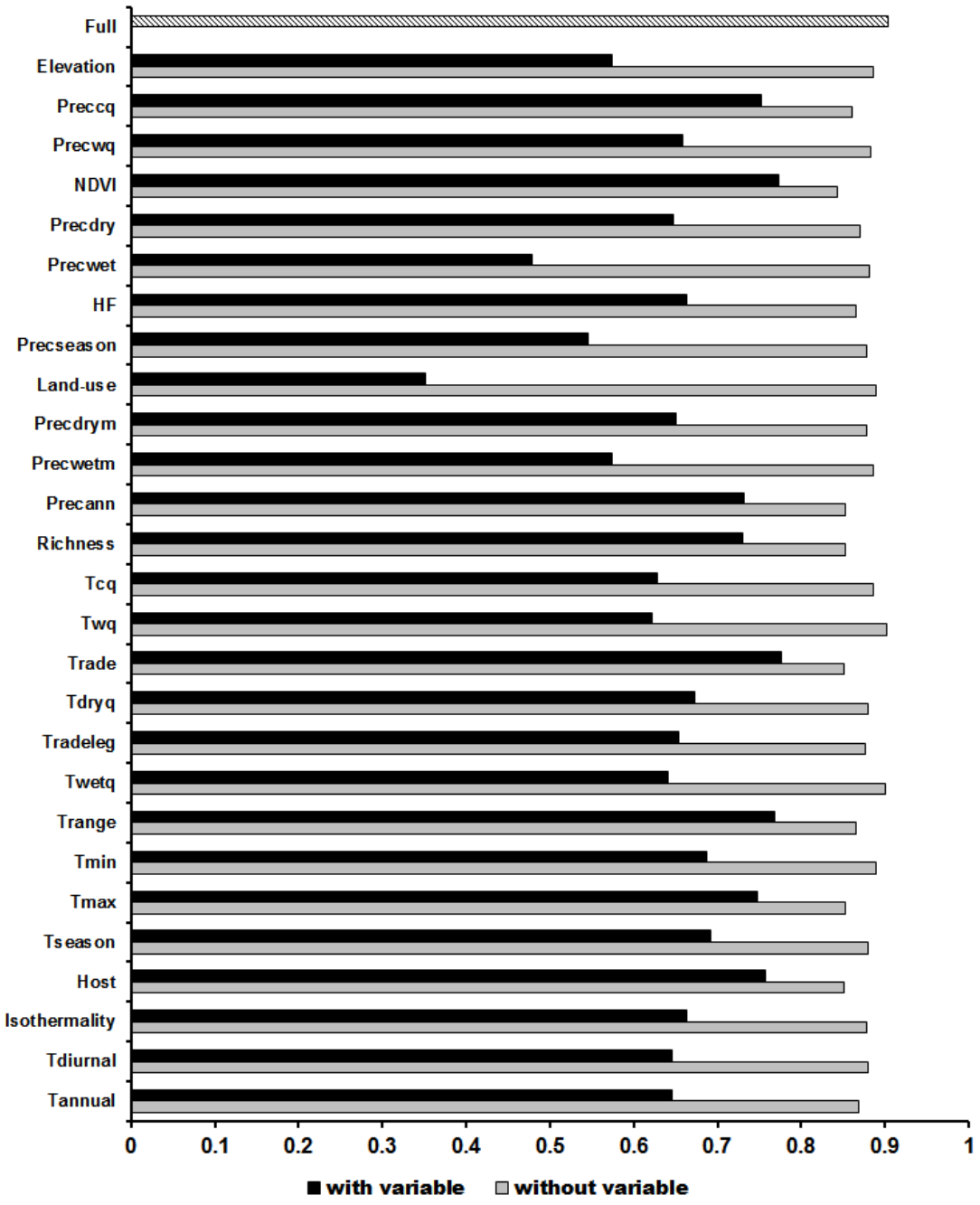
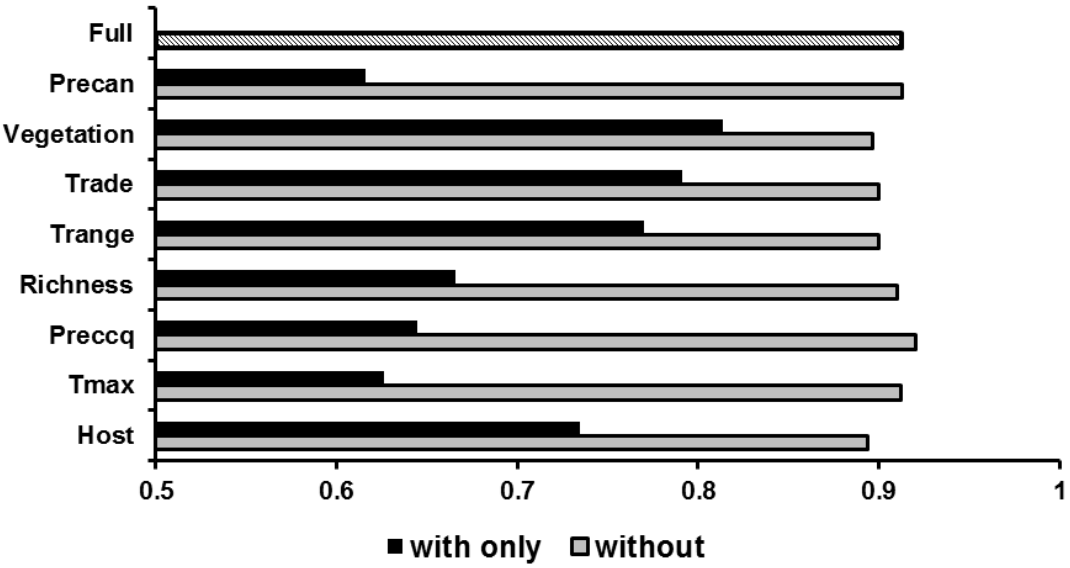


Figure S4 The strength of the eight FNPP pruned predictors of *B. dendrobatidis* occurrence in the pruned MaxEnt models determined by jack-knife analyses. Displayed are the area under the receiver operating characteristic curve (AUC value) for the eight pruned predictors when tested in isolation (with only) and the change in AUC when each predictor was omitted from a model including the other predictors (without). Values are means from 10-fold cross-validation replicates. Full = with all eight FNPP pruned predictors; Precan = annual precipitation; Vegetation: average (1982-2000) normalized difference vegetation index (mean NDVI), Trange = temperature annual range, Precq = Precipitation of coldest quarter, Tmax = max temperature of warmest month.



1063 **Table S1**. Climate, elevation, presence of introduced hosts, trade, and habitat

1064 predictors used for modeling the distribution of *B. dendrobatidis* at a global scale.

1065

Abbreviation	Predictor Variable	Used for model		
Fundamental niche		**Full**	**Pruned FNPP***	**Pruned FN****
Elevation	Height (m) above sea level (m)	•		•
T_{annual}	Annual mean temperature (℃)	•		•
$T_{diurnal}$	Mean diurnal range [mean of monthly (max temp–min temp)] (℃)	•		
Isothermality	Isothermality ($T_{diurnal}/T_{range}$)(100) (℃)	•		
T_{season}	Temperature Seasonality (standard deviation *100) (℃)	•		
T_{max}	Max Temperature of Warmest Month (℃)	•	•	•
T_{min}	Min Temperature of Coldest Month (℃)	•		•
T_{range}	Temperature Annual Range (T_{max} - T_{min}) (℃)	•	•	•
T_{wetq}	Mean Temperature of Wettest Quarter (℃)	•		
T_{dryq}	Mean Temperature of Driest Quarter (℃)	•		
T_{wq}	Mean Temperature of Warmest Quarter (℃)	•		
T_{cq}	Mean Temperature of Coldest Quarter (℃)	•		•
$Prec_{ann}$	Annual Precipitation (mm)	•	•	•
$Prec_{wetm}$	Precipitation of Wettest Month (mm)	•		
$Prec_{drym}$	Precipitation of Driest Month (mm)	•		
$Prec_{season}$	Precipitation Seasonality (Coefficient of Variation) (mm)	•		
$Prec_{wet}$	Precipitation of Wettest Quarter (mm)	•		
$Prec_{dry}$	Precipitation of Driest Quarter(mm)	•		

Abbreviation	Predictor Variable	Used for model		
Fundamental niche		**Full**	**Pruned FNPP***	**Pruned FN****
$Prec_{wq}$	Precipitation of Warmest Quarter(mm)	•		
$Prec_{cq}$	Precipitation of Coldest Quarter(mm)	•	•	•
NDVI	Average (1982-2000) normalized difference vegetation index	•	•	•
Land-use	Land cover type: water habitat (1) or not (0) reclassified from the original land cover maps	•		
Propagule pressure				
Richness	Global amphibian species richness derived from the Global Amphibian Assessment (GAA)	•	•	
Host	Presence of ≥1 invasive host species	•	•	
HF	Human footprint index (0-100)	•		
Trade	Sum of import and export for all kinds of goods (state-level, territory-level, and province-level for the US, Australia, and China) (2001-2010) (US dollar)	•	•	
$Trade_{leg}$	Sum of imported and exported frog legs (1989–2009) (kg)	•		

1066 * The pruned MaxEnt model based on the fundamental niche and propagule pressure (FNPP)

1067 ** The pruned model based on the fundamental niche alone (FN)

Table S2. Pearson correlation coefficient (r) among 27 predictor variables. Bold values indicate a significant correlation with a significance level alpha = 0.01 (**) and 0.05(*) (2-tailed).

	tannual	diural	isoth	tseason	tmax	tmin	trange	twetq	tdryq	twq	tcq	precan	precwetm	precdrym	precseason	precwet	precdry	precwq	preccq	land-use	host	alt	hfp	tradeall	tradeleg	richness	ndvi
tannual	1																										
diural	.288**	1																									
isoth	.779**	.275**	1																								
tseason	-.805**	-.088**	-.885**	1																							
tmax	.851**	.534**	.483**	-.409**	1																						
tmin	.959**	-.143**	.846**	-.926**	.689**	1																					
trange	-.727**	.153**	-.813**	.967**	.273**	-.885**	1																				
twetq	.726**	.155**	.466**	-.362**	.722**	.591**	-.321**	1																			
tdryq	.896**	.296**	.758**	-.846**	.713**	.924**	-.768**	.398**	1																		
twq	.909**	.356**	.524**	-.487**	.969**	.768**	-.397**	.807**	.736**	1																	
tcq	.974**	.223**	.855**	-.916**	.728**	.994**	-.853**	.621**	.924**	.795**	1																
precan	.426**	-.303**	.551**	-.565**	.115**	.529**	-.629**	.276**	.390**	.230**	.497**	1															
precwetm	.486**	-.213**	.560**	-.567**	.210**	.556**	-.603**	.371**	.414**	.315**	.538**	.910**	1														
precdrym	.107**	-.352**	.205**	-.259**	-.115**	.208**	-.350**	-.001	.130**	-.025	.166**	.693**	.398**	1													
precseason	.310**	.346**	.236**	-.136**	.370**	.212**	-.046**	.376**	.193**	.354**	.260**	-.132**	.175**	-.548**	1												
precwet	.478**	-.219**	.559**	-.570**	.198**	.553**	-.608**	.356**	.412**	.302**	.534**	.925**	.994**	.421**	.144**	1											
precdry	.137**	-.350**	.243**	-.293**	-.097**	.242**	-.384**	.016	.161**	-.004	.200**	.728**	.430**	.992**	-.546**	.453**	1										
precwq	.322**	-.268**	.353**	-.356**	.076**	.353**	-.420**	.407**	.165**	.208**	.342**	.777**	.760**	.535**	-.044**	.772**	.549**	1									
preccq	.242**	-.203**	.397**	-.419**	.032	.370**	-.470**	-.057**	.361**	.074**	.325**	.691**	.541**	.574**	-.217**	.558**	.609**	.210**	1								
land-use	.032	-.071**	.053**	-.019	.013	.032	-.034*	.063**	.005	.033	.028	.038*	.038*	.007	-.013	.036*	.050	.008	.050**	1							
host	.067**	-.007	.074**	-.110**	.012	.094**	-.115**	-.014	.099**	.023	.086**	.055**	.026	.062**	-.049**	.033	.065**	.026	.083**	-.046**	1						
alt	-.250**	.319**	.099**	-.072**	-.344**	-.172**	.006	-.437**	-.087**	-.428**	-.147**	-.097**	-.093**	-.070**	.060**	-.093**	-.070**	-.083**	-.058**	-.094**	-.023	1					
hfp	.376**	-.089**	.226**	-.352**	.246**	.402**	-.377**	.221**	.350**	.310**	.383**	.249**	.253**	.158**	-.032	.247**	.168**	.211**	.175**	.000	.102*	-.171**	1				
tradeall	-.227**	.121**	-290**	.288**	-.102**	-.277**	-.223*	-.301**	-.207**	-.115**	-.247**	-.169**	-.209**	.025**	-.129**	-.151**	.026**	-.134**	-0.104	-.091**	.034*	.062**	0.008	1			
tradeleg	-.363**	.097**	-.382**	.293**	-.270**	-.342**	-.282*	-.349**	-.286**	-.327**	-.355**	-.112**	-.147**	.047**	-.283**	-.139**	.039*	-.084**	-.002	-.077**	.021*	.101**	.012	.692**	1		
richness	.505**	-.036*	.661**	-.584**	.249**	.563**	-.587**	.392**	.426**	.333**	.557**	.684**	.636**	.388**	-.023	.644**	.422**	.571**	.398**	.059**	-.016	-.029	.149**	-.125**	-.184**	1	
ndvi	.538**	.139**	.532**	-.563**	.365**	.574**	-.526**	.308**	.519**	.389**	.566**	.541**	.507**	.330**	-.078**	.525**	.363**	.433**	.406**	-.039*	.068**	-.074**	.013	.023	.016	.516**	1

Table S3 Results of the variance partitioning analysis providing the unique and shared variation in the global distribution of *B. dendrobatidis* explained by fundamental niche, propagule pressure, and spatial variables.

Variance component	**Adjust-R^2**
Unique variation	
Fundamental niche (F)[a]	0.169
"Propagule pressure" (P)[b]	0.154
Spatial structure (S)[c]	0.094
Shared variation	
FP	0.166
FS	0.071
PS	0.114
FPS	0.071
Residual variation	0.161

[a] average (1982-2000) Normalized difference vegetation index (mean NDVI), temperature annual range, max. temperature of warmest month, annual precipitation, precipitation of coldest quarter;

[b] Presence of introduced hosts, trade, amphibian species richness;

[c] XY, Y^3.

1079 **Table S4**. Comparsions of our predicted picture with previous studies on potential
1080 distributions of *B. dendrobatidis* at a global scale.
1081

Continent	**Regions**	**Present study**	**Rödder et al. 2010**	**Ron 2005**
North America	Mexican Meseta (Sierra Madre)	+	+	+
	Sinaloan and Sonoran	+	+	+
	Central America	**Restrict**	+	+
	Caribbean islands	**Restrict**	**Restrict**	+
	Eastern coast of USA	+	_	+
	Central Great Plains of USA	_	_	+
	Western coast of USA	+	**Restrict**	+
South America	Andes in Colombia	+	+	+
	Andes in Venezula	+	+	+
	Andes in Ecuaduor	+	+	+
	Andes in Peru	+	+	+
	Andes in Bolivia	+	+	+
	Central South America	_	_	+
	Mata Atlantica, Brazil	+	+	+
	Pantepui, northern South America	+	+	+
	Temperature forest in Chile	+	+	+
	Uruguay	+	+	+
	Paraguay	+	_	+
	Western Argentina	+	+	+
	Northeastern	+	+	+
Africa	Cameroon	**Restrict**	**Restrict**	+
	Ethiopia	+	+	+
	Rift Valley in Kenya	+	+	+

Continent	Regions	Present study	Rödder et al. 2010	Ron 2005
	Eastern and central Madagascar	+	+	+
	Central Africa between 10 N and 10 S	_	_	+
	South Africa	+	+	+
	Eastern Mozambique	**Restrict**	_	+
	Northwest Africa	**Restrict**	**Restrict**	+
Asia	Sumatra	**Restrict**	**Restrict**	+
	Java	**Restrict**	**Restrict**	+
	New Guinea	+	+	+
	Northern and southern Philippines	**Restrict**	**Restrict**	+
	Most of Japan	+	_	+
	Central Indochina	_	_	+
	Eastern Indochina	+	+	+
	Southern India	**Restrict**	**Restrict**	+
	Southern Himalayan	+	+	+
	Southwestern China	+	+	+
	Central to South China	+	**Restrict**	+
	Southeastern China	+	+	+
	Taiwan	+	+	+
	South Korea	+	_	+
	Central Asia	+	_	+
Oceania	New Zealand	+	+	+
	Southern and southeastern Australia	+	+	+
	Central Australia	_	_	+
	Tasmania	+	+	+
Europe	Anatolian (Turkey)	+	+	+
	Portugal	+	+	+
	Spain	**Restrict**	**Restrict**	+
	Central to eastern Europe	**Restrict**	+	+
	Belgium and Netherland	+	+	+
	Italy	+	+	+
	France	+	+	+
	UK	+	+	+

+: suitable for *Bd* distribution, -: unsuitable for *Bd* distribution, Restrict: have less suitable areas for *Bd* distribution