

Figure S1. Result of estimates of breeding range of Tawny-bellied Seedeater, *Sporophila hypoxantha* (South Brazil population). The highest probability to breeding (blue), and probabilities below threshold (yellow), AUC = 0,995. The predictive model of distribution was performed using Maximum-entropy model, MAXENT 3.3. We run analysis selecting seven climatic not auto-correlated and one topographic variables (1 km; 30 arc-sec) provide by WorldClim. The general parameters used in analysis: 1) random test percentage = 25; 2) replicates = 10; 3) replicate type: crossvalidate and maximum interactions 5000. The final map was generated using Quantum Gis 2.12 program. Gray points represent cities and white circle with central point are big cities (capitals).

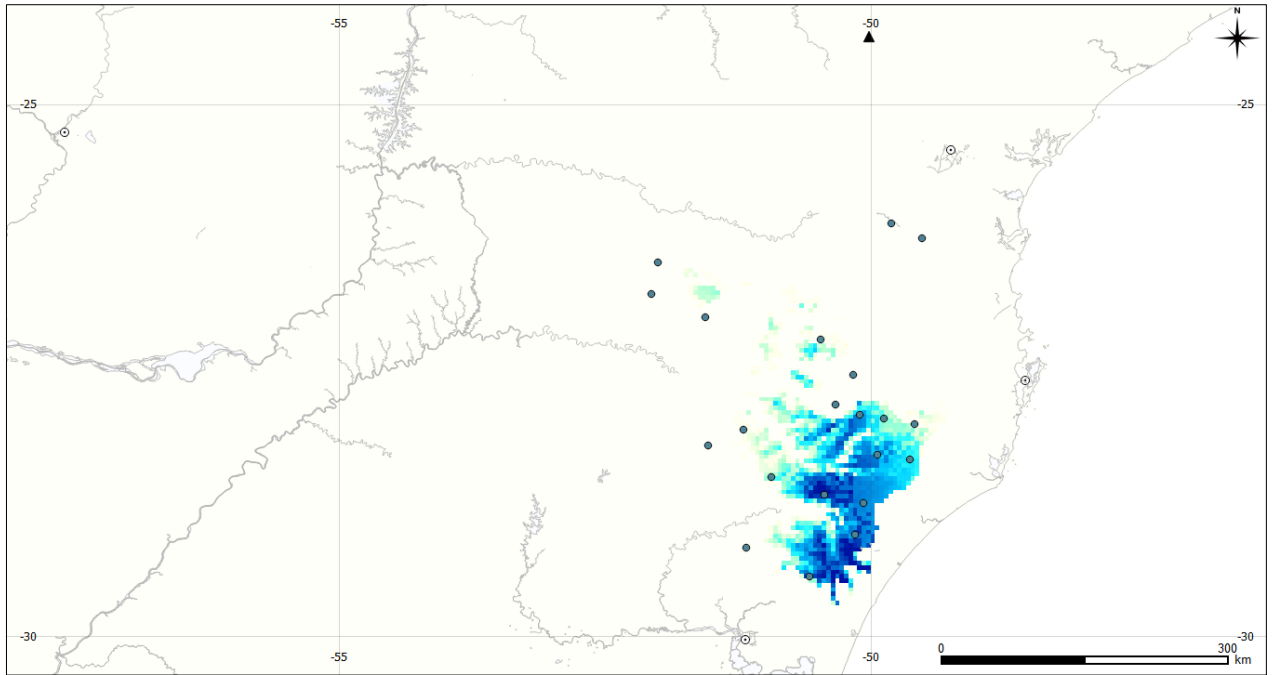


Figure S2. Result of estimates of breeding range of Black-bellied Seedeater, *Sporophila melanogaster*. The highest probability to breeding (blue), and probabilities below threshold (yellow), AUC = 0,997. The predictive model of distribution was performed using Maximum-entropy model, MAXENT 3.3. We run analysis selecting seven climatic not auto-correlated and one topographic variables (1 km; ~30 arc-sec) provide by WorldClim. The general parameters used in analysis: 1) random test percentage = 25; 2) replicates = 10; 3) replicate type: crossvalidate and maximum interactions 5000. The final map was generated using Quantum Gis 2.12 program. Gray points represent cities and white circle with central point are big cities (capitals). Black triangle represents a putative breeding locality in Paraná state.

Table S1. Geographic coordinates of the breeding records from 2006 to 2018 used in analyses of Maximum-entropy models for estimate breeding ranges of Black and Tawny-bellied Seedeater. Records of other authors are cited.

Species	Longitude, Latitude	State	City, Locality; (Author)
Spo_hypoxantha	-49.858857,-24.283438	PR	Arapotí, Rio Perdizes
Spo_hypoxantha	-49.849443,-24.289609	PR	Arapotí, Rio Perdizes
Spo_hypoxantha	-49.708324,-25.483193	PR	Balsa Nova
Spo_hypoxantha	-49.702309,-25.527615	PR	Balsa Nova
Spo_hypoxantha	-49.766517,-25.497456	PR	Balsa Nova
Spo_hypoxantha	-49.723767,-25.919525	PR	Campo do Tenente
Spo_hypoxantha	-49.739968,-25.926376	PR	Campo do Tenente
Spo_hypoxantha	-49.707010,-25.955131	PR	Campo do Tenente
Spo_hypoxantha	-49.656489,-25.912611	PR	Campo do Tenente
Spo_hypoxantha	-49.647875,-25.920819	PR	Campo do Tenente
Spo_hypoxantha	-51.863777,-25.560494	PR	Candói (by Leonardo Deconto)
Spo_hypoxantha	-51.873125,-25.572954	PR	Candói (by Leonardo Deconto)
Spo_hypoxantha	-51.998726,-25.557297	PR	Candói (by Leonardo Deconto)
Spo_hypoxantha	-51.096146,-25.561809	PR	Candói (by Leonardo Deconto)
Spo_hypoxantha	-51.262759,-25.570299	PR	Candói (by Leonardo Deconto)
Spo_hypoxantha	-51.498749,-25.386040	PR	Guarapuava
Spo_hypoxantha	-51.628451,-25.432423	PR	Guarapuava
Spo_hypoxantha	-49.867119,-24.401563	PR	Jaguariaíva
Spo_hypoxantha	-49.870206,-24.400130	PR	Jaguariaíva
Spo_hypoxantha	-49.870608,-24.399517	PR	Jaguariaíva
Spo_hypoxantha	-49.876913,-24.394726	PR	Jaguariaíva
Spo_hypoxantha	-49.732455,-25.708935	PR	Lapa
Spo_hypoxantha	-50.058829,-25.429350	PR	Palmeira
Spo_hypoxantha	-50.027445,-25.391994	PR	Palmeira
Spo_hypoxantha	-49.901244,-24.470835	PR	Piraí do Sul
Spo_hypoxantha	-49.900730,-24.473772	PR	Piraí do Sul
Spo_hypoxantha	-49.750359,-24.582518	PR	Piraí do Sul, Ea. Tabor
Spo_hypoxantha	-49.751061,-24.580399	PR	Piraí do Sul, Ea. Tabor
Spo_hypoxantha	-49.749566,-24.589762	PR	Piraí do Sul, Ea. Tabor
Spo_hypoxantha	-49.778235,-24.570344	PR	Piraí do Sul, Ea. Tabor
Spo_hypoxantha	-49.798817,-24.521838	PR	Piraí do Sul, Rio Iapó
Spo_hypoxantha	-49.931674,-25.620578	PR	Porto Amazonas
Spo_hypoxantha	-49.905347,-25.604875	PR	Porto Amazonas
Spo_hypoxantha	-24.6763801,-50.24766	PR	Tibagi (by Christian Camargo)
Spo_hypoxantha	-24.6130876,-50.24222	PR	Tibagi (by Christian Camargo)
Spo_hypoxantha	-50.324782,-24.680423	PR	Tibagi (by Christian Camargo)
Spo_hypoxantha	-49.142460,-25.900347	PR	Tijucas do Sul
Spo_hypoxantha	-50.722584,-28.331242	RS	Bom Jesus
Spo_hypoxantha	-50.731445,-28.325022	RS	Bom Jesus
Spo_hypoxantha	-50.718325,-28.338847	RS	Bom Jesus
Spo_hypoxantha	-50.695100,-28.337038	RS	Bom Jesus

Species	Longitude, Latitude	State	City, Locality; (Author)
Spo_hypoxantha	-50.679733,-28.374623	RS	Bom Jesus
Spo_hypoxantha	-50.691865,-28.452682	RS	Bom Jesus
Spo_hypoxantha	-50.679503,-28.439603	RS	Bom Jesus
Spo_hypoxantha	-50.676677,-28.425074	RS	Bom Jesus
Spo_hypoxantha	-50.672245,-28.415674	RS	Bom Jesus
Spo_hypoxantha	-50.674401,-28.394048	RS	Bom Jesus
Spo_hypoxantha	-50.521980,-28.421494	RS	Bom Jesus
Spo_hypoxantha	-50.499144,-28.421896	RS	Bom Jesus
Spo_hypoxantha	-50.510724,-28.690364	RS	Bom Jesus
Spo_hypoxantha	-50.472546,-28.670080	RS	Bom Jesus, Cachoeira dos Baggio
Spo_hypoxantha	-50.476614,-28.676408	RS	Bom Jesus, Cachoeira dos Baggio
Spo_hypoxantha	-50.289289,-28.467738	RS	Bom Jesus, Rio Cerquinha Valley
Spo_hypoxantha	-50.815289,-28.900842	RS	Criúva, Caxias do Sul
Spo_hypoxantha	-51.312115,-51.312115	RS	Esmeralda
Spo_hypoxantha	-51.259971,-28.071409	RS	Esmeralda
Spo_hypoxantha	-51.265318,-28.074605	RS	Esmeralda
Spo_hypoxantha	-51.227670,-28.063003	RS	Esmeralda
Spo_hypoxantha	-51.170572,-28.071485	RS	Esmeralda
Spo_hypoxantha	-51.075153,-28.148281	RS	Esmeralda
Spo_hypoxantha	-51.036699,-28.179610	RS	Esmeralda
Spo_hypoxantha	-51.015631,-28.193676	RS	Esmeralda
Spo_hypoxantha	-51.011796,-28.198624	RS	Esmeralda
Spo_hypoxantha	-50.981523,-28.215231	RS	Esmeralda
Spo_hypoxantha	-50.498786,-50.498786	RS	Jaquirana
Spo_hypoxantha	-50.457632,-28.877736	RS	Jaquirana
Spo_hypoxantha	-50.453930,-28.879526	RS	Jaquirana
Spo_hypoxantha	-50.460045,-28.880655	RS	Jaquirana
Spo_hypoxantha	-51.322369,-28.126044	RS	Lagoa Vermelha
Spo_hypoxantha	-51.479707,-28.356024	RS	Lagoa Vermelha
Spo_hypoxantha	-50.809212,-28.641976	RS	Monte Alegre dos Campos
Spo_hypoxantha	-50.802935,-28.640345	RS	Monte Alegre dos Campos
Spo_hypoxantha	-51.189370,-27.973159	RS	Pinhal da Serra
Spo_hypoxantha	-50.697112,-28.911264	RS	S. F. de Paula, Cazuza Ferreira
Spo_hypoxantha	-51.014479,-28.200282	RS	S. F. de Paula, Cazuza Ferreira
Spo_hypoxantha	-50.490544,-28.931507	RS	S. F. de Paula, Cazuza Ferreira
Spo_hypoxantha	-50.564610,-28.875637	RS	S. F. de Paula, Cazuza Ferreira
Spo_hypoxantha	-50.602686,-29.080340	RS	S. F. de Paula (by Paulo Buchabque)
Spo_hypoxantha	-51.296804,-28.560069	RS	Vacaria
Spo_hypoxantha	-50.919241,-28.184666	RS	Vacaria
Spo_hypoxantha	-50.929429,-28.200728	RS	Vacaria
Spo_hypoxantha	-50.869843,-28.222432	RS	Vacaria
Spo_hypoxantha	-50.835143,-28.190487	RS	Vacaria
Spo_hypoxantha	-50.912867,-28.291965	RS	Vacaria
Spo_hypoxantha	-50.891286,-28.292591	RS	Vacaria
Spo_hypoxantha	-50.867998,-28.321268	RS	Vacaria

Species	Longitude, Latitude	State	City, Locality; (Author)
Spo_hypoxantha	-50.802537,-28.373566	RS	Vacaria
Spo_hypoxantha	-50.788221,-28.369312	RS	Vacaria
Spo_hypoxantha	-50.776400,-28.352017	RS	Vacaria
Spo_hypoxantha	-50.752631,-28.340076	RS	Vacaria
Spo_hypoxantha	-50.769873,-28.374642	RS	Vacaria
Spo_hypoxantha	-50.767889,-28.376462	RS	Vacaria
Spo_hypoxantha	-50.758333,-28.374167	RS	Vacaria
Spo_hypoxantha	-50.753056,-28.382222	RS	Vacaria
Spo_hypoxantha	-50.734244,-28.378893	RS	Vacaria
Spo_hypoxantha	-50.823387,-28.728753	RS	Vacaria-Campestres da Serra, Guacho
Spo_hypoxantha	-51.091661,-28.656971	RS	Vacaria-Campestres da Serra, Guacho
Spo_hypoxantha	-51.090326,-28.676755	RS	Vacaria-Campestres da Serra, Guacho
Spo_hypoxantha	-51.085026,-28.664217	RS	Vacaria-Campestres da Serra, Guacho
Spo_hypoxantha	-51.283892,-28.570724	RS	Vacaria-Lagoa Vermelha-Ituim
Spo_hypoxantha	-50.801585,-27.983919	SC	C. Belo do Sul, Ea. Florestal Gateados
Spo_hypoxantha	-50.846015,-27.924924	SC	C. Belo do Sul, Ea. Florestal Gateados
Spo_hypoxantha	-50.668423,-28.174138	SC	Capão Alto
Spo_hypoxantha	-50.742574,-28.089444	SC	Capão Alto
Spo_hypoxantha	-50.613830,-27.862903	SC	Capão Alto
Spo_hypoxantha	-50.874011,-27.897500	SC	Cerro Negro
Spo_hypoxantha	-50.650587,-27.125340	SC	Curitibanos
Spo_hypoxantha	-50.639124,-27.123483	SC	Curitibanos
Spo_hypoxantha	-50.623269,-27.098790	SC	Curitibanos
Spo_hypoxantha	-50.609681,-27.097560	SC	Curitibanos
Spo_hypoxantha	-50.583957,-27.096375	SC	Curitibanos
Spo_hypoxantha	-50.654953,-27.064355	SC	Curitibanos
Spo_hypoxantha	-49.703207,-26.653458	SC	Itaiópolis
Spo_hypoxantha	-49.702169,-26.655363	SC	Itaiópolis
Spo_hypoxantha	-49.688647,-26.657910	SC	Itaiópolis
Spo_hypoxantha	-50.281748,-28.322642	SC	Lages, Coxilha Rica
Spo_hypoxantha	-50.281492,-28.315142	SC	Lages, Coxilha Rica
Spo_hypoxantha	-50.280780,-28.312898	SC	Lages, Coxilha Rica
Spo_hypoxantha	-50.280834,-28.309799	SC	Lages, Coxilha Rica
Spo_hypoxantha	-50.288803,-28.310729	SC	Lages, Coxilha Rica
Spo_hypoxantha	-50.289617,-28.312114	SC	Lages, Coxilha Rica
Spo_hypoxantha	-50.274050,-28.307535	SC	Lages, Coxilha Rica
Spo_hypoxantha	-50.261896,-28.295453	SC	Lages, Coxilha Rica
Spo_hypoxantha	-49.828605,-26.158891	SC	Mafra
Spo_hypoxantha	-50.456787,-27.363711	SC	Otacílio Costa
Spo_hypoxantha	-51.848365,-26.737235	SC	Passos Maia
Spo_hypoxantha	-51.856237,-26.743509	SC	Passos Maia
Spo_hypoxantha	-51.860944,-26.744556	SC	Passos Maia
Spo_hypoxantha	-51.913047,-26.734202	SC	Passos Maia
Spo_hypoxantha	-51.914294,-26.736909	SC	Passos Maia
Spo_hypoxantha	-51.891617,-26.724352	SC	Passos Maia

Species	Longitude, Latitude	State	City, Locality; (Author)
Spo_hypoxantha	-51.879000,-26.621722	SC	Passos Maia
Spo_hypoxantha	-51.878336,-26.635842	SC	Passos Maia
Spo_hypoxantha	-51.930425,-26.647620	SC	Passos Maia
Spo_hypoxantha	-49.754578,-26.158391	SC	Passos Maia
Spo_hypoxantha	-50.292301,-28.439367	SC	S. F. de Paula, Near Cazuza Ferreira
Spo_hypoxantha	-50.282858,-28.352812	SC	São Joaquim, Brusca
Spo_hypoxantha	-50.385191,-28.390317	SC	São Joaquim, Ea. do Meio
Spo_hypoxantha	-50.340646,-28.385354	SC	São Joaquim, Ea. do Meio
Spo_hypoxantha	-50.252750,-28.317193	SC	São Joaquim, Ea. do Meio
Spo_hypoxantha	-50.256157,-28.316810	SC	São Joaquim, Ea. do Meio
Spo_hypoxantha	-50.201624,-28.303324	SC	São Joaquim, Ea. do Meio
Spo_hypoxantha	-50.239907,-28.344959	SC	São Joaquim, Mandurí
Spo_hypoxantha	-50.226156,-28.356092	SC	São Joaquim, Mandurí
Spo_hypoxantha	-50.229430,-28.357870	SC	São Joaquim, Mandurí
Spo_hypoxantha	-50.412207,-28.425998	SC	São Joaquim, São João do Pelotas
Spo_melanogaster	-50.722172,-28.490952	RS	Bom Jesus
Spo_melanogaster	-50.724784,-28.488276	RS	Bom Jesus
Spo_melanogaster	-50.723028,-28.483813	RS	Bom Jesus
Spo_melanogaster	-50.712643,-28.482194	RS	Bom Jesus
Spo_melanogaster	-50.716123,-28.487283	RS	Bom Jesus
Spo_melanogaster	-50.707655,-28.481194	RS	Bom Jesus
Spo_melanogaster	-50.702211,-28.474549	RS	Bom Jesus
Spo_melanogaster	-50.700129,-28.472554	RS	Bom Jesus
Spo_melanogaster	-50.697406,-28.464955	RS	Bom Jesus
Spo_melanogaster	-50.523508,-28.557756	RS	Bom Jesus
Spo_melanogaster	-50.434658,-28.647006	RS	Bom Jesus
Spo_melanogaster	-50.453951,-28.579356	RS	Bom Jesus
Spo_melanogaster	-50.672640,-28.561227	RS	Bom Jesus
Spo_melanogaster	-50.231506,-28.682123	RS	Bom Jesus
Spo_melanogaster	-50.407453,-28.600670	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.403022,-28.601172	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.400601,-28.600850	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.389831,-28.610915	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.383608,-28.605290	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.395440,-28.601524	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.400885,-28.599957	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.401636,-28.598608	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.403156,-28.597617	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.380799,-28.584402	RS	Bom Jesus, Água Branca
Spo_melanogaster	-50.457328,-28.671271	RS	Bom Jesus, Cachoeira dos Baggio
Spo_melanogaster	-50.365296,-29.398376	RS	Bom Jesus, Casa Branca
Spo_melanogaster	-50.338981,-28.537376	RS	Bom Jesus, Casa Branca
Spo_melanogaster	-50.691111,-28.452444	RS	Bom Jesus, Near Ea. Vigia
Spo_melanogaster	-50.305100,-28.712109	RS	Bom Jesus, Rondinha
Spo_melanogaster	-49.982434,-29.076506	RS	Cambará do Sul

Species	Longitude, Latitude	State	City, Locality; (Author)
Spo_melanogaster	-49.991330,-29.104122	RS	Cambará do Sul
Spo_melanogaster	-50.027276,-29.175198	RS	Cambará do Sul
Spo_melanogaster	-50.045440,-29.172287	RS	Cambará do Sul
Spo_melanogaster	-50.046631,-29.162025	RS	Cambará do Sul
Spo_melanogaster	-50.096493,-29.144050	RS	Cambará do Sul
Spo_melanogaster	-50.100435,-29.147103	RS	Cambará do Sul
Spo_melanogaster	-50.135579,-29.181541	RS	Cambará do Sul
Spo_melanogaster	-50.144223,-29.134717	RS	Cambará do Sul
Spo_melanogaster	-49.970791,-28.966374	RS	Cambará do Sul
Spo_melanogaster	-49.956916,-29.029539	RS	Cambará do Sul
Spo_melanogaster	-50.289378,-29.004805	RS	Cambará do Sul
Spo_melanogaster	-50.261690,-29.134814	RS	Cambará do Sul
Spo_melanogaster	-50.459167,-28.912500	RS	Canela to Bom Jesus
Spo_melanogaster	-50.255600,-29.420380	RS	São Francisco de Paula
Spo_melanogaster	-50.283376,-29.412015	RS	São Francisco de Paula
Spo_melanogaster	-50.385392,-29.388487	RS	São Francisco de Paula
Spo_melanogaster	-50.389233,-29.390154	RS	São Francisco de Paula
Spo_melanogaster	-50.408914,-29.392532	RS	São Francisco de Paula
Spo_melanogaster	-50.428396,-29.390753	RS	São Francisco de Paula
Spo_melanogaster	-50.423299,-29.373509	RS	São Francisco de Paula
Spo_melanogaster	-50.460618,-29.419210	RS	São Francisco de Paula
Spo_melanogaster	-50.609647,-29.353348	RS	São Francisco de Paula
Spo_melanogaster	-50.614591,-29.349405	RS	São Francisco de Paula
Spo_melanogaster	-50.612750,-29.359672	RS	São Francisco de Paula
Spo_melanogaster	-50.624014,-29.408607	RS	São Francisco de Paula
Spo_melanogaster	-50.536987,-29.389161	RS	São Francisco de Paula
Spo_melanogaster	-50.504039,-29.461590	RS	São Francisco de Paula
Spo_melanogaster	-50.352926,-29.419707	RS	São Francisco de Paula
Spo_melanogaster	-50.486278,-29.284233	RS	São Francisco de Paula
Spo_melanogaster	-50.440909,-29.139974	RS	São Francisco de Paula
Spo_melanogaster	-50.448536,-29.028479	RS	S. F. de Paula, Faxinal dos Pelucios
Spo_melanogaster	-50.373362,-29.125259	RS	São Francisco de Paula, Passo da Ilha
Spo_melanogaster	-50.368834,-29.117053	RS	São Francisco de Paula, Passo da Ilha
Spo_melanogaster	-50.369836,-29.086781	RS	São Francisco de Paula, Passo do "S"
Spo_melanogaster	-50.373077,-29.086009	RS	São Francisco de Paula, Passo do "S"
Spo_melanogaster	-50.366662,-29.094926	RS	São Francisco de Paula, Passo do "S"
Spo_melanogaster	-50.373383,-29.098322	RS	São Francisco de Paula, Passo do "S"
Spo_melanogaster	-50.409959, -29.223470	RS	São Francisco de Paula, Passo do "S"
Spo_melanogaster	-50.259348,-29.244708	RS	São Francisco de Paula, Tainhas
Spo_melanogaster	-50.334570,-29.265287	RS	São Francisco de Paula, Tainhas
Spo_melanogaster	-50.252342,-29.296077	RS	São Francisco de Paula, Tainhas
Spo_melanogaster	-50.227374,-28.561724	RS	São José dos Ausentes
Spo_melanogaster	-49.987291, -28.700775	RS	São José dos Ausentes
Spo_melanogaster	-49.936302,-28.600372	RS	São José dos Ausentes
Spo_melanogaster	-49.813638,-28.627988	RS	São José dos Ausentes

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Spo_melanogaster	-49.827424,-28.655660	RS	São José dos Ausentes
Spo_melanogaster	-49.882225,-28.713735	RS	São José dos Ausentes
Spo_melanogaster	-49.968361,-28.799416	RS	São José dos Ausentes
Spo_melanogaster	-49.852329,-28.620282	RS	São José dos Ausentes
Spo_melanogaster	-50.130122,-28.780407	RS	São José dos Ausentes, Butiá
Spo_melanogaster	-50.919964,-28.333397	RS	Vacaria
Spo_melanogaster	-50.917123,-28.339254	RS	Vacaria
Spo_melanogaster	-50.976385,-28.437679	RS	Vacaria
Spo_melanogaster	-50.801576, -28.515156	RS	Vacaria
Spo_melanogaster	-50.764819,-28.539749	RS	Vacaria
Spo_melanogaster	-50.814053,-28.408303	RS	Vacaria
Spo_melanogaster	-50.904816,-28.329017	RS	Vacaria, Rio Socorro
Spo_melanogaster	-50.918631,-28.328648	RS	Vacaria, Rio Socorro
Spo_melanogaster	-50.471389,-29.241944	RS	Várzea do Cedro