

forests

Journal of forests

Supporting Information for

Integrating habitat suitability and the Near-Nature restoration priorities into revegetation plans based on potential vegetation distribution

Zheng Cheng¹, Wen Zhongming^{1,2*}, Liu Yangyang¹, Guo Qian¹, Jiang Yanmin², Ren Hanyu¹, Fan Yongming¹ and Yang Yuting¹

¹ College of Grassland Agriculture, Northwest A&F University, Yangling 712100, China

² Institute of Soil and Water Conservation, Chinese Academy of Sciences and Ministry of Water Resources, Yangling, Shaanxi, 712100, China

* Correspondence: Correspondence: zmw@ms.iswc.ac.cn

Contents of this file

Text S1

Tables S1

Introduction

The supporting information includes:

- Description of methods for potential vegetation distribution based on MaxEnt model.
- Number of sampling sites and environmental contribution ratios of 60 native species in the Yanhe River catchment.

- **Text S1. Description of methods for potential vegetation distribution based on MaxEnt model.**

When collecting plant specimens, more intensive sampling is typically carried out in one area or region over others, and this sampling bias will skew the data representativeness for the species distributions environment variables. To reduce and correct this spatial bias, we applied a systematic sampling method using a resolution of 500×500 m, according to the special geomorphic characteristics of the study area to facilitate the implementation of planning and recovery plan. As described in “**2.2. Occurrence Database and Environmental Variables**”, we have collected a total of 145 valuable plots in the Yanhe River catchment. Different species have different records for MaxEnt. In order to reduce the autocorrelation of environmental variables, we run some checks prior to formal analyses. We eliminated environmental variables with a contribution rate of less than 5%, and we simulated with the remaining environmental variables were used to construct the potential vegetation distribution in the Yanhe River catchment. The model assessment test passes the two parameters AUC and TSS.

• **Table S1. Number of sampling plots and environmental contribution ratios of 60 native species in the Yanhe River catchment.**

number	species	sample size	mean AUC	TSS	Temsea(%)	RainA(%)	TemCM(%)	RainSEA(%)	RainRA(%)	SloP(%)	Eva(%)	SloA(%)	TemHM(%)	SloD(%)	TemAO(%)	Elev(%)	Tem(%)
1	<i>Lespedeza davurica</i>	78	0.812	0.382	37	7.1	0	11	7.8	6.8	6.5	5	0	14.2	0	4.6	0
2	<i>Stipa bungeana</i>	126	0.811	0.51	42.7	3.6	1.1	14.8	3.8	7.4	5.2	6.3	0.8	12.3	0	2	0
3	<i>Heteropappus altaicus</i>	96	0.757	0.624	43.8	15	0	11.9	6.4	2.8	3.1	0	0	13.4	0	3.6	0
4	<i>Thymus mongolicus</i>	21	0.94	0.475	4.2	22.3	4.2	0	0	2.8	54.3	4.1	0	5.1	0	0	3
5	<i>Artemisia gmelinii</i>	100	0.847	0.581	36.7	18.9	13.5	10.6	4	3.5	3.3	2.7	2.6	1.7	0.9	0.8	0.8
6	<i>Clematis fruticosa</i>	51	0.865	0.469	47.8	5.1	2.4	11.4	0	4.9	3	13.9	0	11.5	0	0	0
7	<i>Artemisia giraldii</i>	92	0.821	0.154	48	3.1	1.5	12.4	2.6	3.2	9.9	6.9	0	7.4	0	5	0
8	<i>Vitex negundo</i>	13	0.901	0.784	3.6	0	0	2	0	12.2	78.1	1	0	3.1	0	0	0
9	<i>Potentilla tanacetifolia</i>	80	0.836	0.571	32.8	5.4	2.3	13.6	7.7	5.8	3.8	2.3	3.8	17.8	0	4.7	0
10	<i>Bothriochloa ischcemum</i>	82	0.842	0.357	53.1	6.4	0	11	2.8	4.3	4	8.1	0	8.5	0	1.8	0
11	<i>Patrinia scabiosaefolia</i>	13	0.804	0.553	4.3	1.2	0	1.5	0	39.6	0	10.2	0	43.2	0	0	0
12	<i>Syzygium aromaticum</i>	17	0.943	0.907	68.6	3.6	0	0	11.7	1.6	1.5	8.5	0	4.5	0	0	0
13	<i>Cleistogenes hancei</i>	32	0.848	0.592	33.4	12	0	3.2	7.8	7.9	5.3	1.9	0	28.5	0	0	0
14	<i>Prinsepia utilis</i>	7	0.932	0.255	68.9	0	0	2.7	3.2	5.5	8.7	0	0	11	0	0	0
15	<i>Patrinia rupestris</i>	86	0.785	0.358	22.3	3.7	1.3	29.8	4.5	10.8	4	2.5	3.3	13.1	0.8	3.5	0.4
16	<i>Astragalus melilotoides</i>	58	0.823	0.403	41.2	13.3	1.5	6.4	4.1	6.5	2.2	7.3	3	11.9	0.1	2.5	0
17	<i>Bupleurum chinensis</i>	20	0.883	0.562	16.8	10.4	0.5	5.3	12.4	12.8	1.6	22.2	6.5	9.5	0	2	0
18	<i>Cleistogenes caespitosa</i>	82	0.825	0.638	51.2	21.4	0	6	0.6	6.1	1.2	3.6	3.1	5.3	1.2	0	0.3
19	<i>Lespedeza floribunda</i>	10	0.866	0.512	8.2	0	0	2.6	0	17.7	37.8	10	1.5	20.4	0	1.8	0
20	<i>Roegneria kamoji</i>	25	0.826	0.441	4.5	3.2	0	16.9	11.1	7.2	17.5	13	6.8	19.8	0	0	0
21	<i>Potentilla bifurca</i>	41	0.862	0.753	2.2	19.5	0	33.8	4.9	7.6	21.2	4.8	0	2	0	4	0
22	<i>Oxytropis bicolor</i>	35	0.841	0.316	34.3	8.4	1.1	2.5	4.9	26.1	0.6	6.1	2.3	9.6	0	4.1	0

23	<i>Scorzonera austriaca</i>	32	0.901	0.842	26.4	38.2	1	4.4	0	4.4	2.7	2.6	0	15	0	5.3	0
24	<i>Scorzonera pubesens</i>	9	0.885	0.579	1.9	7.4	0	62.6	0	4.5	5.5	0.2	9.1	7.1	0	0	1.7
25	<i>Glycyrrhiza uralensis</i>	22	0.867	0.486	6.4	15.1	0	18.4	15.7	5	10.5	5.8	1.8	8.1	0	13.2	0
26	<i>Periploca sepium</i>	41	0.89	0.475	44.3	10.7	0	7.4	1.8	6.5	0.3	13.1	0.1	14.3	0	1.1	0.4
27	<i>Wikstroemia canescens</i>	32	0.96	0.39	60.5	0.5	0.6	11.6	4	4.2	2.4	3.2	2.2	6.2	0	4.6	0
28	<i>Caragana rosea</i>	7	0.937	0.552	48	1.1	0.2	0	1.7	24.3	0.6	1.8	6	2.1	1.9	10.9	1.4
29	<i>Ostryopsis davidiana</i>	8	0.984	0.497	67.5	5	0	0.2	1	5.6	2.2	9.6	4.8	3.8	0	0.3	0
30	<i>Buddleja lindleyana</i>	15	0.841	0.52	2.7	0	0	10.4	43.1	37.1	0	2.9	0	2.8	0	1	0
31	<i>Rosa xanthina</i>	11	0.934	0.579	68.3	21.2	0	0	8.4	0	0.1	0	0	2	0	0	0
32	<i>Astragalus discolor</i>	17	0.935	0.765	10	25.9	4.4	0	2	0	42.2	3	0	9	0	1.9	1.6
33	<i>Acer palmatum</i>	10	0.91	0.308	22.2	32.8	0	0	1.1	9.7	0	28.3	0	5.9	0	0	0
34	<i>Lespedeza hedysaroides</i>	10	0.854	0.55	0	39.8	0	0	3	2.6	49.4	3.1	0	2.1	0	0	0
35	<i>Caragana purdomii</i>	11	0.942	0.727	32.3	40.5	0	0	0.3	0.7	0.2	21	0	5	0	0	0
36	<i>Galium aparine</i>	11	0.845	0.506	7.4	1.4	0	3.3	19	37.2	7.4	19.6	0	4.7	0	0	0
37	<i>Leymus secalinus</i>	38	0.831	0.288	6.7	9	1.6	10.3	6	5.1	0.6	6.8	0	12.8	7.4	32.8	0.9
38	<i>Sophora davidii</i>	39	0.875	0.625	28.8	5.2	0	4.9	7	9.4	14.5	22.2	1.5	5	0	1.5	0
39	<i>Artemisia frigida</i>	32	0.937	0.196	4.8	65.7	1	4.8	1	0	7.5	6.6	0	6.6	0	2	0
40	<i>Rhamnus davurica</i>	7	0.868	0.347	0.9	25.9	0	0	16.9	38.5	8.6	2.5	0	6.7	0	0	
41	<i>Spiraea fritschiana</i>	14	0.916	0.76	44.4	3.1	0	0	24.1	5.9	8.2	8.1	0	1.5	0	4.7	0
42	<i>Stemmacantha uniflora</i>	33	0.884	0.762	14.8	43.6	0.9	8.5	2	3.2	3.2	15.2	0	6	0	2.6	0
43	<i>Phragmites australis</i>	16	0.843	0.33	0.6	31	0	0.8	12.1	38.5	0	8.6	0	6.9	0	1.5	0
44	<i>Artemisia mongolica</i>	21	0.941	0.68	36	2.6	0	14.6	4.6	5.5	2	8.1	0	24.8	0	1.8	0
45	<i>Adenophora stricta</i>	10	0.936	0.733	0.7	5.8	7.7	4.5	0	4.2	30.6	3.4	11	27.3	4.8	0	0
46	<i>Oxytropis hirta</i>	16	0.872	0.573	0.8	24.7	15.1	0	2	2.7	34.5	3.9	0	6.7	1.5	2.9	5.2
47	<i>Ulmus pumila</i>	13	0.79	0.565	9.5	0	0	16.2	5.1	50.5	0.1	4.7	0	11	2.7	0	0.2
48	<i>Gypsophila davurica</i>	19	0.939	0.804	0.2	67.2	5.3	0.5	3.9	1.8	17.1	2.3	0	1.7	0	0	0

49	Ziziphus jujuba	18	0.882	0.55	40.5	0	0.2	0.6	0	2.4	19.1	15.4	0	8.3	3.8	5.8	3.9
50	Carex stenophylloides	16	0.858	0.705	37	18.4	0	0	16.7	9.7	3.5	11.2	0.6	2	0	0.2	0.7
51	Xanthoceras sorbifolia	8	0.825	0.359	10.3	7.7	0	0	9.9	0	27.6	3.9	0	38.1	0	2.5	0
52	Dracocephalum moldavica	15	0.809	0.216	8.1	3.4	0	11.9	46.7	9	8.1	2	0	8	2.8	0	0
53	Cephalanoplos segetum	36	0.855	0.732	16.9	22.5	1.8	22.6	13	3.8	0	4.4	0.9	9.4	0	4.7	0
54	Cotoneaster multiflorus	12	0.959	0.508	41.8	32.4	0	0	1.4	4.9	0	16.4	0	3.1	0	0	0
55	Allium chrysanthum Regel	36	0.916	0.69	32.9	33.2	0.7	2.2	11.8	6.2	0.8	2.9	0	8.2	0	1.1	0
56	Zinnia peruviana	13	0.75	0.271	42.8	19.9	0	1.6	0	4.1	0	9.6	1.4	18.6	0	2	0
57	Poa annua	42	0.808	0.472	15.4	4.4	0	19.1	6.7	7.7	2.8	5.6	4.7	27.2	0	6.4	0
58	Cleistogenes chinensis	59	0.836	0.646	12	52.9	3.4	6.5	1.4	6.2	2.5	2.2	0	6.3	0	6.6	0
59	Artemisia scoparia	81	0.825	0.472	36.4	5	0	14.2	8.2	6.1	7.4	2.3	1.8	15.7	0	2.9	0
60	Quercus wutaishanica	8	0.985	0.495	9.9	62.2	0	0.7	12.1	6.9	2.7	2.9	0.3	2.3	0	0	0