Exotic natural landscape in Japan and Russia

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Exotic natural landscape in Russia and Japan, bilateral project between Russian and Japan
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1. Beginning of joint research
In the evaluation of the natural landscape, Tamura and Honda (1941) suggested the effect of Russian literature in the appreciation of Musashino, the deciduous forests in Tokyo, written by Doppo Kunikida.
In 2006, Aoki visited Moscow to propose a comparative study of the landscape evaluation between Russian and Japanese. Petrova agreed to try a research of Aoki (1983) in Russia. Japanese group collected 500 photos in terms of mountain, forest, lake, waterfall, coast and field. Russian collected similar 431 photos of Russia. And they selected the typical photos of 35 Russian landscapes and 35 Japanese (Aoki and Petrova 2010) to make color photos (17.5x12.5cm) for the investigation. A questionnaire was set to evaluate the preference and exoticism (Petrova et al 2015).
2. Investigation
Moscow, Irkutsk, Kamchatka, Hokkaido, Chiba, Minamikyushu, Kyoto Prefectural University, Kuramae haiku club and Nishikamata Onazuka community association were investigated. In this survey, we collected not only from college students but also the general elderly. A longer time interview was required for the elderly. 124 people in Russia and 210 Japanese data were obtained.
3. Results
The preference was evaluated in numerical scale 1-5 and averaged. The feelings of exotic were totaled in each photo.
Russian preferred the photos in Caucasus, Altai mountain, the stream of Kola Peninsula and Kamchatka. Japanese waterfall of Nanatsugama was preferred in up to 10. From this result, Russians preferred the mountain and water. Japanese preferred Caucasus, Altai, the North Polar Region and Mt. Fuji. Japanese preferred the mountains. A similar preference of Japanese and Russian was found in the mountain landscape.
Russians felt exotic to Siberia, Kamchatka, Caucasus, North Japan Alps and coast of Ibaraki. Japanese felt exotic to Caucasus, Altai, Kamchatka, Kola Peninsula, the polar region and North Japan Alps. As Japanese are living in rich greenery, they felt exotic to non vegetated landscapes. In Russia, people were asked as daily and non-daily for exotic. So they felt exotic in their own country because of its vast area. Japanese felt exotic to the foreign landscape of Russia.
4. Relation between preference and exotic
Exotic is associated with preference in Russia, the correlation coefficient 0.81 (t=11.4) with a statistic significance level of 0.001. So exotic contributed to preference of Russians. The 0.35 correlation coefficient (t=3.08) was found in Japan, the lower significance level with no relation. This difference should be studied in future.
5. Effect of age to exotic
The exotics of the elderly (over 60 years) were compared to young students in Japan. A large difference was seen in Coastal landscape of Kamchatka with rough rocks and washed ashore with kelp. The elderly felt it Russia and the students did not by their images of Hokkaido.
To the photo of Oze wetland, the elderly did not felt exotic but students felt. Because the

students found the skunk cabbage (*Lysichiton camtchatcense* Schott) from Russia by their knowledge of vegetation.
These suggested the effect of knowledge by the individual experience and professions. The categories of landscape experience (Appleton 1986) will become a major issue in future.
6. Discussion of Results
Russians preferred the coast of Japan (Petrova et al 2015), because they live away from the coast. Japanese did not show their preference in Kamchatka by the similarity of Hokkaido.
Japanese preferred Putorana, Altai and Caucasus. So Japanese will visit these areas, if the social circumstance will be prepared.

Keywords: appreciation of natural landscape, Exotic, comparison of Russian and Japanese

Table Comparison of exotics on landscape photographs between Russia and Japan

oder	N Photo	State	Location	vegetation	Russia	oder	N Photo	State	Location	vegetation	Japan
1	56	Russia	Siberia, Altai	high mounta	109	1	59	Russia	Caucasus	high mounta	202
2	23	Russia	Siberia, Puto	tundra	101	2	23	Russia	Siberia, Puto	tundra	195
3	48	Russia	Kamchatka,	high mounta	98	3	33	Russia	Siberia, Altai	steppe	193
4	33	Russia	Siberia, Altai	steppe	96	4	16	Russia	Siberia, Altai	steppe	185
5	6	Russia	Kamchatka,	high mounta	88	5	56	Russia	Siberia, Altai	high mounta	180
6	15	Russia	Siberia, Nori	tundra	88	6	7	Russia	Kamchatka,	taiga	174
7	55	Japan	Kurobe Dam	subalpine	88	7	55	Japan	Kurobe Dam	subalpine	165
8	58	Japan	Nanatsugam	deciduous	87	8	20	Russia	Kamchatka,	taiga	163
9	59	Russia	Caucasus	high mounta	87	9	45	Russia	Hibiny	tundra	155
10	19	Japan	Fukuroda fal	deciduous	85	10	46	Russia	Siberia, Puto	tundra	155
11	67	Japan	Onneto, Akar	subalpine	84	11	47	Russia	Siberia, Chit	steppe	153
12	45	Russia	Hibiny	tundra	83	12	64	Japan	Kusasenri, A	deciduous	149
13	65	Japan	Ashinoko an	deciduous	83	13	67	Japan	Onneto, Akar	subalpine	144
14	13	Japan	Mt. Fuji, Yam	deciduous	82	14	54	Russia	Siberia, Bury	steppe	143
15	46	Russia	Siberia, Puto	tundra	81	15	1	Russia	Leningrad re	taiga	136
16	20	Russia	Kamchatka,	taiga	76	16	6	Russia	Kamchatka,	high mounta	135
17	66	Russia	Siberia, Altai	high mounta	75	17	18	Japan	Kamikochi, N	subalpine	135
18	16	Russia	Siberia, Altai	steppe	74	18	62	Russia	Pskov region	taiga	134
19	60	Japan	Maryudonota	sub tropical	74	19	48	Russia	Kamchatka,	high mounta	132
20	63	Japan	Kegon fall, N	deciduous	73	20	66	Russia	Siberia, Altai	high mounta	127

	high mountain, subalpine		high mountain, subalpine
	deciduous, mixed		deciduous, mixed
	taiga		taiga
	steppe		steppe
	ever green		ever green
	tundra		tundra

The Original Landscape of Japan in the early Meiji Era (1876) : from the Viewpoint of a Russian Geographer, *A. I. Voeikov*.

*Masahiro Nakatani[1]

1.none

This report will introduce the original landscape of Japan in the early Meiji Era (1876), which was described by a Russian geographer and meteorologist, *Aleksandr Ivanovich Voeikov*.

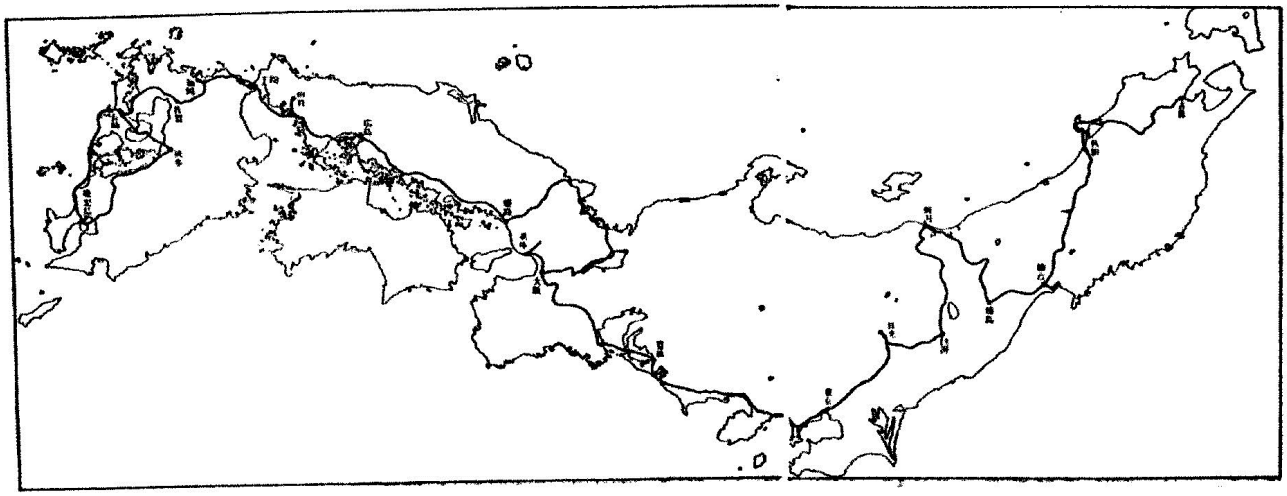
After the conclusion of the *Kanagawa Treaty* ("Japan-US Treaty of Peace and Amity") in 1854, many people began to visit Japan from Europe and America. *Voeikov* was one of them. He came to Japan in 1876 (Meiji 9) and traveled all over Japan (from *Hokkaido* to *Kyusyu*) in only five months. After returning to Russia, *Voeikov* contributed "Travelogue of Japan" (*Puteshestvie po Iaponii*) to the *Bulletin of the Imperial Russian Geographical Society* in 1877.

Talking of "Travelogue of Japan", it is well-known that Isabella Lucy Bird, an English explorer and writer, described *Unbeaten Tracks in Japan* in 1880. She came to Japan in 1878 (Meiji 11) and visited the *Tohoku*, *Hokkaido* and *Kansai* regions in seven months. But she didn't visit South-west Japan.

On the other hand, *Voeikov*'s "Travelogue" is little known in Japan. An abridged(?) translation was made by *Hidetoshi Arakawa*, a Japanese famous meteorologist in 1961. But *Voeikov* observed Japan from many points of view (not only geography, meteorology, but also politics, economy, history, and culture) and in the "Travelogue" he also described many landscapes, which are now lost in the present day.

In this report I will show where *Voeikov* traveled and what he saw in Japan.

Keywords: The Original Landscape, Meiji Era, A. I. Voeikov



Research on Construction and Spatial Structure of Religious Space of the Izumo Grand Shrine

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Research on Construction and Spatial Structure of Religious Space of the Izumo Grand Shrine

1.Introduction

In this study, the Izumo Grand Shrine will be discussed, as it is considered one of the most ancient shrines, which is supposedly the original form of a garden in a palace. The purpose is to uncover the following items: the precinct and ancient forms of rituals at the Izumo Grand Shrine, space utilization structure through annual events at the Shrine and related shrines, and history of planting formations in the precinct.

2.Study Methods

In this article, in order to clarify space utilization structure at the Izumo Grand Shrine and related shrines, and history of planting formations in the precinct, the following methods have been applied: Topographic maps, sectional views, and soil layer charts were studied together with analysis of paintings to apprehend the process of scenery changes and soil layers of each time.

3.Results and Considerations

i. From Yayoi Period until the end of the 10th Century

Based on the excavation report of Izumo Precinct remains, a flow path originating from the south of the current front shrine has been detected, and its shape was assumedly Y-shaped. There is also a record that weapon-type bronze ware and jewels (green jade jewel) from the Yayoi Period were excavated during the construction in the Kanbun Era from the east of Inochi-Nushi-No-Yashiro (one of the smaller shrines attached to the Grand Shrine).

ii. From the beginning of the 11th Century until pre-construction of the Hoji Era

Since Year 4 in the Chogen Era (1031) until the ritual transfer of the main building in Year 2 in the Hoji Era (1248), the building fell five times. The average period between a transfer until a fall was 31 years. Okano (2010) stated that it was reasonable to expect that a building without a foundation would slant due to an uneven settlement and the liquefaction phenomenon.

iii. From the construction of the Hoji Era until another construction of the Keicho Era

According to a painting which is assumed to have captured the ritual transfer of the main building in Year 2 in the Hoji Era (1248), embankment construction was completed on the east side of the precinct; therefore, the building is believed to have been constructed on the elevated ground.

iv. From the construction of the Keicho Era until another construction of the Kanbun Era

Excavation research (Year 12 of the Heisei Era) unveiled that the structure of the main building was not earth-fast construction called Hottate-bashira, but was the first trial of the cornerstone method. The design is heavily influenced by Buddhism.

v. From the construction of the Kanbun Era until another construction of the Enkyo Era

More effective equipment has been completed in order to protect the shrine from flood and debris flows. The ground was gradually elevated with stone masonry as measures to flooding and landslides. The stones used for the masonry were carved out from a giant rock behind Inochi-Nushi-No-Yashiro.

vi. After the construction of the Enkyo Era

From the construction of Kizuki Taisha, the current Izumo Grand Shrine, in the Enkyo Era until the present, construction methods have been based on construction from the Kanbun Era. A new building was constructed in the first year of the Enkyo Era (1744) with partial modifications with a new placement, and the building still remains the same shape until now.

4. Conclusion
In this paper, history of three items around Izumo Grand Shrine have been clarified: its construction, spatial structure of religious space, and planting formations in the precinct.

Keywords: Shrine, tranisition, spacial structure

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Conservation of Biodiversity and Natural Landscape in Urban Area: An Adjustment for Urban Space between Nature and human use

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There are a few wildlife-living environments, etc. greenspace or water area inurban area. Many people live in urban area and are getting concerned about symbiosis with nature and conservation of biodiversity. The Ministry of Land, Infrastructure and Transport has considered conservation of biodiversity is as an important issue for regional construction. The Government is supporting planning and construction of biotope space as maintenance and regeneration of natural environment, protect the environmental quality, ecological network establishment, building for monitoring or appropriate management.
Regeneration of satoyama (managed woodlands or grasslands near human settlements), tidal flat, river which regions are richly endowed with nature is important. However, it is important to create natural environments in urban residential area.
Urban space is artificialness. Human existences interfere with habitats for wildlife. Therefore, it is difficult to maintain biodiversity in urban space. Nevertheless, plants grow and many birds appear in stormwater reservoir for food control. The reservoir is covered with concrete. It is an artificial ground in urban residential area.
Stormwater reservoir for flood control are placed with large-scale housing land development in the 1960s.The reservoir become surrounded by chain link fence for prevention from water accidents. It is forbidden someone to enter. Shape of the reservoir is concave shape. In the case of chain link fence, people can view inside of the reservoir. It is considered that off limits area produced nature inside space and view natural landscape. In other words, receive the view of nature is a symbiosis with nature in urban area.
The purpose of this study is to organize use adjustment of space and consider conservation of biodiversity and natural landscape. I'll focus on perceptional constraint. Off limits area produce view of natural landscape in the reservoir. However, it restricts to get a touch. I think perceptional constraint is one of use adjustment.
It was attempted to gather information on the habitat of vegetation and avian species in stormwater reservoir for flood control and residential cognition living in the reservoir. The results show that urban artificial ground has potentiality of create natural environments. It was clarified features of perception for nature in the reservoir an advantages and disadvantages for symbiosis of nature. Moreover, it is shown that nature inside the reservoir is attributed to sense o the season in urban residents. It is important to hold discussion for border between nature and human.

Keywords: Natural Landscape, Biodiversity, Use Adjustment, Perceptional Constraint

Landscape classification and mapping for Irkutsk city in Siberia region

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Traditional landscape approach is an important part of land-cover mapping in Russia. Since different regions have different landscape's hierarchy, it is impossible to use one classification for all the regions. We tried to analyze the correlation of such concepts as: land cover, landscape, geosystem, ecosystem, habitat, and biotope. Biotope is defined as a complex of factors, which determines physical conditions of existence (abiotic part) of a community (biotic part) to define geographical unites (Connor et al., 2004). Habitat is terrestrial or aquatic areas distinguished by geographic, abiotic and biotic features, whether entirely natural or semi-natural (EEA, 2014). Ecosystems can be regarded as groupings of habitat types (EEA, 2014). Geosystem is a unity, which consists of interrelated components of nature, controlled by regularities, which operate in geographical shell and landscape sphere (Sochava, 1974a). It is an organized integrality, which interacts with cosmic sphere and human society (Sochava, 1972). The term "landscape" is controversial and may be interpreted in different ways. However, landscape is a part of the Earth's surface, which is shaped by natural conditions and formed by human influences to a different extent (Bastian et al., 2014). Since the terms have close meanings, it is necessary to specify which term needs to be taken for certain aim. So, we defined land-cover as the complex of biotic, abiotic and cultural components on the Earth's surface (Monsin et al., 2014). The aim of this study is to compile the landscape classification of terrestrial units for Irkutsk city urban area which can be used for complex and narrow purposes, for example, for research of soil or vegetation and their changes, as well, for spatial planning. Irkutsk is a large regional center and is located on the South of Eastern Siberia near Lake Baikal. Accepted in European Union CORINE Land Cover and EUNIS habitat classification doesn't have data for the studied area. In our research, we elaborate a synthetic approach with using CORINE and EUNIS database and conception of geosystem to classify the Irkutsk's city terrestrial units. Using QGIS software we analyzed the following data: fieldwork, Digital Elevation Model (SRTM), and remote sensing (Landsat 7, 8).

Keywords: urban landscape classification, landscape approach, geosystem

Relation between the experiences and contents of a green space conservation volunteering program for university students

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1. Introduction

Green spaces, which are a part of the urban landscape, have been conserved by public participation in Japan. However, the advanced age of the participants and the lack of sustained participation hinder the continued existence of these spaces. In an attempt to deal with these problems, a movement promoting the participation of young people in green space conservation has taken shape. It is hoped that a green space conservation volunteering (GsCV) program is provided for students. This study identifies the experiences of students who participated in such a program.

2. Methods

The object of this study was a GsCV program provided to students at Takusyoku University. In the program, 14 students joined the “Rangers Project” from April to December 2015. This project conserves green spaces in Japan’s metropolitan areas. The students were provided with 44 opportunities to participate in conservation activities. Each student chose and participated in four activities. The GsCV program was divided into three parts: 1) maintenance of green space (e.g. weeding and farm work), 2) PR of conservation activity at an event, and 3) fieldwork in a city. KH coder, a free quantitative content analysis software was used to analyze 14 final reports and 56 activity reports by students. Firstly, words concerning experiences were sampled from all reports by KH coder. Secondly, coding rules were set in order to count concepts with contexts which included those words identified. Finally, KH coder created co-occurrence networks that showed potential relationships between the contents of the GsCV program and experiences or on the inter-relationship between experiences.

3. Results

Contexts in the reports were classified into 14 concepts from the experiences viewpoint. The main concepts are “understanding conservation groups and CSR activities”, “one significant point and one challenge in making an appeal for our activity” and “getting my new idea about conservation”. The results of co-occurrence networks showed that 1) maintenance of green space was related to five concepts: “experiencing enjoyment and fulfillment”, “the importance of maintenance in the conservation of a good environment”, “interest in a conservation activity”, “acquiring knowledge about the ecosystem or maintenance methods” and “getting an extraordinary experience” (Figure 1). 2) PR of conservation activity at an event was related to three concepts: “understanding conservation groups and CSR activities”, “one significant point and one challenge in making an appeal for our activity” and “getting an extraordinary experience”. 3) Fieldwork in a city was related to three concepts “acquiring knowledge about the ecosystem or maintenance methods”, “a perception of the ecosystem or the history of each green space”, and “a perception of the worth and significance of green spaces”.

Additionally, there is a relation between “understanding conservation groups and CSR activities” and “one significant point and one challenge in making an appeal for our activity” when attention was focused on the inter-relationship between experiences. The results of co-occurrence networks also showed that “an interest in a conservation activity” had a relationship with “understanding conservation groups and CSR activities” and “a precious interaction with other people in an activity”.

4. Conclusion

The results of this study suggest that an interest in conservation activities is increased by having experience with PR of conservation activity at an event, and that fieldwork provides a chance to understand the worth and significance of green spaces. Therefore, a GsCV program consisting of complex components is more effective than a program consisting only of maintenance of green spaces.

Acknowledgments

This work was supported by JSPS KAKENHI Grant Number 15J03276.

Keywords: green space, conservation, experience, student, volunteering program

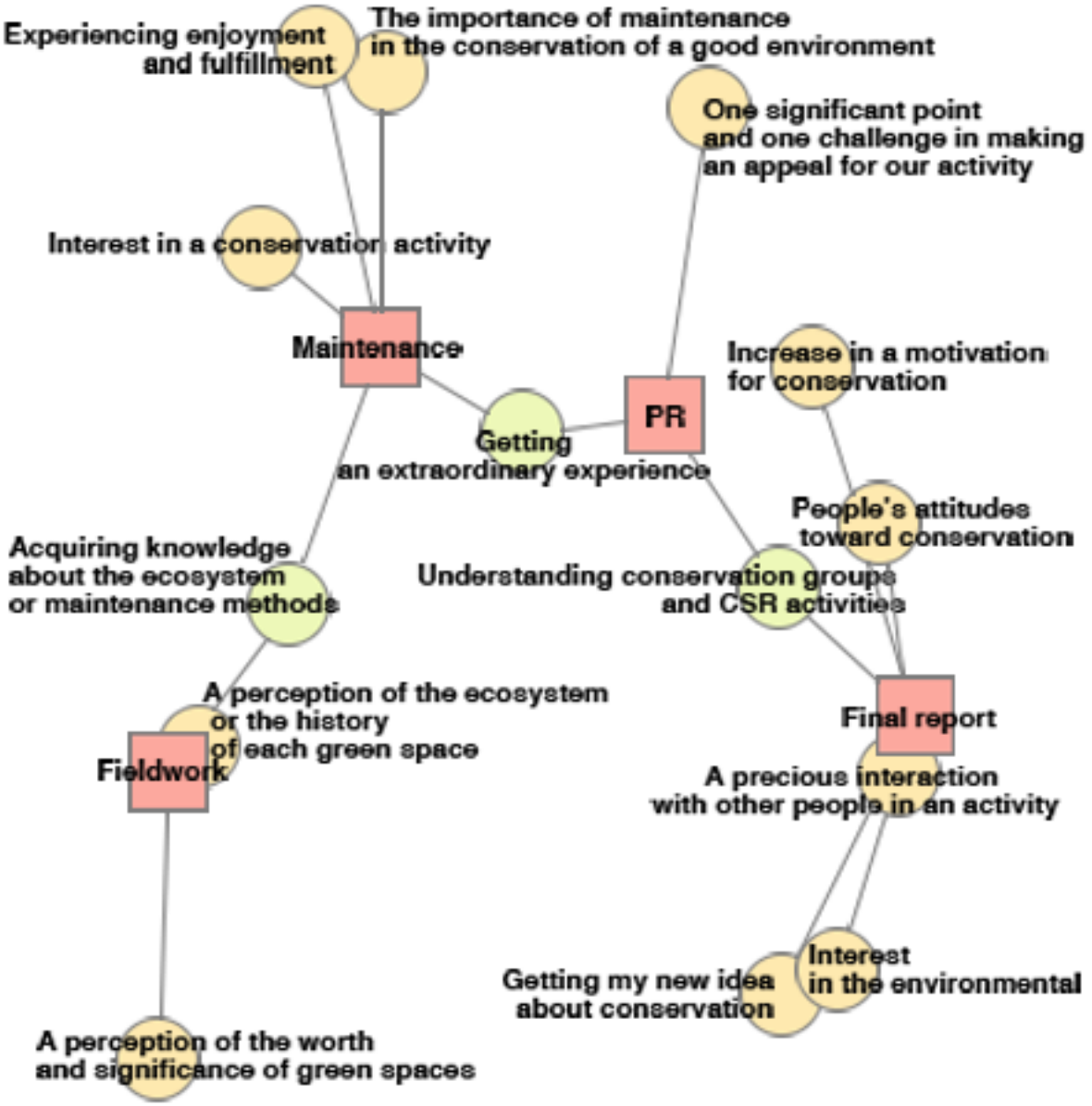

Figure1. Relationships between the contents of the GsCV program and experiences

Remote Sensing Estimates of vegetation Biomass and Carbon storage in Hulunbuir grassland, Inner Mongolia

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The grassland ,as one of the most widespread terrestrial ecosystems in the world, plays an important role in regulating regional climate changes and reducing the emission of carbon dioxide.So it is important to do an accurate evaluation of grassland vegetation biomass and carbon storage , and analysis on spatial distribution patterns and environmental factors in the regional scale.Hulun Buir grassland is the study area in this paper .This study constructs grassland biomass model by integrating MODIS EVI data, climatic variables and topographic variables using RBF artificical neural network model.And aboveground biomass,carbon storage during 2000-2013 is simulated further by means of accuracy of the estimation.And With this source ,the study estimates the underground biomass , total biomass and carbon storage of the study area by underground / aboveground biomass ratio in different types of grassland .The results are as follows:
The ability of RBF neural network model to estimate grassland biomass is better than multiple linear regression model. The spatial distribution of average aboveground biomass has gradually increasing trend from southwest to northeast in Hulun Buir grassland during 2000-2013.Besides the spatial distribution of average aboveground biomass has gradually increasing trend,and increased from 142.857 g/m^2 to 161.436 g/ m^2 in the rate of 1.034 / a . The total aboveground biomass,total aboveground carbon storage of study area were 8.26 Tg, 4.14 Tg·C.The total underground biomass ,total underground carbon storage were 36.1 Tg, 18.06Tg·C.The total biomass and total carbon storage were 44.4 Tg, 22.2Tg· C.Typical steppe has the highest carbon storage, totaling 13.38 Tg·C.

Keywords: Hulun Buir Grassland, RBF artificical neural network, Biomass , Carbon storage

Seedling growth and photophysiology of Quercus austrocochinchinensis under two light levels

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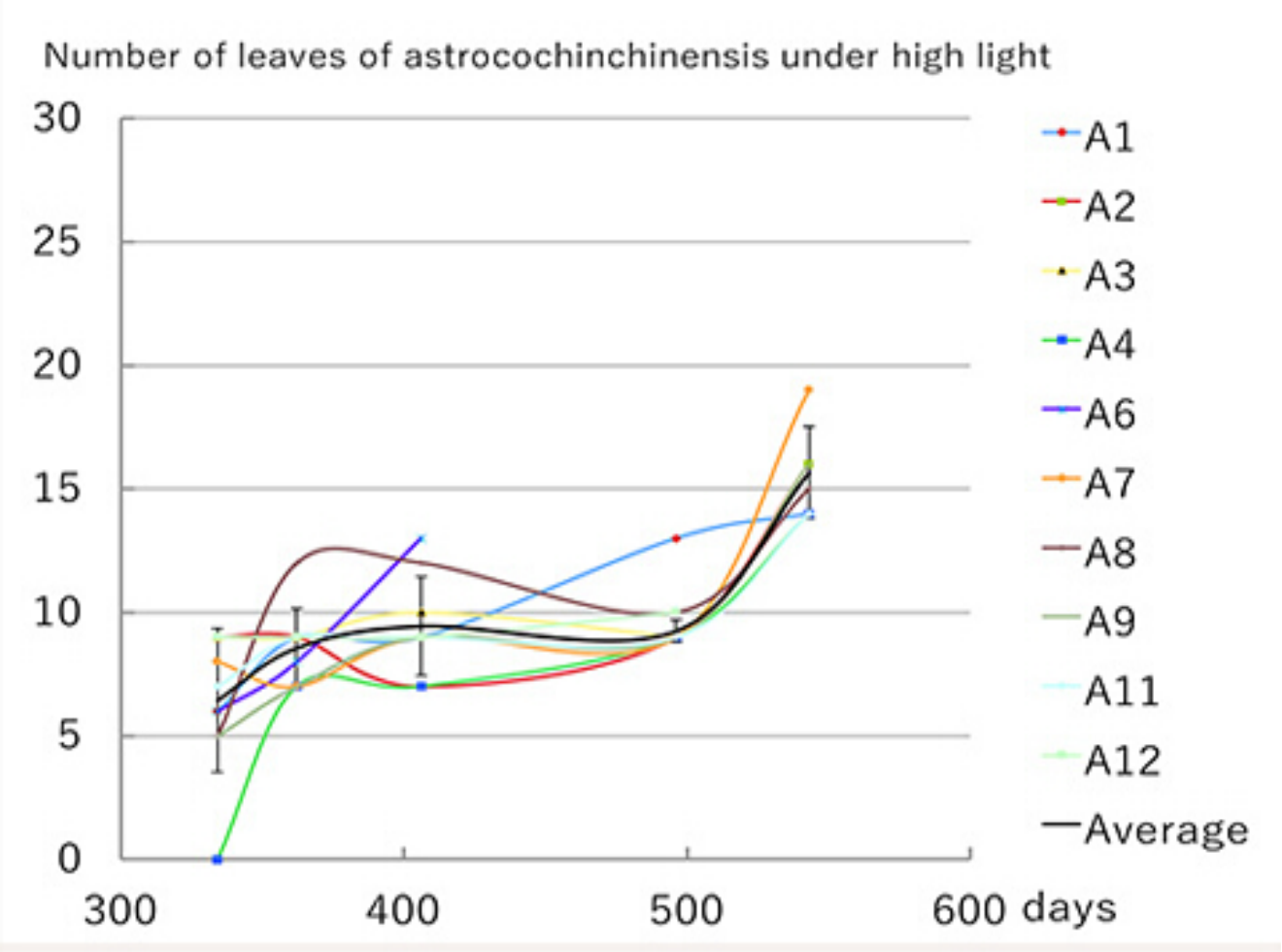
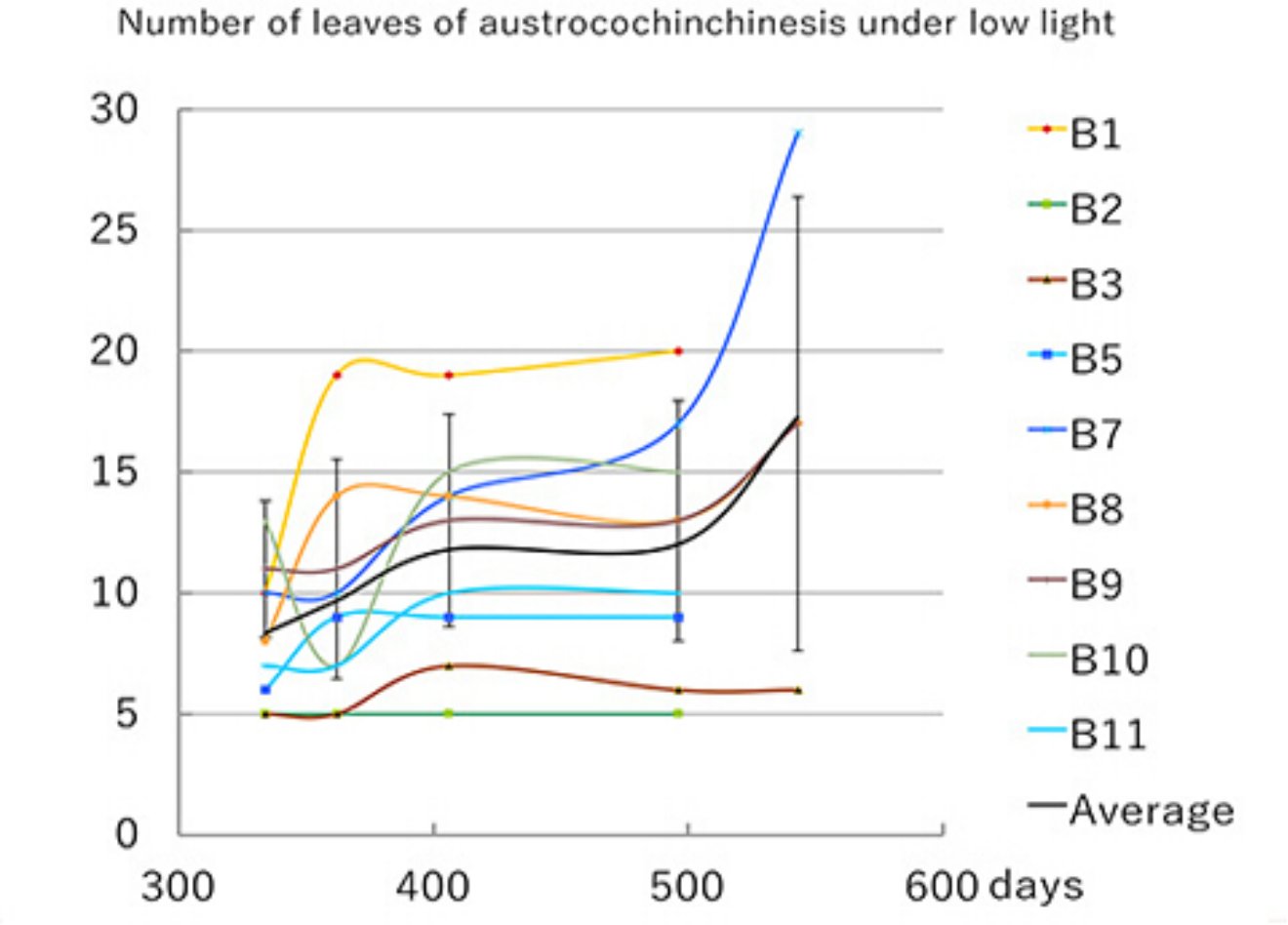
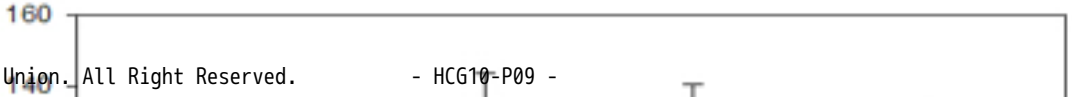
Introduction
Protecting endangered species is an important part of conservation. Quercus austrocochinchinensis is an evergreen tree of the Quercus subgenus cyclobalanopsis Oerst. of Fagaceae. Q. austrocochinchinensis is an endangered oak species, which has only been identified at two sites in Yunnan province and Hainan province in China. Q. austrocochinchinensis is distributed in ravines in southwest China, northern Thailand, Vietnam, and Laos at elevations of 700 to 900 m. Because of tree felling, the distribution and population size of this species are both declining rapidly. At the same time, this species hybridizes with other common species, which might accelerate its extinction. The objective of this study was to compare the growth characteristics of Q. austrocochinchinensis seedlings under two light levels.
Material and Methods
Q. austrocochinchinensis seeds were collected from Pu-Er, Yunnan Province, in September 2011. Seeds were kept in a 4°C refrigerator before being sown on October 21, 2011. Seeds were sown in 32-cell plug trays with 60% peat and 40% perlite mix as a substrate. When the young seedlings reached 20 cm in height, they were transplanted into 18-cm plastic pots containing the same potting mixture. These seedlings were separated into two groups and grown under two different light levels in a greenhouse. The maximum PAR(Photosynthetically available radiation) of the high-light and low-light treatments was 530 and 150 μmol*m-^{2}*s-^{1} respectively. Plant height, leaf number, and stem diameter of seedlings were measured monthly. Leaf chlorophyll content, stomatal density, chlorophyll fluorescence, and rapid light response curves were also measured at the end of experiment.
Results
Q. austrocochinchinensis had a low rate of seedling emergence (21.88%) and some seedlings died during the experiment, which may explain why Q. austrocochinchinensis is rare.
Seedlings differed considerably with respect to plant height, number of leaves, and stem diameter, especially the number of leaves under the low-light condition. The growth rate during the winter was slow, and growth started from February onwards. The higher number of lateral shoots on seedlings grown under the high-light conditions was of interest and might be explained by Q. austrocochinchinensis being shade tolerant; therefore, high light levels may have adversely affected the shoot growth of dominant seedlings.
The chlorophyll content of Q. austrocochinchinensis grown under high-light conditions was 3.17 mg/g for new leaves and was 2.88 mg/g for old leaves. At low light levels, the chlorophyll content of new leaves was 4.01 mg/g and that of old leaves was 3.39 mg/g. Leaf chlorophyll content of seedlings grown under low-light conditions was higher than that of seedlings grown under high-light conditions. In addition, the differences observed between new and old leaves under high light were greater than the differences observed between new and old leaves of seedlings grown under low light.
The stomatal density of Q. austrocochinchinensis under low light levels (318.42/mm^{2}) was higher than that under high light levels (286.84/mm^{2}).
Chlorophyll fluorescence and rapid light curve, ETR raises with the increase of PAR, then reached saturation and remained stable. Q. austrocochinchinensis had higher ERT max under low light levels.
Conclusion and Discussion

Q. austrocochinchinensis had a low seedling emergence rate, and some seedlings died during the experiment. Q. austrocochinchinensis presented large differences among its seedlings, suggesting that the quantity of seedlings should be increased.
Research on Q. austrocochinchinensis in biological engineering and physiology has been lacking. This study presents valuable information on Q. austrocochinchinensis and may be helpful in the recovery of this endangered species.

Keywords: Quercus austrocochinchinensis, Seedling growth , Photophysiology , Light level







The Effect of Forest Management of Secondary Coniferous forests on User's Landscape Appreciation and Psychological Restorativeness

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-INTRODUCTION: We investigated the influence of forest management on landscape appreciation and the psychological restorative effect in an on-site setting by exposing respondents to an unmanaged coniferous forest (U.F.), and a managed coniferous forest (M.F.) for a particular period. The both forests, which consisted of Japanese larch and Japanese red pine (a second-growth forest), were fairly similar in the land cover type and vegetation one another.
-METHODS: We considered the experiment in late July. We set the two experimental plots (0.25 ha) in the both forests of Fuji Iyashinomoroi Woodland Study Center as U.F. setting and M.F. setting. Here, the mean temperature, relative humidity and sound pressure were almost the same during the experiment except illuminance. The respondents were eighteen individuals (eighteen males; aged twenties to fifties) for the experiment. As for eliminating an order effect, the respondents were divided into the two groups (Group A and Group B) in every nine-person. The respondents of Group A were exposed to U.F. setting at first and then were done to M.F. setting. However, the respondents of Group B were exposed to each setting by the opposite order. They were individually exposed to the both settings while sitting for 15 min. In the both settings, the respondents were required to answer the three questionnaires to investigate the psychological restorative effect at before and after the experiment (mood; POMS, affect; PANAS, subjective restorativeness; ROS). For comparison of landscape appreciation, the respondents were required to answer other two questionnaires at after the experiment (scene appreciation (SD), a restorative property of environment (PRS)).
-RESULTS: As a comparison result by the statistical test, regarding a restorative property of environment (PRS), M.F. setting had statistically higher property in “Being away” and “Coherence”, “Compatibility” than U.F. setting ($p < .05$). About scene appreciation (SD), M.F. were appreciated statistically higher in “brightness,” “openness,” “comfort,” “beauty,” “safeness” and “healthiness” ($p < .05$), and “order” and “thin” ($p < .01$). On the other hands, by the result of two-way repeated ANOVA (difference of setting (U.F. -M.F.) xpresence of experience (before exposure -after exposure)), there were no statistical relationship with the mutual interaction between difference of setting and presence of experience in “mood” (POMS), “affect” (PANAS) and “subjective restorativeness” (ROS).
Then, as a result of having checked both the main effects, the difference of setting did not seem to raise a psychological restorativeness. Otherwise, the presence of experience could give a statistical influence negative “affect” (PANAS; $p < .05$) and “tension and anxiety” (POMS; $p < .05$). The difference of setting also reduced numerical values for them in M.F. setting. In contrast, before and after exposure could give a statistical influence and raise “vigor” in U.F. setting (POMS; $p < .05$).
-CONSSIDERATION: Consequently, negative affect, tension, and anxiety might come to decrease because the managed forest setting had a sufficient restorative property of the environment and the better scenic environment. Conclusively, respondents would obtain a psychological restorativeness to some extent by being exposed to M.F. setting. On the other hand, even though vigor rose in U.F. setting, we would consider the reason for it by these three hypotheses as follows;
1) all the respondents were men. 2) the sample group had a tendency toward a relatively low

neuroticism and a high extroversion by the personality traits test which we also conducted as one of the optional tests. 3) if we referred to the Kaplan's landscape preference theory, we could think of the possibility that U.F. setting would bring a sense of mystery and exploration to the respondents who had the trait mentioned above.

Keywords: Landscape appreciation, Psychological restorative effect, Forest management, Coniferous forest, Subjective restorativeness

table 1. summary of questionnaires using the experiment and the result of analysis.

category		Landscape appreciation		Psychological restorativeness		
abbreviated form		SD	PRS	POMS	PANAS	ROS
official name		Semantic differential method	Perceived restorativeness Scale	Profile of mood states	Positive and negative affect schedule	Restorative outcome scale
contents		scene appreciation	restorative property of environment	mood	affect	subjective restorativeness
number of subscales		25	5	6	2	1
timing of the measurement		after exposure		before and after exposure		
wilcoxon signed rank test		M.F was statistically higher in "brightness", "openness", "comfort", "beauty", "safeness", "healthiness", "order" and "thin" than U.F. (p<.01 to p< .05).	M.F. was statistically higher in "Being away", "Coherence" and "Compatibility" than U.F. (p<.05).			
two-way repeated ANOVA	mutual interaction			n.s.	n.s.	n.s.
	main effect			U.F.: vigor (p< .05)↑ M.F.: tension and anxiety (p< .05)↓	M.F.: negative affect (PANAS; p< .05)↓	n.s.

Photo. Unmanaged Forest (U.F.)

Photo. Managed Forest (M.F.)

U. F.: unmanaged forest, M. F.: managed forest, ↑:increased, ↓:decreased

