A Short Note on the Coastal Dune Vegetation South of Wonsan, the North Korea

- Ladislav Mucina and Jiří Dostálek -

ABSTRACT

The paper presents some data on the *Caricion kobomugi* communities at a locality south of the city of Wonsan, the Democratic People's Republic of Korea. Two plant communities, namely the *Ixeridetum repentis* and the *Carex pumila*-community were described and their syntaxonomy and nomenclature briefly discussed.

ZUSAMMENFASSUNG

Die Arbeit enthält Angaben zu Pflanzengesellschaften der Küstendünen im Gebiet südlich von Wonsan, KVDR. Zwei Gesellschaften, das *Ixeridetum repentis* und eine *Carex pumila*-Ges., werden beschrieben, ihre syntaxonomische Stellung und Nomenklatur werden diskutiert.

The dune vegetation along the coast of Japan, both of the Japan Sea and Pacific Ocean, is well elaborated (see for instance KURODA & NOBUHARA 1962; ISHIZUKA 1962; TÜXEN 1966; NOBUHARA 1967; OHBA et al. 1973; MIYAWAKI 1967, 1975 and the ample reference cited especially in the latter two papers). However, no data have been still available from the coast of the North Korea. Our paper is meant to bring some notes on dune vegetation studied on the coast of the Japan Sea of the Democratic People's Republic of Korea.

The dune vegetation was studied in June, southeast of the city of Wonsan, approximately at 39° 11' N and 127° 50' E at the beach of Sijun-ho near to Tonhchon in the Province of Kangwon. The climatical data of the locality are summarized in Fig. 1. The vegetation was sampled and later elaborated using the methods of BRAUN-BLANQUET approach (BRAUN-BLANQUET 1964; WESTHOFF & VAN DER MAAREL 1978).
Two plant communities, the *Ixeridetum repentis* and the *Carex pumila*-community were distinguished in the study area.

IXERIDETUM REPENTIS Takewaki et Ro 1960

The association was described by TAKEWAKI & RO (1960) from the island of Hokkaido, Japan. MIYAWAKI (1967) and OHBA et al. (1973) call this unit *Elymo-Caricetum kobomugi* (Takewaki et Ro 1960) Miyawaki 1967. We use the name *Ixeridetum repentis* as the original description includes both diagnosis and phytosociological relevés, which is, according to the Code (BARKMAN et al. 1976) sufficient in terms of validity of the described unit.

The *Ixeridetum repentis* is a vicarying community to the *Wedelio-Caricetum kobomugi* Ochi 1951 em. Ohba, Miyawaki et R.Tx. 1973 which is found southwards of the distribution area of the *Ixeridetum repentis* (see Map 11 in OHBA et al. 1973: 42). The *Ixeridetum repentis* is confined mainly to the regions on Hokkaido and Honshu characterized by summer-green broad-leaved forests *(Fagetea crenatae* Miyawaki, Ohba et Murase 1964) whereto also the studied area in the North Korea can be assigned. The *Wedelio-Caricetum kobomugi* is distributed along the coasts of southern Honshu and Kyushu characterized by evergreen broad-leaved forests *(Camellietea japonicae* Miyawaki et Ohba 1962; see also OHBA et al. 1973: 73 and Tab. 34).

According to the floristic composition (Tab. 1), the North-Korean community was classified as the *Ixeridetum repentis*, though there are several plants, known to occur in Japan in this community, missing in the stands sampled in Korea. These include *Artemisia stelleriana*, *Ischaemum anthephoroides*, *Messerschmidia sibirica*, *Rosa rugosa*, *Lactuca indica* var. *laciniata*, *Zoysia macrostychya* and *Viola senamiensis*. However, only the latter two species do not occur in Korean flora (Flora Koreana 1979). On the other hand, *Chenopodium acuminatum* which was not recorded in stands of the association in Japan (OHBA et al. 1973), is found in our relevés.

The dominating species of the *Ixeridetum repentis* stands is *Carex kobomugi*, a typical East-Asian coastal-dune element. Further, physiognomically

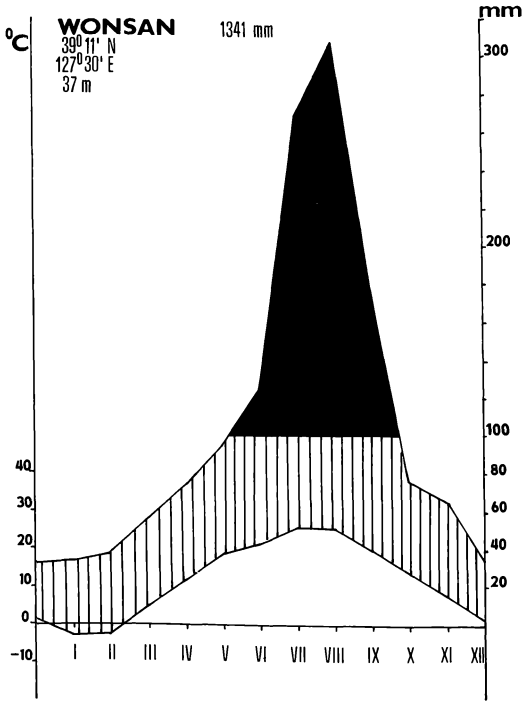

Fig. 1: The climatical diagramme of the climatical station in Wonsan, D.P.R.K.

important are also creeping species as *Lathyrus maritimus*, *Calystegia soldanella* and *Ixeris repens*. The average hight of the stands attains 30 to 40 cm; only *Elymus mollis* overshoots a hight of 1 m. The average number of species (7) is higher than in Japan (5). The stands are found on partly stabilized coastal dunes slightly interferred by man near to a beach.

All coenoses can be classified within the typical subassociation (sensu OHBA et al. 1973); the relevé 4 represents the typical variant and the relevés 1 to 3 belong to the *Lathyrus maritimus* variant.

CAREX PUMILA-COMMUNITY

Carex pumila can be considered a *Caricion kobomugi* character-species (see OHBA et al. 1973: Tab. 15). At Sijun-ho, the species forms a special community floristically resembling the *Ixeridetum repentis* (Tab. 1, rels. 5 and 6)., but still differring in the absence of *Carex kobomugi* and the presence of *Ischaemum anthephoroides* and *Scutellaria stigillosa*. Facies with *Chenopodium acuminatum* (Tab. 1, rel. 5) and with *Lathyrus maritimus* (Tab. 1, rel. 6) are distinguished within the community. The loose stands of the *Carex pumila* community populate moving sand dunes directly on beaches, and are strongly interferred by man (trampling, temporal mowing). The community can be seen as a developmental stage of the *Ixeridetum repentis* in a degradation series.

Like the *Ixeridetum repentis*, the *Carex pumila* community belongs to the *Caricion kobomugi* Ohba, Miyawaki et R.Tx. 1973 (*Glehnietalia littoralis* R.Tx. ex Ohba, Miyawaki et R.Tx. 1973, *Glehnietea littoralis* Ohba, Miyawaki et R.Tx. 1973). The *Glehnietea littoralis* comprise coastal dune grasslands occurring along the Japan Sea, the Pacific coast of Japan and coasts of some islands surrounding the Sea of Okhotsk. It is a member of a group

Tab. 1. The communities of Caricion kobomugi at the locality Sijun-ho /the North Korea/.

Relevé no.	1	2	3	4	P	C_1	C_2	5	6
Exposition	E	E	E	/E/				E	E
Slope ^{o}	10	5-10	10	/5/				10	5-10
Sampled area m^2	8	8	8	25				8	8
Coverage %	80	80	75	60				75	60
Hight of stand	30	30-40	30	30-40				20	20
No of species	8	8	5	7				9	9
Carex kobomugi	4	5	3	4	4^{35}	V_2^{+4}	V_1^{+4}	.	.
Carex pumila	.	.	.	.	.	I^{1}	I^{1}	3	1
Calystegia soldanella	1	1	3	+	4^{+3}	IV^{+2}	IV^{+3}	2a	2b
Glehnia littoralis	+	+	+	1	4^{+1}	IV^{+2}	IV^{+2}	1	+
Ixeris repens	.	+	1	1	3^{+1}	V^{+2}	IV^{+3}	+	2b
Lathyrus maritimus	2a	2m	2m	.	3^{2}	II^{+2}	II^{+3}	2a	3
Elymus mollis	.	.	.	1	1^{1}	V^{+4}	III^{+3}	.	.
Linaria japonica	.	/+/	.	.	1^{+}	I^{1}	III^{+2}	.	.
Chenopodium acuminatum	1	+	.	+	3^{+1}			3	+
Salsola komarovii	+	1	.	+	3^{+1}	I^{+}		.	+
Asparagus schoberioides	.	+	.	.	1^{+}			+	+
Oenothera lamarckiana	r^{o}	.	.	.	1^{r}			.	.
Artemisia capillaris	r	.	.	.	1^{r}		I^{+}	.	.
Ischaemum anthephoroides	.	.	.	.	.		V^{+3}	+	+
Scutellaria strigillosa	.	.	.	.	.			+	.
Artemisia stelleriana						I^{r2}	II^{+1}		
Messerschmidia sibirica						I^{1}	I^{1}		
Festuca rubra						I^{1}			
Rosa rugosa						I^{1}			
Viola senamiensis						I^{1}			
Zoysia macrostachya							II^{1}		
Lactuca indica var. laciniata							I^{+}		

P - Ixeridetum repentis, out table
C_1 - Elymo-Caricetum kobomugi typicum, Japan, Ohba et al. /1973: Tab. 10, rel. 33-48/
C_2 - Elymo-Caricetum kobomugi ischaemetosum, Japan, Ohba et al. /1973: Tab. 10, rel. 49-58/

of vicarying classes comprising the coastal dune vegetation of the world (OHBA et al. 1973: 68-69).

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The authors' addresses:

Dr. Ladislav Mucina, CSc.
Dept. of Geobotany
Institute of Experimental Biology and Ecology of the S.A.S.
Sienkiewiczova 1

CS-814 34 Bratislava

Ing. Jiří Dostálek
Botanical Institute of the C.S.A.S.

CS-252 43 Průhonice u Prahy