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研究论文

山西恒山温带草原与暖温带落叶阔叶林交错区植被生态研究

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摘要 在中国植被分区上，山西恒山是温带草原地带与暖温带落叶阔叶林地带的交错区。采用TWINSPAN分类和DCA排序相结合的方法，对恒山南北坡植被类型进行了比较研究。TWINSPAN分类结果将南北坡的植被分别划分为16个群丛和20个群丛，分别隶属于16个和20个群系。DCA排序较好的印证了其分类结果:DCA排序第一轴反映海拔、温度的变化，南坡植被随海拔的升高，从耐旱的山蒿灌丛向寒温性的针叶林过渡，北坡由旱生的长芒草草原也向寒温性的针叶林过渡; 第二轴反映湿度的变化，排序轴从上到下，南坡由低海拔的山蒿群丛向高海拔的华北落叶松群丛，北坡是由长芒草、碱茅群丛向青杨群丛过渡。DCA排序结果显示，南北坡基带植被的群丛组成迥然不同，南坡基带为山蒿群丛、三裂叶绣线菊-山蒿+赖草群丛、虎榛子-披针叶苔草群丛，是落叶阔叶林破坏后形成的次生植被类型；北坡基带为长芒草群丛、碱茅+千里光群丛、三裂叶绣线菊-硬质早熟禾群丛、山菊+硬质早熟禾群丛，具有典型的草原植被特征，这与它们所处的植被带有较高的吻合度。南北坡随海拔升高，植被类型表现出明显的趋同性。对南北坡群系的比较结果表明：有4个群系为南北坡共有，但群丛数量存在较大的差异，三裂叶绣线菊群系、山蒿群系在南坡的群丛数要比北坡多，披针叶苔草群系在北坡的群丛数要比南坡多，华北落叶松群系分布大致相同。

关键词 恒山南北坡植被；群丛；群系；TWINSPAN；DCA

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Ecological studies of vegetation in the ecotone between temperate grassland and warm-temperate deciduous broad-leaved forest of Hengshan Mountains, Shanxi

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Abstract Hengshan Mts, Shanxi, is located in the ecotone between temperate grassland zone and warm-temperate deciduous broad-leaved forest zone according to the result of China vegetation regionalization. The differences between vegetation types on the south and north slopes of Hengshan Mountains were studied comparatively by using both TWINSPAN and DCA based on the vegetation data set from the field. The result produced by TWINSPAN indicated that the vegetation was divided into 16 and 20 associations, among which Ass. Larix principis-ruprechtii_Dendranthema chanetii, Ass. *Larix principis-ruprechtii_Hippophae rhamnoides subsp.sinensis_Sanguisorba officinalis*, *Ass. Larix principis-ruprechtii_Equisetum ramosissmum*, Ass. *Roegneria kamoji+Sanguisorba alpine*, Ass. *Larix principis-ruprechtii_Potentilla anserine*, Ass. *Larix principis-ruprechtii_Calamagrostis pseudophragmite*, Ass. *Artemisia brachyloba+Dendranthema chanetii*, Ass. *Leymus secalinus+Artemisia brachyloba*, Ass. *Ostryopsis davidiana_Carex lanceolata*, Ass. *Spiraea trilobata_Artemisia brachyloba+Leymus secalinus*, Ass. *Spiraea trilobata_Artemisia brachyloba_Dendranthema chanetii+Dendranthema chanetii*, Ass. *Artemisia brachyloba+Oxyktropis caerulea*, Ass. *Carex lanceolata*, Ass. *Artemisia b*

rachyloba+Artemisia lavandulaefolia, Ass. *Artemisia brachyloba*, and Ass. Artemisia giraldii r +Artemisia brachyloba on the south slope and belonged to 6 formations, moreover, Ass. Stip a bungeana, Ass. Puccinellia distans+Senecioneae sp., Ass. Poa sphondylodes+ Carex lanceolat a, Ass. Senecioneae sp. +Siline jenisseensis, Ass. Sanguisorba alpina+Artemisia lavandulaefoli a, Ass. Siline jenisseensis-*Artemisia lavandulaefolia*, Ass. *Denfranthema zawwadskii+Artem isia lavandulaefolia*, Ass.*Denfranthema zawwadskii+Poa sphondylodes*, Ass. *Populus cath ayana*, Ass. *Carex lanceolata+Anaphalis hancockii*, Ass. Larix principis-*ruprechtii_Poa sph ondylodes*, Ass. *Larix principis-ruprechtii_Carex lanceolata*, Ass. *Larix principis-ruprechtii _Polygonum viviparum*, Ass. *Larix principis-ruprechtii_Equisetum ramosissmum*, Ass. *Lari x principis-ruprechtii_Hippophae rhamnoides subsp.sinensis_Roegneria kamoji*, Ass. *Care x lanceolata+Poa sphondylodes+Sanguisorba alpine*, Ass. *Sanguisorba alpina+Galium ve rum*, Ass. *Artemisia brachyloba+Artemisia lavandulaefolia*, Ass. *Spiraea trilobata_Poa sp hondylodes*, and Ass. *Hippophae rhamnoides subsp. sinensis_Viicia amoena* on the north slo pe belonging to 11 formations.

The result produced by DCA showed that vegetation of the south slope varies from Artemisia br achyloba scrub arid-tolerance to cold-temperature coniferous forest and that of the north slope va ries e.g, Stipa bungeana steppe to cold-temperature coniferous forest along first axis standing fo r elevation and temperature. Down the second axis standing for moisture, south slope varies fro m Ass. Artemisia brachyloba at low elevation to Ass. Larix principis-ruprechtii at high elevatio n, while the north slope varies from Ass. Stipa bungeana and Ass. Puccinellia distans to Ass. Pop ulus cathayana. The result from the ordination suggested some substantial differences concerning v egetation types of both slopes, namely, Ass. Spiraea trilobata, Ass. Spiraea trilobata_Artemisia b rachyloba+Leymus secalinus, and Ass. Ostryopsis davidiana_Carex lanceolata were the seconda ry vegetations after deciduous broad-leaved forest was destroyed in the south slope， while As s. Stipa bungeana, Ass. Puccinellia distans+Senecioneae sp., Ass. Spiraea trilobata_Poa sphondy lodes, and Ass. Denfranthema zawwadskii+Poa sphondylodes in the north slope had characteristi cs typical of steppe vegetation. With the rising of elevation, the vegetation types showed some ho mogeneity.

Compared between vegetation types including Form. Larix principis-ruprechtii, Form. Artemisi a brachyloba, Form. Spiraea trilobata, Form. Ostryopsis davidiana, Form. Hippophae rhamnoi des subsp.sinensis, Form. Carex lanceolata, Form. Stipa bungeana, Form. Senecioneae sp., For m. Poa sphondylodes, Form. Artemisia lavandulaefolia, Form. Populus cathayana, Form. Sangui sorba alpine, and Form. Hippophae rhamnoides subsp. sinensis in the south and north slopes, it s howed that they shared Form. Larix principis-ruprechtii, Form. Artemisia brachyloba, Form. Spir aea trilobata, and Form. Carex lanceolata in both the slopes. However, some obvious differenc e existed in association numbers. The association number of Form. Spiraea trilobata and Form. A rtemisia brachyloba on the south slope were more than those on the north slope, and the associati on number within Form. Carex lanceolata was more on the north slope than on the south, while th e association number of Form. Larix principis-ruprechtii was close on both the slopes. All abov e differences were closely related to different vegetation zones with different collocations of ecolo gical factors on different slopes such as water and temperature.

Key words vegetation； north and south slopes； Hengshan Mountains； associ ation； formation； TWINSPAN； DCA

DOI

本刊中 包含“恒山南北坡植被；群丛；群系；TWINSPAN；DCA”的 相关文章

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