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1. INTRODUCTION

1.1 Historical perspective

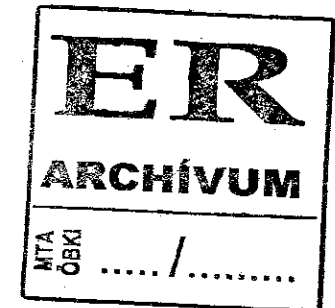
There is a long tradition of organised forest protection in Slovenia. Forest reserves were established between the years 1887 and 1894 in the area of Rog, located in the southern part of Slovenia. By 1973, a network of old-growth forests were protected and excluded from utilisation.

During the 1970s, it became apparent that the existing forest reserve network was not large enough, because it did not cover the range of different Slovenian forest types. At that time, a comprehensive project, aimed at expansion of the forest reserve network, was launched by Professor Mlinšek. The following factors influenced the formation of the reserves network:

1. future long-term research goals, including research on human impacts on ecosystems and its natural ways of regeneration (succession);
2. phytogeographical division of Slovenia;
3. distribution of important forest sites in Slovenia;
4. untouched forest sites and stands, except for special research purposes;
5. size (a minimum area of 20 ha was decided).

As a result of the project, a network of 173 forest reserves, covering all the important Slovenian forest sites, was organised and approved by the government. Also, a database including all important forest sites and reserves was created and published.

By 1995, the forest reserves network had been expanded to include a total of 186 forest reserves, which is approximately 1% of the total forest area (Fig. 1). Together with protective forest, forest with subordinate status, and ecocells, the forest reserves represent an important natural resource.



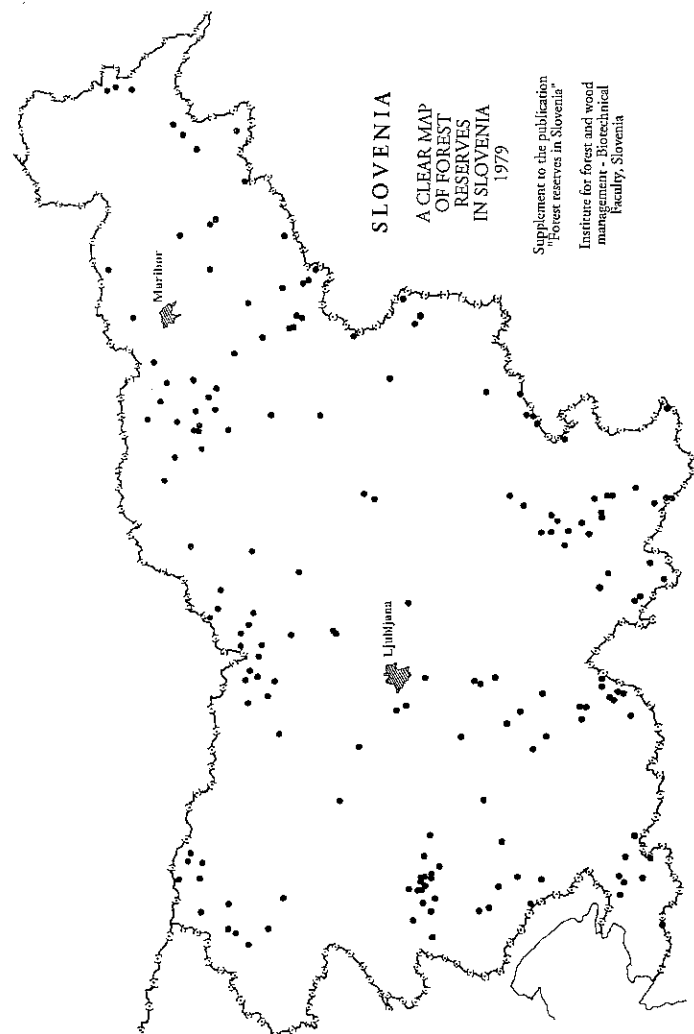


Figure 1. Map of forest reserves in Slovenia.

undisturbed natural systems and provide an important basis for the development of close-to-nature silviculture. The forest reserves in Slovenia have the status of "forest reserves", which means that they are totally secured and protected by State law.

1.2 Ownership

After the conclusion of the recent process of denationalisation, the majority of forest reserves will remain as State property, and for the rest there will be appropriate compensation under the Forest Act.

1.3 The purpose of forest reserves

Forest reserves in Slovenia are intended to serve as areas for research and nature conservation. In addition to the study of undisturbed nature, the research in a broader sense also includes a study of human impact on forest ecosystems, pathways of natural regeneration, and the transfer of new research findings into practice, education and society.

1.4 Research approaches

Forestry research concerning mainly stand structure and stand dynamics was characteristic for the first research period (1882-1950). Full inventory methods were usually applied.

During the second period (1951-1980), long-term research on stands was continued and a new network of permanent sample plots was established. In addition to forestry research, other groups of scientists, including phytocoenologists, zoologists (especially ornithologists) and mycologists, showed considerable interest, although their research was not linked to forestry.

In the third and most recent research period, there is an emphasis on interdisciplinary and comparative research into forest reserves and managed forests on similar

2. APPLYING RESEARCH RESULTS INTO SILVICULTURE

2.1 How does it work?

Transfer of research results into practice is obtained by tight co-operation between research, practice and education. This is primarily achieved through a network of workshops in Slovenia. Workshop preparatory teams always consist of faculty and field foresters.

2.2 What are the results?

- more than a hundred workshops, meetings and conferences
- an increase in the self-education abilities among the forestry staff
- close-to-nature managed multipurpose forest in Slovenia

2.3 Some examples

- integration of natural succession patterns in a conversion strategy of lower forests which are developing on abandoned agricultural land
- research into the structure and dynamics of dead biomass in old growth forests and development of guidance for managed forests
- comparative research into the patterns of natural disturbances and regeneration in old growth and managed forests

3. MOST IMPORTANT ONGOING RESEARCH INSTITUTIONS, RESEARCH GROUPS, PROJECTS

3.1 Research institutions:

I Biotechnical Faculty Department for forestry Unit for Silviculture Vecna pot 83 1000 Ljubljana Slovenia	II Slovenian Forestry Institute Vecna pot 2 1000 Ljubljana Slovenia
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3.2 Research groups:

I/1. Prof. dr. D. Mlinšek Prof. dr. S. Horvat-Marolt Dr. J. Diaci mag. D. Robi mag. A. Boncina M. Debeljak	I/2. Prof. dr. M. Adamic II/1. dr. H. Kraigher
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3.3 Ongoing research projects:

Research group I/1:

- Research into the structure and dynamics of old-growth forests in Slovenia (long-term research).

- Comparative research into the patterns of natural disturbance and regeneration old-growth and close-to-nature managed forests.
- Responses of beech (*Fagus sylvatica* L.) to stress: research on hom characteristic of beech trees and beech stands.
- New growth of virgin forest Pecka: research on the dynamic process w new growth of silver fir (*Abies alba* L.) and beech (*Fagus sylvatica* L.)
- Entropy of forest, particularly entropy of natural (virgin) forest cc research of the flows of entropy, exergy and emergy through the virg ecosystem.

Research group I/2:

- International project about protection of brown bear in Europe with Vienna, Forestry Faculty of the University in Munich.

4. MAINTENANCE OF FOREST RESERVES

Forest reserves are equipped, managed and maintained by the Slovenian Forestry Service and are supervised in co-operation with the Biotechnical Faculty in Ljubljana. Forest reserves, like other forests, are inspected by corresponding inspection services as by the Institute for Nature Conservation of Slovenia (Fig. 2).

Any exploitation, recreation, research and other activities, which would in change the natural situation and influence natural development in the reserves are prohibited in the reserves. In the case of natural disturbances, no intervention

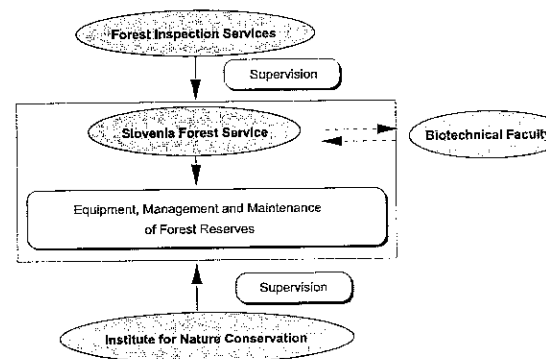


Figure 2. Maintenance of forest reserves in Slovenia.

in the reserves. Each forest reserve is surrounded by a protective zone, the height of which equals at least the height of a mature stand, not less than 30 meters. All the research methods employed must be undestructive. The co-ordination of research work is performed by the Biotechnical Faculty, Chair for Silviculture in Ljubljana.

REFERENCES

- Accetto, M. 1975. Naravna obnova in razvoj doba in beloga gabra v pragozdnem rezervatu "Krakovo". Ljubljana, GozdV, 2, pp. 67-85.
- Anko, B. 1975. Gozdni rezervati - naša biološka dediščina. Ljubljana, GozdV, 33 (1): pp. 1-7.
- Anko, B. 1977. Forest reserves in Slovenia, Yugoslavia. From the Land. Ljubljana, Gozdni rezervati Slovenije, 6, pp. 263-266.
- Anko, B., Mlinšek, D. and Robič, D. 1976. Instructions for formation, equipment and maintenance of forest reservations in Slovenia, Yugoslavia. XVI. IUFRO World congress, Oslo, 24 p.
- Cenčič, L. 1985. Gozdni rezervati Slovenije. Gozdni rezervat Šumik. Strokovna in znanstvena dela 82. Ljubljana. Univ. EK, BF odd. za gozdarstvo, 52 p.
- Diaci, J. 1994a. Razvojna dogajanja v gozdnem rezervatu Mozirska pozganija v četrtem desetletju po požaru. Ljubljana, Zbornik gozdarstva in lesarstva, 45, pp. 5-54.
- Diaci, J. 1994b. Spreminjanje naravne gozdne vegetacije ob višinskem gradientu Veze. Dleskovoške planote v Savinjskih alpah, Zbornik gozdarstva in lesarstva, 44, pp. 45-84.
- Diaci, J. 1995a. Proučevanje zgradbe naravnih gorskih gozdov v Savinjskih alpah, Zbornik gozdarstva in lesarstva, 46, pp. 5-44.
- Diaci, J. 1995b. Application of classification and ordination techniques for identification and analyses of intrinsic natural patterns of vegetation in Savinja Alps, Sammlung von Beiträgen aus der 6. Jahrestagung der Sektion Forstliche Biometrie und Informatik des Deutschen Verbandes Forstlicher Forschungsanstalten, Freising-Weihestephana 8-9 September, 1993, herausgegeben von H.-D. Quednau. Ljubljana, Biotechnische Fakultät, Abteilung für die Forstwirtschaft, 1995. pp. 106-118.
- Diaci, J. 1996. Untersuchungen in slowenischen Totalwaldreservaten am Beispiel des Reservates Pozganija (Brandfläche) in Savinja Alpen. Schweizerische Forstzeitschrift, No.2, 147 p.
- Hartman, T. 1987. Gozdni rezervati Slovenije. Pragozd Rajhenavski Rog. Ljubljana, Strokovna in znanstvena dela 89, Univerza EK, BF odd. za gozdarstvo, 80 p.
- Janežič, V. 1985. Gozdni rezervati Slovenije. Gozdni rezervat Zdroc. Ljubljana, Strokovna in znanstvena dela 85, Univerza EK, BF odd. za gozdarstvo, 69 p.
- Kordiš, F. 1985. Gozdni rezervati Slovenije. Pragoz Bukov vrh. Ljubljana, Strokovna in znanstvena dela 87. Univerza EK, BF odd. za gozdarstvo, 71 p.
- Lebez, L. 1985. Gozdni rezervati Slovenije. Gozdni rezervati Motvarjevci, Zgornje Kobilje, Ginjevec. Ljubljana, Strokovna in znanstvena dela 86, Univerza EK, BF odd. za gozdarstvo, 52 p.
- Lebez, J. 1987. Gozdni rezervati Slovenije. Pragozd Ravna gora. Ljubljana, Strokovna in znanstvena dela 88, Univerza EK, BF odd. za gozdarstvo, 45 p.
- Mlinšek, D. 1967a. Pomlajevanje in nekatere razvojne značilnosti bukovega in jelovega mladja v pragozdu na Rogu. Zbornik BF, 15, pp. 64-79.
- Mlinšek, D. 1967b. Verjüngung und Entwicklung der Dickungen im Tannen-Buchen Urwald "Rog" (Slowenien). München, IUFRO Kongress Referate, Band IV.
- Mlinšek, D. 1972. Snovanje novih gozdnih rezervatov. Ljubljana, GozdV, 2, pp. 33-36 (nem.povz.).
- Mlinšek, D. 1975. O novih gozdnih in pragozdnih rezervatih v Sloveniji. Ljubljana, Spominski zbornik BF, 1975. pp. 77-82.
- Mlinšek, D. 1976. Zur Ausscheidung von neuen Wald- und Urwaldreservaten (am Beispiel von Slowenien). IUFRO-Beitrag, Oslo Kongress Gruppe S1, pp. 1-3.
- Mlinšek, D. 1978. Urwaldreste als Lernbeispiele waldbaulicher Behandlung. Laufen/Salzach. Ab für Naturschutz und Landschaftspflege (ANL). Berichte 2, pp. 67-69.
- Mlinšek, D. 1980. Gozdni rezervati v Sloveniji. Ljubljana, BF-IGLG, 414 s. + priloge
- Mlinšek, D. 1985a. Gozdni rezervati Slovenije. Naraven gozd v Sloveniji. Ljubljana, Strokovna in znanstvena dela 84. Univerza EK, BF odd. za gozdarstvo, 48 p.
- Mlinšek, D. 1985b. Forestry Science and Forests as Nature's Work of Art. Vienna, IUFRO No 48, p. 1.
- Mlinšek, D. 1985c. Future Orientation of Forestry Science and IUFRO. Vienna, IUFRO News, p. 1.
- Mlinšek, D. 1990. The Future of Forest Management Based on Research Results from Virgin Montreal, XIX. IUFRO World Congress. Volume 1, pp. 107-115.
- Mlinšek, D. 1994. Forestry and society-oriented research on the history of virgin forests and the needs. Wageningen, Proceedings of the European Forest Reserves Workshop, pp. 29-33.
- Mlinšek, D. and Cvenkel, J. 1988. Gozdni rezervati Slovenije. Smrekov gozd v Triglavskem parku. Ljubljana, Strokovna in znanstvena dela 100. Univerza EK, BF odd. za gozdarstvo.
- Mrakič, J. and Vomer, B. 1985. Gozdni rezervati Slovenije. Gozdni rezervat Lovrenška jezera. I Strokovna in znanstvena dela 83. Univerza EK, BF odd. za gozdarstvo, 81 p.
- Robič, D. 1989. Gozdni palinološki rezervati - zakaj? Ljubljana, GozdV, 4, pp. 168-171.
- Smolej, I. 1981. Pomen in značilnosti gozdnih rezervatov v Sloveniji. Ljubljana, GozdV, 5, pp.