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Annual report of the Geobotanical Institute ETH (1995)

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1 Introduction

The year 1995 introduced some important changes in the structure and staffing of the Geobotanical Institute. These new developments will certainly guide the direction of the Institute in the following years.

The new assistant professorship for biodiversity was advertised and attracted a wide field of applicants. Eventually, Prof. Dr. Barbara A. Roy (Davis, California) was appointed and she took up her position in February 1996. Prof. Roy is mainly interested in evolutionary ecology and will introduce the latest molecular techniques in this field to the Institute. Prof. Roy gives a concise outline of her research in this issue of the *Bulletin*. To enable her to work at the Institute, the laboratories in Zürichbergstrasse 38 had to be rebuilt. Plans for these building alterations were drawn up in 1995, work started in January 1996, and was completed in April.

Several other staff changes occurred in 1995. Dr. Christiane Jacquat received a prestigious ATHENA-Stipendium of the Swiss National Science Foundation and became a regular member of the Institute where she continues her archaeobotanical research. Dr. Johannes Kollmann and Margot Zahner were appointed as new teaching assistants, and Helen Bailer, Karin Reinhardt and Rose Trachsler as laboratory assistants. The new computing administrator Roger Stupf took over the position from Dr. Hans-Rudolf Binz and has been active in reorganizing the existing computing systems and implementing new facilities (network, WWW, GIS). Sabine von Vivis resigned as the secretary of the

research group at Zollikerstrasse 107; her successor is Claudia Heinze. Susy Dreyer, who has been the secretary of the Institute for 16 years, retired at the end of 1995. We would like to take this opportunity to thank her again for all she has done for the Institute. We will certainly miss her and wish her all the best for this new stage in her life.

The two libraries (Zürichbergstrasse, Zollikerstrasse) maintained the usual exchange and experienced only minor structural changes. Annemarie Tanner has been appointed as a full-time herbarium assistant. One of her priorities is to help establish a new computer catalogue for the mycological collection; this is needed for the project of a Red Data book and an atlas of the Swiss basidiomycetes (supported by BUWAL and Swiss Mycological Society). The mycological collection increased by 1400 new specimens, mainly basidiomycetes. The collection of phanerophytes received c. 900 new specimens, mainly from Tasmania, Canary Islands and Switzerland. The collection of grass endophytes now comprises 376 specimens of which 101 are new; there is a regular exchange with other research groups. This is also true for the unique collection of Lemnaceae which has been now reduced to 350 clones as part of a policy of transferring it gradually to other institutions. The complete collection is now maintained by Dr. Anne-Marie Stomp,
North Carolina State University,
Department of Forestry,
Box 8002, Raleigh, N.C. 27695-8002, USA.

A series of successful grant proposals brought in about 1.5 Million Sfr for new projects of the Institute, including projects supported by the Swiss National Science Foundation, BUWAL and ETH research funds. New agreements about the financial situation of the herbarium were worked out in 1995, and a solution to the current space problem of the group in the Zollikerstrasse 107 is to be expected.

2 Staff of the Institute

2.1 FOUNDATION BOARD

President

Prof. Dr. Hannes FLÜHLER

Vicepresident

Dr. Martin RÜBEL-FUCHS

Secretary

Armin SCHELBERT

Other members of the board

Daniel HUBER-DUMUID

Prof. Dr. Josef NÖSBERGER

Dr. Alexander RÜBEL

Prof. Dr. Franz SCHMITHÜSEN

2.2 STAFF

Director

Prof. Dr. Peter J. EDWARDS

Scientific members of staff (lecturer)*

Dr. Cyrus ABIVARDI

* Dr. Matthias BALTISBERGER

Dr. Alfred BRÜLISAUER

* Prof. Dr. Andreas GIGON

* Heike HOFMANN

* Prof. Dr. Egon HORAK

Gisela HORAT

Dr. Christiane JACQUAT

* Prof. Dr. Frank KLÖTZLI

Dr. Johannes KOLLMANN

Prof. Dr. Elias LANDOLT

Regula LANGENAUER

*Dr. Adrian LEUCHTMANN

Olivier MERMOD

*Dr. Peter RYSER

*Anna-Barbara UTELLI

*Prof. Dr. Krystyna M. URBANSKA

Bettina Scherz VRACKO

Margot ZAHNER

External lecturers

Dr. Hans-Ulrich FREY

Maja HALDEMANN

Dr. Andreas HASLER

Dr. Bertil KRÜSI

Dr. Fredy LEUTERT

Dr. Bernhard MERZ

Dr. Dieter RAMSEIER

PD Dr. Otto WILDI

Doctoral students (lecturer)*

Franziska ANDRES

*Bernhard BEYER

*Markus BICHSEL

Urs BLÖSCH

Andreas BOSSHARD

Gian-Pietro CERLETTI

Ivano CUCCHI

*Yvonne EDWARDS-WIDMER

Marzio FATTORINI

Karl FLEISCHMANN

Daniel FREY

Andreas GRUNDMANN

Sabine GÜSEWELL

Otto HOLZGANG

Jörg IPSEN

Michael KELLER

Kurt KUSSTATSCHER

Gerrit MEIJER

Angelika RAIMANN

Neria ROEMER

Thomas WILHALM

*Markus WILHELM

Diploma students 1995

Gérald ACHERMANN
Agata DE GIORGI
Stephan ERZINGER
Ralph ETTER
Dieter GILLMANN
Martin HERMANN
Jost MATTLI
Rochus SCHERTLER
Lorenzo SONOGNINI
Gian-Reto WALTHER
Urs WEIBEL

Diploma students 1996

Daniel ARN
Silvia ERDT
Florian FREIMOSER
Thomas GLOOR
Mirjam GRAF
Dominik KÄUFERLE
Barbara SCHNEIDER
Marco SOLIVA
Martina WALSER

Computing system administrator

Roger STUPF

Secretaries

Susy DREYER
Claudia HEINZE
Karin LEE
Katharina RENTSCH

Librarians

Liselotte KÖNIG
Ladina PAZELLER

Library assistant

Dr. Marianne JEKER

Laboratory assistants

Helen BAILER
Rose TRACHSLER

Herbarium assistants

Josefine SAXER
Annemarie TANNER

Technical assistants

Anita HEGI
Markus HOFBAUER
Stephan LOCHER
Karin REINHARD

Gardener

Martin FOTSCH

Garden assistants

Zorica EBEID
Raymonde METZGER

Site and building manager

René GRAF

Scientific visitors

Min CAO, Kunming Institute of Ecology,
Chinese Academy of Sciences
(18.9.–31.12.95)

Dr. Hans DEN NIJS, University of Amsterdam
(10.–12.2.95)

Prof. Dr. Dennis DESJARDINS, San Francisco State University
(13.–24.6.95)

Prof. Dr. Fernando ESTEVE, University of Alcala, Madrid
(9.–16.9.95)

Prof. Dr. Gabriele MORENO, University of Alcala, Madrid
(9.–16.9.95)

Dr. Dagmar TRIEBEL, Botanical State Collection, University of München
(15.–17.5.95)

Dr. Kristjan ZOBEL, Institute of Botany & Plant Ecology, University of Tartu
(6.–15.11.95)

Dr. Andrej ZUREK, University of Agriculture Krakow
(30.1.–2.2.1995)

3 Research

3.1 OVERVIEW

The research of the Geobotanical Institute focuses on three main fields – plant ecology, plant systematics and mycology – which are described in detail below.

In February 1995 an internal research conference was organized where all doctoral and diploma students were asked to present their projects and results. This new form of conference proved very successful in stimulating discussion and providing valuable feedback for the research projects. Because of this success it will become an annual event.

3.2 RESEARCH FIELDS

PLANT ECOLOGY

Group 1: Plant ecology and ecosystems

- Ecological stability: concepts and case studies
- Ecosystem processes: nutrient budgets, herbivory and other biotic interactions
- Physiological and ecological characters of plants
- Biodiversity and nature conservation
- Ecosystems on a landscape level and GIS

Group 2: Restoration ecology

- Population processes and their relevance for restoration
- Primary and secondary safe sites above the timberline
- Endophytes and mycorrhiza during restoration projects above the timberline

Group 3: Vegetation science

- Resilience and dynamics of nutrient-poor wetlands
- Patterns and processes of forest communities (e. g. tropical forests)
- Succession on landslides
- Dynamics of tropical savannas

PLANT SYSTEMATICS

- Speciation in complex genera (e. g. *Ranunculus*, *Erigeron*)
- Microevolution and genetic adaptation in a changing environment
- Monographic revision of the Lemnaceae

MYCOLOGY

- Plants and fungi (ectomycorrhiza, saprophytes) in various habitats of the northern and southern hemisphere
- Biodiversity and population biology of *Epichloë* and *Acremonium* grass endophytes
- Sexual systems of *Epichloë* species in the context of the evolution of symbioses between grasses and endophytes

ARCHAEOBOTANY

- Investigations of fossil plants in archaeological excavations

3.3 NEW RESEARCH PROJECTS 1995

(title, source of grants, authors)

- Invasion of reed (*Phragmites communis*) in litter meadows on lake shores in the Swiss lowlands. Federal Office of Environment, Forests and Landscape (BUWAL). S. GÜSEWELL, A. BRÜLISAUER; F. KLÖTZLI.
- The importance of seed source in Buntbrachen. Federal Institute of Agroecology and Agriculture Zürich. M. KELLER; P.J. EDWARDS.
- Ecological and evolutionary significance of sexual reproduction vs. seed-transmission of the *Epichloë* endophyte of *Brachypodium sylvaticum*. ETH research grant. G. MEIJER; A. LEUCHTMANN.
- Forest-savanna transitions in SE-Rwanda. Federal Office of Foreign Affairs. U. BLOESCH; F. KLÖTZLI.
- Archaeobotanical investigations of the late neolithic settlement Saint-Blaise Bain

des Dames (NE): environment and human activities. Office of Education and Culture, Canton Neuchâtel. O. MERMOD; C. JACQUAT.

- Ecological significance of plant tissue structure on biomass turnover. Swiss National Science Foundation. P. RYSER.
- Effects of ecological compensation sites on spatial patterns of abundance, food supply and breeding of the skylark (*Alauda arvensis*). Sandoz grant. U. WEIBEL; P. J. EDWARDS, M. JENNY and N. ZBINDEN.

4 List of publications 1995

4.1 VERÖFFENTLICHUNGEN DES GEOBOTANISCHEN INSTITUTES ETH, STIFTUNG RÜBEL, ZÜRICH, 1995

Volume 124

Keel, A. Vegetationskundlich-ökologische Untersuchungen und Bewirtschaftungsexperimente in Halbtrockenwiesen (Mesobromion) auf dem Schaffhauser Randen.

Volume 125

Lindacher, R. PHANART-Datenbank der Gefäßpflanzen Mitteleuropas. Erklärung der Kennzahlen, Aufbau und Inhalt.

Volume 126a

Frey, H.-U. Waldgesellschaften und Waldstandorte im St. Galler Berggebiet.

Volume 126b

Frey H.-U. Karten- und Tabellenband zu Heft 126a.

4.2 BERICHTE DES GEOBOTANISCHEN INSTITUTES ETH, STIFTUNG RÜBEL, ZÜRICH, 61

Edwards, P.J. Ökologie als Werkzeug. 50–69.

4.3 FURTHER PUBLICATIONS

A Monographs

Adam, M. (1995) *Die Übergangszone von Buchen- und Fichtenwald in den nördlichen Kalkalpen – klimatische, edaphische und vege-*

tationskundliche Aspekte. Dissertationes Botanicae, **255**, J. Cramer, Berlin.

Gamundí, I. & Horak, E. (1995) *Fungi of the Andean-Patagonian Forests*. (eds. V. Mazzini), Buenos Aires.

Petrini, O. & Horak, E. (1995) *Taxonomic Monographs of Agaricales*. Bibliotheca Mycologica, **159**, J. Cramer, Berlin.

Urbanska, K.M. & Grodzinska, K. (1995) *Restoration Ecology in Europe*. Geobotanical Institute SFIT, Zürich.

B Publications in scientific journals

Aas, G., Maier, J., Baltisberger, M. & Metzger, S. (1994) Morphology, isozyme variation, cytology, and reproduction of hybrids between *Sorbus aria* (L.) Crantz and *S. torminalis* (L.) Crantz. *Botanica Helvetica*, **104**, 195–214.

Abivardi, C. & Benz, G. (1995) Effect of bisabolangelone on development of *Cydia pomonella* larvae and oviposition of the females. *Entomologia Experimentalis et Applicata*, **75**, 193–201.

Angold, P.G., Gurnell, A.M. & Edwards, P.J. (1995) Information from river-corridor surveys. *Water and Environmental Management*, **9**, 489–498.

Baltisberger, M. & Baltisberger, E. (1995) Cytological data of Albanian plants. *Candollea*, **50**, 457–493.

Barker, A.M., Wratten, S.D. & Edwards, P.J. (1995) Wound-induced changes in tomato leaves and their effects on the feeding patterns of larval lepidoptera. *Oecologia*, **101**, 251–257.

Benech Arnold, R.L., Fenner, M. & Edwards, P.J. (1995) Influence of potassium nutrition on germinability, abscisic acid content and sensitivity of the embryo to abscisic acid in developing seeds of *Sorghum bicolor* (L.) Moench. *New Phytologist*, **130**, 207–216.

Crawford, D.J. & Landolt, E. (1995) Allozyme divergence among species of *Wolffia* (Lemnaceae). *Plant Systematics and Evolution*, **197**, 59–70.

Edwards, P.J. (1995) Ecological progress to meet the challenge of environmental change. *Trends in Ecology and Evolution*, **10**, 261.

Gurnell, A.M., Simmons, D. & Edwards, P.J. (1995) Integrating river corridor environment information through multivariate ecological

- analysis and geographic information systems. *The Ecological Basis for River Management* (eds. D.M. Harper & A.J.D. Ferguson), pp. 251–273. Wiley, Chichester.
- Hanley, M. E., Fenner, M. & Edwards, P.J. (1995) An experimental field study of the effects of mollusc grazing on seedling recruitment and survival in grassland. *Journal of Ecology*, **83**, 621–628.
- Hanley, M. E., Fenner, M. & Edwards, P.J. (1995) The effect of seedling age on the likelihood of herbivory by the slug *Deroceras reticulatum*. *Functional Ecology*, **9**, 754–759.
- Hengeveld, R., Edwards, P.J. & Duffield, S.J. (1995) Characterization of biodiversity: biodiversity from an ecological perspective. *Global Biodiversity Assessment*. (ed. V.H. Heywood). UNEP. pp. 88–106. Cambridge University Press, Cambridge.
- Horak, E. (1995) *Cortinarius* Fr. (Agaricales) in Australasia. 2. Subgen. *Myxacium* in Papua New Guinea. *Sydowia Beihefte*, **10**, 101–126.
- Huber, W. (1995) Typification of *Erigeron glabratu* (Asteraceae). *Taxon*, **44**, 87–89.
- Huber, W. & Nilsson, Ö. (1995) Close genetic affinity of Northern and other Eurasian *Erigeron* species. *Advances in Compositae Systematics* (eds. D.L.N. Hind, C. Jeffrey & G.V. Pope), pp. 197–222. Royal Botanic Gardens, Kew.
- Klötzli, F. (1995) Giving the power of nature an adaptive hand of culture. *Culture within Nature* (eds. B. Sitter-Liver & B. Sitter-Liver), pp. 37–39. Swiss Academy of Humanities and Social Sciences. UNESCO.
- Klötzli, F. (1995) Synsystematics for the scientist or for the practitioner? *Annali di Botanica*, **53**, 143–144.
- Klötzli, F. (1995) Projected and chaotic changes in forest and grassland communities. – Preliminary notes and theses. *Annali di Botanica*, **53**, 137–146.
- Klötzli, F., Lupi, C., Meyer, M. & Zysset S. (1995) Veränderungen in Küstensavannen Tanzanias. Ein Vergleich der Zustände 1975, 1979 und 1992. *Verhandlungen Gesellschaft für Ökologie*, **24**, 55–65.
- Klötzli, F. & Zarzycki, K. (1995) West and south-east deciduous and deciduous-conifer mixed forests of the lowlands. *Vegetation Sciences in Forestry* (eds. E. Box *et al.*), pp. 211–254. Handbook of Vegetation Science **12**, Kluwer Academic Publications, Dordrecht.
- Klötzli, F. & Zielinska, J. (1995) Zur innern und äusseren Dynamik eines Feuchtwiesenskomplexes am Beispiel der “Stillen Rüss” im Kt. Aargau. *Schriftenreihe für Vegetationskunde*, **27**.
- Kollmann, J. (1995) Regeneration window for fleshy-fruited plants during scrub development on abandoned grassland. *Écoscience*, **2**, 213–222.
- Kollmann, J., Nobis, M., Bogenrieder, A. & Böhm, R. (1995) Feinanalytische Untersuchungen zum Vegetationsmosaik zweier subalpiner Buckelweiden. *Carolinea*, **53**, 113–123.
- Kollmann, J. & Pirl, M. (1995) Spatial pattern of seed rain of fleshy-fruited plants in a scrubland-grassland transition. *Acta Oecologica*, **16**, 313–329.
- Kollmann, J. & Staub, F. (1995) Entwicklung von Magerrasen im Kaiserstuhl nach Entbuschung. *Zeitschrift für Ökologie und Naturschutz*, **4**, 87–103.
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- Maas Geesteranus, R.A. & Horak, E. (1995) *Mycena* and related genera from Papua New Guinea and New Caledonia. *Taxonomic Monographs of Agaricales* (eds. O. Petrini & E. Horak) *Bibliotheca Mycologica*, **159**, 143–229. J. Cramer, Berlin.
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- Ryser, P. & Lambers, H. (1995) Root and leaf attributes accounting for the performance of fast- and slow-growing grasses at different nutrient supply. *Plant and Soil*, **170**, 251–265.
- Ryser, P., Langenauer, R. & Gigon, A. (1995) Species richness and vegetation structure in a limestone grassland after 15 years management with six biomass removal regimes. *Folia Geobotanica & Phytotaxonomica*, **30**, 157–167.

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- Wolff, P. & Landolt, E. (1994) Spread of *Lemna turionifera* (Lemnaceae), the red duckweed, in Poland. *Fragmentae Florae Geobotanicae*, **39**, 439–451.

C Unpublished reports

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