

FRIEDRICH EHRENDORFER 70 – a life of pioneering devotion to botany and biosystematics*

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Biosystematics is on the one hand an experimental science, and on the other essentially a theoretical and synthetic one. A good biosystematist knows how to embrace both. In a highly specialized scientific world abounding in data and hypotheses there is need for great minds capable of absorbing and working with this vast information. In both these respects, F. EHRENDORFER's merits are justly famous throughout the whole botanical world; he is a laudatory example for all of us.

Professor EHRENDORFER represents the splendid synthesis of floristics and classical taxonomy (one of his teachers being KARL HEINZ RECHINGER), meticulous karyology (another important teacher was LOTHAR GEITLER who pioneered chromosomal and cyanobacterial research) and evolutionary research (strongly stimulated and encouraged by the Californian school of new and experimental systematics comprising E. ANDERSON, J. CLAUSEN, D. D. KECK, W. M. HIESEY, and G. L. STEBBINS). FRIEDRICH EHRENDORFER was the most outstanding proponent in establishing the "New Systematics" in Central Europe. This was an essentially new approach which tried to link cytogenetics, evolutionary research, and phylogenetics. FRIEDRICH EHRENDORFER succeeded in convincing his botany colleagues from the "physiological hemisphere" that taxonomy is not out-dated but an active, fascinating and indispensable component (or even central core) of plant science. His untiring advocacy for "experimental taxonomy" has proven fruitful for gaining new respect for this classical biological discipline. Thirty years later, he now shows us how to cope with the next and probably much further reaching revolutionary challenge in taxonomy – how to cope with macromolecular data in order to understand phylogeny and improving the classification of the angiosperms.

EHRENDORFER's incredible capacity of taking up and integrating information, combined with his enthusiastic spirit for intellectual adventure enabled him to inspire students and colleagues (sometimes to their exhaustion!) and to initiate

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several innovative major research projects, e.g., chemosystematics, the Floristic Mapping of Central Europe and also the re-establishment of scientific mycology at the University of Vienna. In scientific ideas he has been engaged in the successful reconciliation of biotaxonomy and ecology (particularly phytosociology: e.g., E.¹ 1954). “FRITZ” – as his friends all over the world like to call him respectfully – is always ready to support, to initiate, even to provoke discussion between different and increasingly divergent branches of our science. He tries to construct bridges, to promote and to encourage dialogue between the different fields of research, between systematics on the one hand and physiology, morphology, ultrastructural research, genetics, ecology, and molecular botany, i.e. phytochemistry and DNA research, on the other hand.

FRIEDRICH EHRENDORFER was born and grew up in Vienna and has been interested in botany since childhood. He acquired his Ph.D. in 1949 at the University of Vienna in the fields of botany and palaeobotany with his thesis on the karyosystematics of *Galium* (E. 1949), obtained positions there as research assistant under L. GEITLER and at the Natural History Museum in Vienna (herbarium W) under K. H. RECHINGER. He spent some time as a Fulbright scholar in the USA, investigating phylogenetics and evolutionary processes in *Rubiaceae* (e.g., E. 1956, 1961c, 1962c) and *Achillea*. His habilitation (venia docendi) was conferred at the University of Vienna in 1955 (on variation, population biology, polyploidy, ecology, and evolution of *Galium* sect. *Leptogalium* in the meadows of the Viennese Woods: E. 1953b).

Besides studies on *Rubiaceae* (e.g., E. 1951, 1953 b, c, 1955, 1958 a–d, 1959 f), *Asteraceae-Anthemideae* (E. 1953 a, 1957) and, later on, *Dipsacaceae* (E. 1964b, c, 1981), EHRENDORFER has been a very active teacher at the University of Vienna and also at the renowned adult education centre “Urania” It was here, at Urania, that I, a young gymnasium student, first met him, then I was caught by the scientific enthusiasm and the profound knowledge of Dozent Dr EHRENDORFER, exemplified also by his lectures illustrated by excellent colour slides on the flora of Austria. In his classes there on modern biology, he taught us new concepts of plant evolution through palaeobotany and especially amazing new discoveries in electron microscopy, karyology and the beginnings of understanding the molecular bases of inheritance, a branch of study which was at its very first roots in those far off days.

FRIEDRICH EHRENDORFER guided botanical excursions in the extremely various biotopes around Vienna for both university students as well as for biology school teachers willing to increase their knowledge and widen their horizons. These trips ranged from mountain forests to Pannonian steppes, from the arable plains and the Danube riverside up to the summits of the nearby Eastern Alps. As a keen field botanist, he amazed and stupefied his pupils with his vast knowledge, his love for the hidden and inconspicuous yet significant details, always combined with his strong understanding of the great affinities, the mutual relationships, the pertinent evolutionary aspects between the floristic elements, their adaptational structure, ecological environment, evolutionary rôle and the history of the flora as a whole as well as the entire ecosystem. For a disciple of EHRENDORFER, there are no individual separate scientific disciplines as floristics, ecology, ecophysiology, karyology,

¹ E. = EHRENDORFER, see bibliography.

biotaxonomy, and phytogeography, and as pedology, geology, geography, and as mycology, lichenology, bryology or the study of vascular plants. Our master usually managed to convince us on the manifold and intimate interrelationships of all those aspects of the plant world, be it extant or extinct.

In the early sixties, in addition to several specialized papers on microevolutionary mechanisms, the macroevolution of angiosperms, and biotaxonomy, karyology, and phylogeny of *Achillea* (e.g., E. 1959a–d, g, 1960a, 1961a, b), *Artemisia* (E. 1964a) and *Knautia* (1962a), F. EHRENDORFER published three important and influential works. The first one concerned the impact of cytology towards an understanding of the shaping of Central European vegetation and flora (E. 1962b), treating relations between vegetation types (climax vs. communities on extreme habitats, natural vs. man-made vegetation) and evolutionary categories (e.g., wide-spread polyploid vs. relictual diploid taxa). The second, and most important, work was a comprehensive survey and synthesis of karyology and cytogenetics in biotaxonomy with an explanation of principles governing microevolution of seed-plants (E. 1963c), highlighting hybridization and polyploidization and differentiation-hybridization cycles as major factors of evolution (E. 1959g). The third work is the initiation, together with U. HAMANN (Berlin), of the Mapping Project of the Central-European Vascular Flora (E. & HAMANN 1965), which resulted in the “Liste der Gefäßpflanzen Mitteleuropas” (Checklist of Vascular Plants of Central Europe; E. 1967b, 1973b), being a first step towards a distribution atlas.

It must be emphasized that EHRENDORFER’s biosystematic contributions opened important new pathways in biotaxonomy by combining careful traditional analyses with cytogeographical, phylogenetic and evolutionary perspectives, e.g., E. 1958b (on the *Galium anisophyllum* complex) and 1962a (*Knautia* sect. *Trichera*). His characteristic and comprehensive views extend, in several respects, the ideas of the ecologist R. SCHARFETTER (1953) who tried to synthesize ecology and evolutionary systematics using mainly growth form characters, albeit not shrinking occasionally from visionary concepts.

In 1965, F. EHRENDORFER was appointed Full Professor of Systematic Botany and head of the Botanical Institute and director of the Botanical Garden at the University of Graz (Styria) succeeding F. J. WIDDER. In 1970, he was appointed the equivalent position at the University of Vienna as the successor of L. GEITLER. The period spent at Graz and his following stay at Vienna were very fruitful, for botany, the students and for both institutes.

A new line of study was started by EHRENDORFER in the late sixties: karyotaxonomic research on the presumably ancient and primitive tropical woody angiosperm families (e.g., E. & al. 1968, E. 1970c, E. & al. 1979, E. 1982, 1986, SAUER & E. 1970, E. 1989b). Together with his interests and expert knowledge in macroevolution, origin of angiosperms and palaeobotanical evidence, this gave rise to a large field of useful, promising and novel research activities which were followed by several of his students. Additional topics carried out in continuation of former studies were general evolutionary mechanisms and patterns (e.g., E. 1962d, 1970a, 1976a, 1982), biological relevance of polyploidy (e.g., E. 1980a), DNA differentiation in relation to systematics and evolution (e.g., E. 1983c), the early differentiation of angiosperms (e.g., E. 1976a, 1977, E. & al. 1979; see also WEBER

1992), macrosystematics of angiosperms (e.g., E. 1973a, 1976d, 1983a, 1986, 1989a, E. & DAHLGREN 1983), and general aspects of seed plant biotaxonomy, evolution, and species concepts (e.g., E. 1970b, 1976c, 1984a, b, 1988b).

During all these years EHRENDORFER never abandoned his first loves, i.e. the *Rubiaceae* (e.g., E. 1971b, 1975) and the *Anthemideae* (e.g., MITSUOKA & E. 1972; NAGL & E. 1974; SCHWEIZER & E. 1976; VETTER, LAMBROU, FRANZ & E. 1996). Together with collaborators he produced accounts of these groups for several standard Floras, e.g., of Europe (E. 1976b), Iraq (E. & SCHÖNBECK-TEMESY 1980), and of Turkey (E. & SCHÖNBECK-TEMESY 1982). He discovered and described many new species and subspecies, of course. During the latter years, however, also in collaboration with disciples and colleagues, he was and is occupied in continuing those "classical" studies by reshaping systematics and phylogenetic hypotheses now based on isozyme (SAMUEL, PINSKER & E. 1990; E. & al. 1996) and DNA data (MANEN, NATALI & E. 1994; NATALI, MANEN & E. 1995; SAMUEL, BACHMAIR, JOBST & E. 1997).

The broad range of EHRENDORFER's floristic and taxonomic interests is also worth mentioning. Distinguished by his vast floristic knowledge, he is often regarded by his colleagues as a kind of "global plant determinator". – The range of his taxonomic study objects is also considerably large (e.g., *Olea*: E. 1960 b; *Euphrasia*: E. & VITEK 1984; *Carlina*: MEUSEL, KÄSTNER, VITEK, WERNER & E. 1994; *Anemoninae*: E. 1995; *Quercus*: SAMUEL, PINSKER & E. 1995, and SAMUEL, BACHMAIR, JOBST & E. 1997; *Cerastium*: BOŞCAIU & E. 1996) as also reflected by his students' activities (see p. 10). – He also carried out a number of studies on Mediterranean taxa, particularly on those showing connections with Central Europe based on cytotaxonomical evidence (e.g., E. 1970b).

Some other topics characteristic of EHRENDORFER's comprehensive views include carpo-ecology (E. 1965a, 1983d, E. & al. 1980), and ecology. A deep interest in the ecological aspects of evolution (E. 1959e, 1962b, 1963a, 1965a, 1968, 1972a, c, e) and evolutionary chorology (phytogeography) reflected in several papers (e.g., E. & HAMANN 1965, E. & NIKLFELD 1967, E. 1970b, 1979, 1980b, 1983d, 1988a, MEUSEL & E. 1987), prompted him to encourage some of his students to treat phytocoenology differently from the classical BRAUN-BLANQUET approach. Starting with an early critical essay comparing the principles of taxonomic systematics with coenological synsystematics (E. 1954), influenced by the ideas of the ingenious Austrian botanist H. GAMS, EHRENDORFER feels that the intriguing links between taxa and biocoenoses are still neglected because they tend to disappear between two diverse botanical disciplines. Therefore, he initiated studies on various aspects, e.g., on dynamics of alpine vegetation, comparative investigations on chorological and carpo-ecological spectra and different evolutionary patterns for different biocoenoses. EHRENDORFER pleads for considering growth form in systematics, corroborated by the analyses performed by the school of H. MEUSEL, Halle/S. and resulting in close contacts to him.

FRIEDRICH EHRENDORFER is a courageous taxonomist who follows the principle that "the more difficult and delicate the problem, the more fascinating and more challenging the approach" So, he was not afraid to tackle the microtaxonomy of orchids, the "playground" of jealous amateurs. He cooperated effectively and tactfully with keen, excellent and knowledgeable amateur orchidologists high-

lighting several scientific and important aspects of speciation in *Ophrys* hybrids (DANESCH, O., DANESCH, E., E. & EHRENDORFER, K., 1975; VÖTH & E. 1976; E. 1980c).

Professor EHRENDORFER always strongly campaigns for multidisciplinary approaches in taxonomy (theoretically being a matter-of-course because implied by the definition of biotaxonomy), encouraging the use of “modern” methods: palynology (HESSE, MORAWETZ & E. 1985; HESSE & E. 1990), cytology, especially karyology (NAGL & E. 1974; GREILHUBER & E. 1975, 1988; SCHWEIZER & E. 1976; NAGL, HEMLEBEN & E. 1979; E. 1988; MOSCONE, LAMBROU & E. 1996; VETTER, LAMBROU, FRANZ & E. 1996), chemotaxonomy (SILVA, GOTTLIEB & E. 1988; E. 1988a), isozymes (SAMUEL, PINSKER & E. 1990, 1995; E. & al. 1996), DNA (MANEN, NATALI & E. 1994; NATALI, MANEN & E. 1995; SAMUEL, BACHMAIR, JOBST & E. 1997), including biometrical and numerical systematics. However, he never would neglect fundamental and traditional methods like embryology, palaeobotany, “classical” chromosome counts, morphology and careful examination of herbarium material.

EHRENDORFER’s affection for plant-life is not restricted to higher plants. As a young research assistant he had made notable mycological excursions in the forests near Vienna and in Lower Austria. Later, as professor, he initiated and promoted various cryptogamic studies (e.g., E. & al. 1971, E. 1985).

We owe to F. EHRENDORFER many inspiring debates, neither would he become tired, nor annoyed or fed up if you argue with him on cladistics, numerical taxonomy, methodological problems and the aims and ends of systematics and taxonomy. He is always able to combine skilfully seemingly controversial aspects – quite adequate to the theoretical task of the systematist to achieve syntheses. Science means discussion. EHRENDORFER is a master of discussion and of summary statements (e.g., E. 1976e, 1983a, d). He would always refuse a one-sided or apodictic approach. His colleagues admire – and sometimes are intimidated by – his enormous knowledge of literature, his awareness of problems, his understanding of divergent viewpoints, ranging from traditional intuitive taxonomy (“systematic tact” as – I think – CHARLES DARWIN put it) to his very strong appreciation of up-to-date methods. His enthusiasm for the most modern techniques, for “exact and experimental” data and their use in systematics, however, is not at conflict with his high regard for creativity and intuition. He, himself, is able to bridge both aspects, so that he is – as one of his renowned and famous older colleagues, a great, outstanding classical taxonomist had stated – also an intuitive biosystematist!

It is well known that F. EHRENDORFER organized, participated in and contributed to numerous international symposia, dealing with systematics and evolution in a broad sense, often linking systematics and other disciplines such as ecology, floristics, phytogeography, genetics, morphogenesis, palaeobotany, nature conservancy (e.g., E. 1968, 1970a, b, 1971b, 1973a, 1976c–e, 1979, 1982, 1983a, d, 1986, 1989b).

EHRENDORFER’s synthetic approach resulted (besides bibliographic works like E. & al. 1975), in the compilation and critical evaluation of pertinent new papers for the biennial chapter on “Systematics and Evolution of Seed Plants” in the reputable annual review “Fortschritte der Botanik” (since 1974 “Progress in Botany”) covering the years from 1963 to 1970 (E. 1965b, 1967a, 1969, E. &

FISCHER 1971). Of even more important and far-reaching effect, he wrote the chapters on genetics and evolution, on taxonomy of higher plants, and on geobotany in the well-known "Strasburger" botany textbook since the 30th edition (E. 1971a, 1978, 1983b, 1991). He is presently preparing the 34th edition which will, very daringly, incorporate the new DNA data into the classification system of the angiosperms, which (hopefully) will evoke serious and positive discussions on the aims and possibilities (limitations?) of macrotaxonomy (and sense and nonsense in a phylogenetically based but still one-dimensional plant system).

Within the field of popular science and advanced training of biology teachers, the publication of a four-volume standard work, the "Natural History of Vienna" was remarkable (STARMÜHLNER & E. 1970–1974). Several of the botanical and ecological contributions were written by EHRENDORFER. Together with E. HÜBL and H. NIKLFELD, a numerical ecological evaluation for each species in the Vienna region was established, one of the first of its kind (E. 1972b, d, E. & al. 1972a, b).

University teaching has been modernized by F. EHRENDORFER in a number of important respects. He was the first biology professor in Austria to make molecular biology necessary in the curriculum of elementary students. In the late sixties into the seventies no institutes or departments for genetics and microbiology existed at the universities of Graz or Vienna. In his university lectures and examinations he also maintained high standards. Some of the elementary students did not fully understand or estimate this in their early days: they feared his severe insistence on intellectual commitment, they were rather afraid and even terrified of his name.

Considering F. EHRENDORFER's human qualities, all colleagues and collaborators who know him well, appreciate his exemplary open and honest attitude in all arguments, be it scientific or when dealing with administrative matters, e.g., in his position as head of the institute. He would treat each case objectively without any personal bias and with a strictly rational and scientific approach. He would listen carefully to your argument which he expects to be stated clearly. It may seem unusual but he is not angered by an aggressive attitude on your part but respects and appreciates your firm stand. His reply would be frank but often phrased in a persuasive or fervent manner – however, there is no reason to be intimidated by this. He would always separate his "scientific emotions" clearly from his private feelings. Few have ever seen him to be irritated, annoyed or offended by controversial discussion; he does not bear resentment and would always find a fair and acceptable compromise for all involved.

Although never underestimating the value of intellectual power and the progress of science, he deeply believes in the necessity of a modest attitude to human possibilities and of responsibility towards mankind.

Excursions continued to be an important part of prof. EHRENDORFER's activities. Often together with his collaborators and students, he explored various places on earth. For many years he made introductory excursions to the Austrian (Central European, Pannonian, Alpine) and Mediterranean regions for students. Later, he continued with tropical countries with the admonition: "If you never have experienced a tropical region you have no idea what plant life means!"

A genuine botanist in the field is like a fish in water, and an enthusiastic one will also be an ardent collector and skilful photographer. EHRENDORFER knows most parts of the world's biosphere, and in his slide collection you can find almost any

panorama and species – and all kinds of architecture. Accompanying him in the field is a heavy task—but definitely a wonderful, challenging and exciting experience.

Professor EHRENDORFER's administrative accomplishments also need to be mentioned. As Director of the Institute of Botany at the University of Vienna (1970–1991), he fought hard for enlarging the institute building at Rennweg. It was a big challenge (an adequate one for a man like EHRENDORFER) and, although a difficult, troublesome and nerve-racking task, imperturbable F. E. finally won the battle which had started in 1971. It ended with the solemn formal opening of the enlarged and renovated building in 1992 (MORAWETZ 1992, E. 1992). This occasion coincided with the celebration of EHRENDORFER's 65th birthday (FISCHER 1992, WEBER 1992)!

Much more essential and significant than acquiring space for the researchers of the Institute and their activities was the successful broadening of overall research within the building. Thus, the degree of intellectual “biodiversity” that materialized in our institute rapidly became almost unique when compared with analogous other institutes. At the Rennweg (representing half the botany of the University of Vienna) we now find small but viable departments for Systematics and Evolution of Higher Plants, Morphology, Cytology and Genetics, Plant Chorology and Vegetation Science, Ultrastructure Research and Electron Microscopy, Systematic Karyology and Embryology, Comparative and Ecological Phytochemistry, and Cryptogamic Research; further units are the Herbarium (WU), the Botanical Garden (HBV) and the Library.

Today, we might take for granted that our institute had always been situated next to the Botanical Garden. In fact it was not so. EHRENDORFER had to decide whether our institute should move to the biology centre or remain with the Botanical Garden. The decision had not been easy, for each placement had its pros and cons but eventually it turned out to be the right choice. Despite the highly divergent scientific disciplines, we feel like a family unit. We owe this to the director, EHRENDORFER, for he never favoured a particular person or department but treated all impartially being interested only in the progress of research regardless of personal conduct. To have assured comparatively peaceful development, harmony and fruitful cooperation between all these research units is one of the major accomplishments and lasting merits of F. EHRENDORFER.

In 1974, F. EHRENDORFER succeeded professor GEITLER as the editor of *Österreichische Botanische Zeitschrift*, the traditional journal (since 1851) of Austrian botany. Believing this journal should be internationalized to maintain its standards, F. EHRENDORFER, as from vol. 122, changed the title to “Plant Systematics and Evolution”, specializing in systematics in the broadest sense and adopting English as the prevalent language. As a result, this journal not only has survived and maintained its standards, but has also increased its reputation. As EHRENDORFER's collaborator in editing *Plant Systematics and Evolution* for a long period, I would like to add that he always did more than an editor is required to do. Instead of simply rejecting a bad manuscript, he would try to find one good idea or some valuable data in it and extract this and propose to discard the rest. He would carefully foster that tiny viable fragment by completing and supplementing it to put into words what the author subconsciously intended to express. He would return

the manuscript for revision proposing that the author proceeds along the editor's guide-lines, providing him with generous and paternal advice and, after having repeated this lengthy procedure several times, at last the author would achieve a "slightly" transformed manuscript suitable for publication.

In 1975, F. EHRENDORFER became a full member of the Austrian Academy of Sciences – a special honour in Austria. In this position he actively supports and manages biological research and enhances international cooperation, mainly in the fields of biodiversity (including systematics) and ecology. He acts as coordinator of the "Man and Biosphere" programmes and is the chairman of the "Commission for Interdisciplinary Ecological Studies". He promotes long-term projects such as "Catalogus Florae Austriae" (editing the Lower Plants and Fungi volumes: E. 1985), the Flora of Austria project, tropical botany, etc.

It is no surprise that F. EHRENDORFER has been given several additional distinctions including membership of the Deutsche Akademie der Naturforscher Leopoldina and nomination to Foreign Honorary Member of the American Academy of Arts and Sciences; he has also been awarded the Gold Medal of the City of Vienna.

In 1995, after 30 years of "official" service to the universities of Graz and Vienna in leading positions as head of the Department for Systematics and Evolution of Higher Plants and for 20 years as head of the whole Institute of Botany of the University of Vienna, FRIEDRICH EHRENDORFER retired from professorship and from directorship of the Botanical Garden. We are extremely fortunate that this does not mean that he will retire from teaching or scientific research or research administration. He still provides inspiring and stimulating lectures on current topics – passionate as ever and often more heavily committed than some of us younger colleagues. He is presently working on a synthesis of complexes of adaptive and evolutionary parameters that control differentiation of the higher plants through time and space.

For a dedicated botanist, as for any scientist, the job is, of course, identical with the hobby. This does not mean, however, that our celebrant has no other activities in his spare time. His most notable one is art history, particularly of architecture and medieval sculpture, and the study of the development of the ancient advanced civilizations of the world. He is attracted by evolutionary aspects of the gradual, multidimensionally determined development of cultural activities of mankind in space and time, be it religion, art or science. On his travels he takes time off to visit churches, mosques, sanctuaries of different religions, archaeological excavations and art museums of all types. We cannot imagine him being exhausted or tired of field and herbarium work, just as he never would succumb to fatigue in learning, discussing, teaching, listening to lectures, and observing, collecting, and photographing plants in their native habitats or works of art in churches and museums.

Many of EHRENDORFER's students (strictly speaking: those who were supervised by him for their degree) became productive members of the botanical community, and several obtained prestigious positions. University research botanists (professors and docents) are D. FÜRNRANZ (biotaxonomy and carpo-ecology; Salzburg), H. GREGER (ecological phytochemistry; Vienna), M. GUERRA FILHO DOS SANTOS (karyotaxonomy; Recife), G. KARRER (vegetation ecology and ecomorphology;

Vienna), W. MORAWETZ (tropical botany; Leipzig), G. PILS (karyotaxonomy and ecology; Linz and Vienna), C. PUFF (tropical biotaxonomy; Vienna), and M. A. FISCHER (biotaxonomy and Austrian Flora; Vienna). Other scientifically active former students at universities, museums, and other research institutes include D. ERNET (biotaxonomy; Graz), W. GUTERMANN (biotaxonomy, chorology, floristics, nomenclature; Vienna), M. KIEHN (biotaxonomy, tropical botany; Vienna), C. KÖNIG (after W. TITZ's death; karyotaxonomy, biometrics; Vienna), F. KRENDL (karyotaxonomy; Vienna), I. KRISAI-GREILHUBER (mycology; Vienna), V. MAYER (biotaxonomy and carpo-ecology; Vienna), A. POLATSCHKEK (karyotaxonomy and floristics; Vienna), F. STARLINGER (ecology, biotaxonomy, floristics; Vienna), U. THANHEISER (archaeobotany; Vienna), W. TILL (biotaxonomy; Vienna), E. VITEK (biotaxonomy; Vienna), and A. ZIMMERMANN (chorology, ecology; Graz).

So, dear professor EHRENDORFER, please accept our best wishes and deepest congratulations on the occasion of your 70th birthday! All of us, your graduates and students, your colleagues and friends, we wish to express our heartfelt thanks for your stimulating ideas, your support and encouragement, your collaboration, the promotion and development of our science, and above all, for the illustrious example of high scientific and personal standards you have set in so many ways. Our warmest thoughts accompany you, and we wish you continued success and happiness ad multos annos!

My sincere thanks for advice and help in several different respects go to my friends and colleagues KIT TAN, LUISE SCHRATT-EHRENDORFER, TOD F. STUESSY, WALTER GUTERMANN, HARALD NIKLFELD, ROSE SAMUEL, CHRISTIANE KÖNIG, MICHAEL HESSE, and IRMGARD KRISAI-GREILHUBER.

Selected bibliography of F. EHRENDORFER

For a complete listing of F. EHRENDORFER's papers covering the period from 1970 to 1991, see RÖSER & GUTERMANN (1992). Deviating from normal practice, this list comprising papers by F. E. or together with co-authors is arranged not alphabetically but chronologically.

EHRENDORFER, F., 1949: Zur Phylogenie der Gattung *Galium*. I. Polyploidie und geographisch-ökologische Einheiten in der Gruppe des *Galium pumilum* MURRAY (Sekt. *Leptogalium* LANGE sensu ROUY) im Österreichischen Alpenraum. – Österr. Bot. Z. **96**: 109–138.

– 1951: Rassengliederung, Variabilitätszentren und geographische Merkmalsprogressionen als Ausdruck der raum-zeitlichen Entfaltung des Formenkreises *Galium incanum* S. & S. (Eine Monographie.) (Zur Phylogenie der Gattung *Galium*. II.) – Österr. Bot. Z. **98**: 427–490.

– 1953a: Systematische und zytogenetische Untersuchungen an europäischen Rassen des *Achillea millefolium*-Komplexes. – Österr. Bot. Z. **100**: 583–592.

– 1953b: Ökologisch-geographische Mikro-Differenzierung einer Population von *Galium pumilum* MURR. s. str. (Zur Phylogenie der Gattung *Galium*. III.) – Österr. Bot. Z. **100**: 616–638.

– 1953c: *Galium noricum* EHREND., eine neue Art der Ostalpen. – Österr. Bot. Z. **100**: 670–672.

- 1954: Gedanken zur Frage der Struktur und Anordnung der Lebensgemeinschaften. – Angewandte Pflanzensoziologie (Veröff. d. Kärntner Landesinstitut. f. angew. Pflanzensoz. in Klagenfurt) **1** (Festschrift Aichinger): 151–167.
- 1955: Hybridogene Merkmals-Introgression zwischen *Galium rubrum* L. s. str. und *G. pumilum* MURR. s. str. (Zur Phylogenie der Gattung *Galium*. IV.) – Österr. Bot. Z. **102**: 195–234.
- 1956: Survey of the *Galium multiflorum* complex in western North America. – Contr. Dudley Herb. **5/1**: 3–21.
- 1957: Akzessorische Chromosomen, Kreuzungsfertilität und Polyploidie beim *Achillea millefolium*-Komplex (*Compositae*). – Die Naturwissenschaften **44**: 405–407.
- 1958a: Critical notes on Turkish *Rubiaceae*. – Notes Roy. Bot. Gard. Edinburgh **22**: 323–401, 651.
- 1958b: Die geographische und ökologische Entfaltung des europäisch-alpinen Polyploidkomplexes *Galium anisophyllum* VILL. seit Beginn des Quartärs. – Uppsala Universitets Årsskr. **1958**: 176–181.
- 1958c: Sect. nova *Jubo-Galium* (*Rubiaceae: Galium*), ein alter, aufgesplitteter Sippenkomplex mit Zentrum im südöstlichen Mittelmeergebiet. (Zur Phylogenie der Gattung *Galium*, V.) – Österr. Bot. Z. **105**: 212–228.
- 1958d: Ein Variabilitätszentrum als “fossiler” Hybrid-Komplex: Der ost-mediterrane *Galium graecum* L.-*G. canum* REQ.-Formenkreis. Eine Monographie. (Zur Phylogenie der Gattung *Galium*, VI.) – Österr. Bot. Z. **105**: 229–279.
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