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Pollen Morphology of Indian Monocotyledons

Pollen Morphology of the Euphorbiaceae with Special Reference to Taxonomy

Acta Societatis Botanicorum Poloniae

Measuring sea-level change – be that rise or fall – isone of the most pressing scientific goals of our time and requiresrobust scientific approaches and techniques. This Handbookaims to provide a practical guide to readers interested in thischallenge, from the initial design of research approaches throughto the practical issues of data collection and interpretation froma diverse range of coastal environments. Building on thirtyyears of international research, the Handbook comprises 38 chaptersthat are authored by leading experts from around the world. The Handbook will be an important resource to scientists interestedand involved in understanding sea-level changes across a broadrange of disciplines, policy makers wanting to appreciate ourcurrent state of knowledge of sea-level change over differenttimescales, and many teachers at the university level, as well asadvanced-

level undergraduates and postgraduate research students,wanting to learn more about sea-level change. Additional resources for this book can be found at: ahref=" http://www.wiley.com/go/shennan/sealevel"www.wiley.com\go\shennan\sealevel/a

Morphology and Infrageneric Relationships of the Genus Jatropha (Euphorbiaceae)

Pollination and Floral Ecology is the most comprehensive single-volume reference to all aspects of pollination biology--and the first fully up-to-date resource of its kind to appear in decades. This beautifully illustrated book describes how flowers use colors, shapes, and scents to advertise themselves; how they offer pollen and nectar as rewards; and how they share complex interactions with beetles, birds, bats, bees, and other creatures. The ecology of these interactions is covered in depth, including the timing and patterning of flowering, competition among flowering plants to attract certain visitors and deter others, and the many ways plants and animals can cheat each other. Pollination and Floral Ecology pays special attention to the prevalence of specialization and generalization in animal-flower interactions, and examines how a lack of distinction between casual visitors and true pollinators can produce misleading conclusions about flower evolution and animal-flower mutualism. This one-of-a-kind reference also gives insights into the vital pollination services that animals provide to crops and native flora, and sets these issues in the context of today's global pollination crisis. Provides the most up-to-date resource on pollination and floral ecology Describes flower advertising features and rewards, foraging and learning by flower-visiting animals, behaviors of generalist and specialist pollinators--and more Examines the ecology and evolution of animal-flower interactions, from the molecular to macroevolutionary scale Features hundreds of color and black-and-white illustrations

Pollen Morphology and Plant Taxonomy: Angiosperms

List of members in v. 4, no. 2, 1927.

Pollen Morphology and Phylogenetic Relationships of the Berberidaceae

Pollen Morphology and Plant Taxonomy: Gymnospermae, bryophyta (text)

A Monograph of Codonopsis and Allied Genera (Campanulaceae)

Pollen and Spores

Papers presented at the First International Conference on Labiatae, held at the

Royal Botanic Gardens, Kew in April 1991.

American Journal of Botany

A comprehensive review containing the first classification of the entire family to be published for over 100 years.

Pakistan Journal of Botany

Codonopsis and its allied genera, are a group of plants which are important in economy and horticulture. A Monograph of Codonopsis and Allied Genera (Campanulaceae s. str.) offers its audience comprehensive knowledge of these plants including palynology, cytology, population biology, morphological description, geographical distribution with vouchers cited, excellent ink illustrations, and color photos, and keys to genera and to species. This excellent work will facilitate identification of relevant plants, use of plant resources, assessment of endangered states, the development of conservation strategies, and will promote systematic and evolutionary research of this group. Provides comprehensive descriptions and classifications of Codonopsis and allied genera Richly illustrated with line drawings and high-quality color photographs Delineates and clarifies the relationships of Codonopsis and its allied groups based on the analyses using data from external morphology, pollen morphology, chromosomes, and molecular biology

Acta Botanica Sinica

Journal of Palynology

Glossary of Pollen and Spore Terminology

Upper Mesozoic and Cainozoic spores and pollen grains from New Zealand

This book provides a fully illustrated compendium of key terms and basic principles in the field of palynology, making it an indispensable tool for all palynologists. It is a revised and extended edition of “Pollen Terminology. An Illustrated Handbook,” released in 2009. This second edition offers additional insights into new and stunning aspects of palynology. Accordingly, the general chapters have been critically revised, expanded and restructured. The chapter “Misinterpretations in Palynology” has been extended to include new research data and additional ambiguous terms, e.g., polyads vs. massulae. The chapter “Methods in Palynology” has been extensively enhanced with illustrated protocols showing most methods and techniques used to study recent and fossil pollen with LM, SEM and TEM. Moreover, additional information on describing and publishing pollen data is provided in the chapter “How to Describe and Illustrate Pollen Grains.” Various other parts of the general chapters have been updated and/or extended with more

comprehensive textual passages and new illustrations. The chapter “Illustrated Pollen Terms” now includes new and more appropriate examples of each term, including additional LM micrographs. Where necessary, the entries on pollen terms have been improved with new definitions, illustrations and micrographs. Also, new terms have been added, e.g. “suprasculpture” and the prefix “nano-“ for ornamental features. In turn, the chapter “Illustrated Pollen Terms” is the main part of the book and comprises more than 300 widely used terms illustrated with over 1,000 high-quality images. It provides a detailed survey of the manifold ornamentations and structures of pollen, and offers revealing insights into their stunning beauty.

Solanaceae, Biology and Systematics

This book explores the puzzling phenomenon of new veiling practices among lower middle class women in Cairo, Egypt. Although these women are part of a modernizing middle class, they also voluntarily adopt a traditional symbol of female subordination. How can this paradox be explained? An explanation emerges which reconceptualizes what appears to be reactionary behavior as a new style of political struggle--as accommodating protest. These women, most of them clerical workers in the large government bureaucracy, are ambivalent about working outside the home, considering it a change which brings new burdens as well as some important benefits. At the same time they realize that leaving home and family is creating an intolerable situation of the erosion of their social status and the loss of their traditional identity. The new veiling expresses women's protest against this. MacLeod argues that the symbolism of the new veiling emerges from this tense subcultural dilemma, involving elements of both resistance and acquiescence.

South African Pollen Grains and Spores

Pollen Morphology and Systematic Relationship of the Family Polygonaceae

Advances in Labiate Science

Preface: Working for many years with pines, I have been asked many questions I could not answer. Often I have thought how useful it would be for bothe the curious layman and the busy scholar to have assembled together as much information as possible on pines. Being a biologist, I am primarily interested in the biology of pines-their origin and development, their chemical composition, and their physiological processes. These considerations have naturally led me to the past and present distribution of pines. Difficulties of presenting these aspects of the subject are many The literature on pines is enormous; it is scattered through scientific, trade, and popular journals. What should be included and what omitted were not easy decisions. For instance, chemical components of pine and wood are considered; but physical properties of pine lumber are not, although there is a wealth of published information in that field. Keeping in mind the traditional

remoteness of chemistry from plant taxonomy, I have perhaps oversimplified, in a conciliatory mood, the presentation of the chemical aspects of pines. On the other hand, I have attempted to make the presentation of taxonomy palatable to chemists, who are not always concerned with the ways and rules of classifying plants and are apt either to disregard accepted nomenclature entirely or to accept it in an amazingly uncritical manner. Our knowledge of the genus Pinus is rather uneven. Certain groups of chemical substances (polyphenols, terpenes) have been studies extensively; others, such as fats, are still known only sporadically. Alkaloids have been discovered in some pines only recently. Some physiological processes, such as mineral nutrition, have been investigated more thoroughly than others, for example, transpiration. Such unevenness will be noticed throughout the book. I have attempted to give ansers to many questions about pines; many have remained unanswered, and new ones have arisen. I have even attempted to offer some gerealizations and speculations, hoping that their presentation would not be condemned as heresy but, rather, would be accepted as a stimulus to more research along controversial lines. I have always been encouraged by Darwin's remark, in one of his letters to Wallace, that without speculation there would be no progress. N.T. Mirov--Berkeley, California, January, 1967.

The Genus Pinus

Taxonomy of Angiosperms

Illustrated Pollen Terminology

Tobacco Use by Native North Americans

Catalogue of Selected Angiosperm Pollen Grains from Palaeogene and Neogene Sediments of India

Gentianaceae

U.S. Geological Survey Professional Paper

The field of plant taxonomy has transformed rapidly over the past fifteen years, especially with regard to improvements in cladistic analysis and the use of new molecular data. The second edition of this popular resource reflects these far-reaching and dramatic developments with more than 3,000 new references and many new figures. Synthesizing current research and trends, Plant Taxonomy now provides the most up-to-date overview in relation to monographic, biodiversity, and evolutionary studies, and continues to be an essential resource for students and scholars. This text is divided into two parts: Part 1 explains the principles of taxonomy, including the importance of systematics, characters, concepts of

categories, and different approaches to biological classification. Part 2 outlines the different types of data used in plant taxonomic studies with suggestions on their efficacy and modes of presentation and evaluation. This section also lists the equipment and financial resources required for gathering each type of data. References throughout the book illuminate the historical development of taxonomic terminology and philosophy while citations offer further study. Plant Taxonomy is also a personal story of what it means to be a practicing taxonomist and to view these activities within a meaningful conceptual framework. Tod F. Stuessy recalls the progression of his own work and shares his belief that the most creative taxonomy is done by those who have a strong conceptual grasp of their own research.

Annales Botanici Fennici

Pollination and Floral Ecology

Palynology is important in basic as well as in manifold applied sciences, as e.g. biology, medicine, forensics, earth history, climatology and food production. This volume is the first fully illustrated handbook of palynological principles and glossary terms, exclusively using LM and EM micrographs of superior quality. A comprehensive General Chapter on pollen morphology, anatomy, pollen development etc. based on the present knowledge in palynology introduces the reader in the world of pollen. The glossary part comprises more than 300 widely used terms illustrated with over 1.000 high quality light and/or electron microscopic pictures to show the character range of a term. Terms are grouped by feature, e.g. ornamentation, where each term is illustrated on a separate page, definition and original citation included and where necessary, provided with a comprehensive explanatory comment. The term's use in LM, SEM or TEM and its assignment to anatomical, morphological and/or functional pollen features is indicated by icons and colour coding, respectively. This handbook is not only a valuable source for students and researchers but also for all persons interested in pollen and its aesthetic beauty.

Flowering Plants

Over 30 papers are brought together in Pollen and Spores: Morphology and Biology, covering topical and current research from a wide range of pollen related disciplines.

Pollen Morphology and Plant Taxonomy: Angiosperms, with 261 illus. (or groups of illus.) based on the author's originals by A. L. Nilsson. Corrected reprint of the ed. of 1952 with a new addendum

This book summarizes the taxonomic details of selected fossil angiosperm pollen genera and species along with their affinity and occurrences in space and time. It provides information about the historical background of palynology from Palaeogene and Neogene sediments in India, general pollen morphology along with

the terms commonly used in describing fossil angiosperm pollen and an overview of the Indian Tertiary sediments. A complete list of genera described in this book is given. It also includes a key for identification of Indian angiosperm genera as well as a description of selected fossil angiosperm pollen from India along with their Indian records, illustrations, locality, age and horizon from where these have been reported. In all 130 genera and 402 species have been dealt with. The names of genera and species are arranged alphabetically. The Discussion part includes a summarized account of palynofloras, their biostratigraphic application in various regions of India and their palaeogeographical and palaeoclimatic implications.

Pollen Grains of New Zealand Dicotyledonous Plants

Armen Takhtajan is among the greatest authorities in the world on the evolution of plants. This book culminates almost sixty years of the scientist's research of the origin and classification of the flowering plants. It presents a continuation of Dr. Takhtajan’s earlier publications including “Systema Magnoliophytorum” (1987), (in Russian), and “Diversity and Classification of Flowering Plants” (1997), (in English). In his latest book, the author presents a concise and significantly revised system of plant classification (‘Takhtajan system’) based on the most recent studies in plant morphology, embryology, phytochemistry, cytology, molecular biology and palynology. Flowering plants are divided into two classes: class Magnoliopsida (or Dicotyledons) includes 8 subclasses, 126 orders, c. 440 families, almost 10,500 genera, and no less than 195,000 species; and class Liliopsida (or Monocotyledons) includes 4 subclasses, 31 orders, 120 families, more than 3,000 genera, and about 65,000 species.This book contains a detailed description of plant orders, and descriptive keys to plant families providing characteristic features of the families and their differences.

A Monograph of the Lichen Genus Pseudoparmelia Lynge (Parmeliaceae)

Pollen and Spores of Barro Colorado Island

Plant Taxonomy

Taxonomy of Angiosperms is designed for B.Sc. (H) and M.Sc. students of Botany in various universities. The book is divided into two parts; Part I deals with the Principles of Angiosperm Taxonomy and Part II deals with families. The book is amply illustrated with examples. Some of the important chapters in Part I comprise Different Classifications, Nomenclature, Biosystematics, Modern Trends in Taxonomy, Chemotaxonomy, Numerical Taxonomy etc. Part II deals with about 214 families of which 55 are discussed in detail and summarized accounts of the rest are given for advanced students. The book also comes loaded with numerous appendices like comparison of classifications, floral diagrams and floral formulae, questions etc. The book will cater to the needs of Botany students pursuing B.Sc. (H), M.Sc. and related fields like Medical Botany, Pharmacy, Agricultural Botany and Horticulture.

Handbook of Sea-Level Research

Pollen from 68 collections representing 14 genera and 40 species of the family Berberidaceae was examined by light microscopy, SEM, and TEM. In part, the pollen data reinforce the traditional view of closely related pairs or small groups of genera. In Berberis and Mahonia the pollen morphology would support separate family status as well as congeneric treatment. The unusual exine structure in Nandina would reinforce its treatment as a monotypic family, Nandinaceae. The distinction of Bongardia from Leontice and of Dysosma from Podophyllum is confirmed by pollen data. The presence of a fundamentally similar tectum in Achlys, Dysosma, Epimedium, Jeffersonia, Podophyllum peltatum, P. hispidum, and Vancouveria suggests closer relationship among these genera than has been previously thought. The close similarity of the pollen in Jeffersonia and Plagiorhegma confirms their congeneric treatment. Palynologically, Bongardia, Caulophyllum, and Leontice are more closely related to each other than to any remaining genera. In three taxa, Diphylleia, Podophyllum hexandrum, and Ranzania, certain characteristic(s) of the pollen render it unique and for the most part nullify any systematic value within the family. The pollen morphology of the Berberidaceae s. 1. is not similar to that of the Ranunculaceae, Hydrastis excepted, nor to Lardizabalaceae. There appear to be unusual examples of parallelism between the Berberidaceae and Cistaceae, and between Podophyllum and Croton.

Excerpta botanica

Recently identified as a killer, tobacco has been the focus of health warnings, lawsuits, and political controversy. Yet many Native Americans continue to view tobacco-when used properly-as a life-affirming and sacramental substance that plays a significant role in Native creation myths and religious ceremonies. This definitive work presents the origins, history, and contemporary use (and misuse) of tobacco by Native Americans. It describes wild and domesticated tobacco species and how their cultivation and use may have led to the domestication of corn, potatoes, beans, and other food plants. It also analyzes many North American Indian practices and beliefs, including the concept that Tobacco is so powerful and sacred that the spirits themselves are addicted to it. The book presents medical data revealing the increasing rates of commercial tobacco use by Native youth and the rising rates of death among Native American elders from lung cancer, heart disease, and other tobacco-related illnesses. Finally, this volume argues for the preservation of traditional tobacco use in a limited, sacramental manner while criticizing the use of commercial tobacco. Contributors are: Mary J. Adair, Karen R. Adams, Carol B. Brandt, Linda Scott Cummings, Glenna Dean, Patricia Diaz-Romo, Jannifer W. Gish, Julia E. Hammett, Robert F. Hill, Richard G. Holloway, Christina M. Pego, Samuel Salinas Alvarez, Lawrence A Shorty, Glenn W. Solomon, Mollie Toll, Suzanne E. Victoria, Alexander von Garnet, Jonathan M. Samet, and Gail E. Wagner.

Bibliography and Index to Palaeobotany and Palynology

Pollen Terminology

An Introduction To Pollen Analysis

AN INTRODUCTION TO POLLEN ANALYSIS by G. ERDTMAN. FOREWORD: It has long been the custom among those making pollen surveys to expose microscope slides coated with a suitable adhesive and examine them for the pollen grains caught. The counts of the various species are tabulated each day and at the end of the season drawn into a graph or pollen spectrum, as it is called , which gives a clear picture of the relative amounts of the different kinds of pollen which are floating in the air from day to day throughout the growing season If done in the north temperate zone such a spectrum will show the pollen of the early flowering trees, at first a trickle, as the junipers, alders and hazels flower, then a deluge as the birches, oaks and pines ami many other trees cast their pollen to the air. This is generally followed by a long stream of grass pollen, fluctuating from week to week as the various species come into flower, reach their zenith, then die out giving way to succeeding species And toward the end of the summer pollens of the late flowering weeds make their appearance, nowadays in most places com pletely dominated by that of the ragweed. If the record is repeated the following year the spectrum will be nearly the same The succession can be counted on to repeat itself with hltle change from year to year for many years to come, unless some cataclysm changes the surrounding vegetation which contributes to the pollen spectrum, for it is always a faithful representation of the surrounding vegetation

The Biology and Chemistry of the Compositae