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Newsletter

No. 25

Edited by

K. M. Urbanska
D. J. Crawford **C. A. Stace**

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IOPB Newsletter No. 25

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1. Editorial Comment

Dear IOPB Members,

A good reason for celebration: this is IOPB Newsletter No. 25!! It comes to you well-packed with information on various issues important for us all. This time we have both various scientific data and business reports.

Scientific information is rich and varied:we have Individual Research Reports (p. 3), a Profile of a Lab (p. 3) IOPB Chromosome Data (p. 7), News from Molecular Biosystematists (p. 11), and last but not least an interesting short paper (p.4). Best thanks to all contributors who took time off their busy schedules to share the data with us. Please continue to do so.

Last summer we had again an IOPB Symposium, this time in the faraway Lapland; the organizers provided just the right mix of scientific and social activities, and the midnight sun was there, too. Thanks Liv + Bengt + Brynhild + Torstein + Ola ++... for this unforgettable experience.

An open Business Meeting of IOPB was held during the Symposium and several pertinent issues were addressed on this occasion (see the minutes on p. 13). An increase of membership fees was agreed upon; you will receive soon a detailed information on fee payment from the new Secretary/Treasurer.

Some old Executive Members stepped down, some new ones took over. An address from our new President may be found on p. 18, a farewell-welcome note from our old Secretary/Treasurer - on p. 18. We owe special thanks to Hans den Nijs for his faithful, not infrequently frustrating work as Secretary/Treasurer; a very heartful "thank you" comes from this Editor whom Hans always helped, even at short notice. A cordial welcome to our new Secretary/Treasurer Peter Hoch and the Regional Teasurer, Leo van Raamsdonk.

The next IOPB Symposium 1998 will be held in The Netherlands (p. 19); another beautiful land to visit, to see old friends, to make new ones. Many thanks to our new Vice President (President Elect) Konrad Bachmann who proposed to host this important IOPB event.

After the IOPB Symposium a Workshop on apomixis was held in Prague. Read the highlights of this meeting on p. 19, contributed by our Council Member David Murray who carefully prepared his diskette despite a recent hand surgery. Very special thanks Dave and get well, you hear?

And now it's time to say good-bye. I served you for more than twelve years and hope that you enjoyed our blue Newsletter. I am leaving the Editorship in able hands of Liv Borgen and Bengt Jonsell. Clive Stace and Dan Crawford will continue to fulfill their respective co-editorial duties. Please send them many interesting contributions. I am already looking forward to the next issue of (hopefully blue) Newsletter coming from the North.

Good luck to everybody.
The Editor

NOTE: As far as the deadlines for the future Newsletters and preparation of contributions are concerned, please contact the new Editors. I am unfortunately not able to give here this information. The same goes for an exact information on increased membership fees, payment, etc. Please contact the Secretary/Treasurer in the matter.

2. Individual Research News

Frey Ludwik, W. Szafer Institute of Botany, Polish Academy of Sciences, Dep. of Plant Systematics, Lubicz 46, 31-512 Krakow, Poland.
Recent publications:
FREY L., 1994: Distribution of *Aira caryophyllea* and *A. praecox* (Poaceae) in Poland. Fragm. Flor. Geobot. Ser. Polonica *1*: 5-17.
FREY L., 1995: Chemotaxonomy of *Trisetum* (Poaceae) in Poland. Fragm. Flor. Geobot. (in press).

Mizianty Marta, W. Szafer Institute of Botany, Polish Academy of Sciences, Dep. of Plant Systematics, Lubicz 46, 31-512 Krakow, Poland.
Recent publications:
MIZIANTY M., 1994: Biosystematic studies on *Dactylis* (Poaceae). 5. Variability of *Dactylis glomerata* subsp. *glomerata* in Poland. Fragm. Flor. Geobot. *39*(1): 235-254.
MIZIANTY M. and CENCI C.A., 1995: Dactylis glomerata subsp. slovenica (Dom.) Dom. - a new taxon for Italy. Webbia *50*(1): 35-42.
MIZIANTY M., 1995: Genus *Dactylis* L. in Poland against a background of its Eurasian distribution. Fragm. Flor. Geobot. (in press).

* * *

3. Profile of a Lab

Current research and staff at Herbarium, Institute of Biological Problems of the North, Magadan, Russia

by Alexandra Berkutenko, email: ibpn@ibpn.magadan.su

Editor's comment: Alexandra did not include her own research in the presentation, but the information on her work was published in the Newsletter No. 24. I retained some of her original expressions which make a delightful reading - see for yourself.

* * *

The collections at our Herbarium include 100,000 sheets of vascular plants; we have a mycological herbarium, too. As there are no other herbaria in NE Russia, our collections are unique for the region. The Herbarium was initiated in 1971 by A.P. Khoriakov, the author of "Flora of the Magadan Region" who widely collected in various remote corners of North-East Russia.
The overall research theme of our group until year 2000 is "Comparative study of island and mainland floras in areas N of the Okhotsk Sea and adjacent territories".
We have only one gentleman in our Herbarium - our old computer, his name is Power II. We are not feminists but our small group consists of women only, all very dedicated to research in spite of very poor salary.
Maria Kuznetsova - 28 years old graduated from Moscow Institute of Russian Academy of Sciences but returned to her mother-place Magadan and joined our group four years ago.We spent one season together in the field, afterwards she worked on her own. She is

the first author of our recent paper: "Flora and vegetation of Spafariev Island".
Olga Mochalova - 27 years old, called by us " Queen of Koni Peninsula". Just imagine: Kamchatka is ten times larger than the Koni Peninsula, but the number of vascular plant species in the Koni area is only two times lower than in the whole flora of Kamchatka. Olga described 90 new species from the area. The Koni Peninsula is uninhabited, there are lots of brown bears and sometimes few fishermen. Olga had good relations with bears and fishermen who bring her to any location on the peninsula free of charge anytime. It is rather suprising that this young woman born and raised in Moscow, a graduate of the Moscow University, feels perfectly at home in the wilderness. Olga graduated as mycologist but after joining our group she got the "islomania virus" and cannot live without field work on vascular plants inhabiting mysterious, remote places. She published recently a paper on "Flora of the Umara Island" - a small uninhabited island where even fresh water cannot be found.
Nina Sasanova - 37 years old, graduate from St. Petersburg University, is mycologist, the only specialist on the Agaricales within the huge area of NE Russia so that her publications are a gold-mine for scientists all over the world. She solved her demographic problems by giving birth to two children and now is preparing her PhD Thesis.
Nadezhda Sinelnikova - 31 years old was born and studied in Moscow, but opted for life and work in wild forests. She lives at the field station in Kolyma Basin using natural resources and growing vegetables in her self-made greenhouse. Nadezda is specialized in classification of vegetation with help of floristic methods, published in "Geography and Natural Resources" journal, and took part of the scientific expertise of of a power plant construction in the Amguyema River (Chukotchka). She is currently involved in the ITEX (International Tundra Experiment) project.
In 1994 Maria and Olga visited Main Botanical Garden and the Komarov Botanical Institute in St. Petersburg for the first time.Our famous and respected botanists Skvortsov, Jurtsev, and their colleagues were impressed by the young generation of botanists from a remote area of Russia. The paper "Vascular plants of Koni Peninsula" written by myself, Olga and Maria was accepted for publication in the Botanicheskij Jurnal; this annotated list of more than one-third of the whole flora of Magadan region and Chukotchka includes 525 species.
Our Institute should soon move into a new building but we are worried about the future of the Herbarium: because of lack of funds, we are unable to ensure a proper storage of the collections and a part of our material will have to be just kept on shelves without doors. At least we are fortunate not having any serious invasion of insects because our only facility i.e. the Siberian Frost takes care of that. Our working places are in the same room as the collections so that no insecticides can be used - our young research associates are expected not only to produce dissertations and publications but also a healthy new generation. We don't like to complain but sometimes cannot avoid feeling desperate. Even so, our work is going on - let's hope for better times.

* * *

4. Clonal Diversity and Phylogeography of Asexual *Taraxacum* in Europe

by Hans den Nijs and Konrad Bachmann

At the Hugo de Vries Laboratory, at the Institute of Systematics and Population Biology of the University of Amsterdam, research in the biosystematics of *Taraxacum* has a long-standing tradition. Recently, we have initiated a new project as part of a program of four

nationally coordinated studies of *Taraxacum* in which molecular markers will be employed to analyze the relationship between sexual and asexual (apomictic) representatives of the genus in Europe.

The genus *Taraxacum*, in Europe forms a polyploid complex with the majority of the taxa on the triploid and higher polyploid levels. There is a strong correlation between ploidy level and mode of reproduction: diploids are invariably sexuals, whereas polyploids generally behave as apomicts. Whether or not this apomixis is truly obligate is still matter of debate. In a recent review, DEN NIJS & MENKEN (1994) have suggested that there may be a more widespread occurrence of occasional sexuality in polyploids than has been assumed up to now. In a part of Western, Southern and Southwest Europe, sexual diploids of several taxonomic sections occur, usually together with apomictic triploids. Where these ploidy levels co-occur, there is evidence of gene flow between ploidy levels. A better understanding of the genetical relations between the ploidy levels is of great importance for interpreting the evolutionary mechanisms in the genus, especially the apparently stable coexistence of sexual diploids with triploids over much of the range of the genus. As reviewed by DEN NIJS & MENKEN (1994), diploids occur in many sections, in primitive as well as in derived ones as *Ruderalia*, *Erythrosperma* (Europe) and *Mongolica* (SE Asia). The current research project will confine itself mainly to *Ruderalia*.
Many hypotheses have been put forward to explain the geographic distribution of sexual, diploid and apomictic triploid types of *Taraxacum* in Western Europe, in particular of sections *Ruderalia* (common dandelion) and *Erythrosperma* (with red fruits, from dryer habitats). Some authors have suggested that diploids have spread northwards from hypothetical ice age refuges, and continually add to the generation of new triploid lineages when ovules are fertilized by pollen from triploids (DEN NIJS & STERK 1980, 1984a,b; MOGIE & FORD 1988; MORITA et al. 1990; DEN NIJS et al. 1990; MENKEN et al. 1995). If this is the case, the sexual and asexual reproductive strategies could be in a dynamic equilibrium, at least in some populations. The generally more Northern distribution of apomicts could then be explained by a better ability to become established in marginal sites, following the amelioration of the climate. A crucial factor may be that the population growth of these triploids does not depend on pollination. For the same reason, it should theoretically be difficult for sexual diploids to overtake an established apomictic population (MOGIE 1992). On the other hand, sexuals may have an advantage in generating variable offspring which may facilitate adaptation to diverse ecological conditions and sexual populations are able to rid themselves of deleterious alleles that are likely to accumulate in asexual ones. Alternative hypotheses for the Northern distribution of apomicts concern possible intrinsic correlations between ploidy level and life history traits and the production of hybrids after encounters between sexuals and apomicts in post-glacial periods (RICHARDS 1973; DOLL 1982). Parental taxa are assumed to be either extinct or southern relic diploids or pre-Pleistocene triploids from other sections that went South during glacial periods.
Information on the ancestral relations between apomictic lineages and their diploid progenitors is a prerequisite for the analysis of the distribution of sexual and apomictics. KING (1993) suggested that the high clonal variation found in North-American populations was due to the multiple introduction of apomictic lineages derived from diploid/triploid hybridizations in Europe.The situation in Europe appears to be particularly complex (DEN NIJS & MENKEN 1994; MENKEN et al. 1995).

The new project will address the following questions about the amount and pattern of variation in sexual and asexual *Taraxacum:*
1. The number and frequencies of clones in a series of populations along a transect from within the mixed diploid/triploid area (Central France) to the presumably fully apomictic region (Denmark). We will test the hypothesis that clonal diversity decreases with latitude,

due to the absence of the generation of new clones in the North.
2. Together with samples from the other parts of the diploid/triploid distribution area, these data will be used to determine the phylogenetic relationships among triploid clones, their relation with the co-occurring diploids, and the relationship of both to the diploids in the central parts of their area. The hypothesis will be tested that the diploids in the Eastern and the Western part of the distribution area constitute different evolutionary lineages, each having produced different sets of triploid decendants.
3. Geographically wide-spread asexual lineages will be identified and studied in more detail. We will compare these with clones that share genes with the co-occurring diploids to find out if the former have traits that prevent them from having gene flow with the diploids.
4. A comparitive study of sections assumed to be related to *Ruderalia* (such as *Erythrosperma*, *Celtica*, *Palustria*, *Boreigena*, *Hamata*, *Alpestria* etc.) will shed light upon the origin of section *Ruderalia* and on the phylogenetic relationships between at least some of these West European complex of sections.

For the identification of genomes, we shall use DNA fingerprinting techniques (RAPDs, PCR of individual microsatellite loci, for which the primers will be developed in a separate project). Analysis of the ancestral relationships will be on the basis of nuclear and cytoplasmic markers.
DNA markers have already been used to examine the clonal structure of *Taraxacum*. KING & SCHAAL (1990) and KING (1993) have used molecular markers to study the origin and differentiation of triploid clones. VAN HEUSDEN, ROUPPE VAN DE VOORT & BACHMANN (1991) have used multilocus microsatellite fingerprinting to show that plants of the European microspecies *T. hollandicum* collected in Czechia, France and The Netherlands were members of a single lineage. Probes for chloroplast DNA and nuclear single-copy probes (from *Microseris pygmaea*) are available where more stable and/or specific cytoplasmic markers are needed.

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NIJS DEN J.C.M., KIRSCHNER J., STEPANEK J. and VAN DER HULST A., 1990. Distribution of

diploid plants of *Taraxacum* sect. *Ruderalia* in east-Central Europe, with special reference to Czechoslovakia. Plant Syst. Evol. *170*: 71-84.
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RICHARDS A.J., 1973: The origin of *Taraxacum* agamospecies. Bot. J. Linn. Soc. *66*: 189-211.

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5. IOPB Chromosome Data 10

edited by Clive A. Stace,
Department of Botany, University of Leicester
Leicester LE1 7 REH
England
Fax: + 44-533-522 791
e-mail: CAS7@leicester.ac.uk

Please send contributions to Professor Stace at the above address stating whether or not you are a Member of IOPB. Neither proofs nor reprints will be made available, but the editor will acknowledge receipt of contributions and raise queries with authors if necessary.

* * *

Reports by **J. V. DAUSHKEVICH, T. V. ALEXEEVA** and **M. G. PIMENOV**, Botanical Garden, Moscow State University, Moscow 119899, Russia. Vouchers in MW. The collectors are M.G. Pimenov (P), J.V. Daushkevich (D), T.A. Ostroumova (O), M.G. Vasil'eva (V) and E.V. Kljuykov (K). The work has been supported by the Russian Foundation of Basic Investigations (RFFI).

APIACEAE

Angelica glauca Edgew. 2n=22. Pakistan: N.-W. Frontier Prov., Swat Division, Ushu-Tal, 1983, Ern & Prelaz 7590, seeds received from Botanical Garden Berlin-Dahlem, grown in Botanical Garden of Moscow State University.

Angelica palustris (Bess.) Hoffm. 2n=22. Russia: Mordovia, between Ichalki and Lobaski, 1993, S.Majorov s.n.

Aulacospermum anomalum (Ledeb.) Ledeb. 2n=18. Russia: Khakasia, near Efremkino, 1993, P & V 83.

Carum komarovii Karjag. n=11. Armenia: distr. Kafan, Khustup Mt., 1977, P & O 1274.

Chaerophyllum humile Stev. n=11. Russia: N. Ossetia, distr. Alagir, near Verkhni Zgid, 1990, D 9.

Chaerophyllum macrospermum (Willd. ex Spreng.) Fisch. et C.A. Mey. n=11. Azerbaidzhan: Nakhichevan, distr. Ordubad, Valley of Vanad-chai River, Nazmara, 1977, P & K s.n.

Chaeropyllum prescottii DC. 2n=22. Russia: Khakasia, near Shira, Tchitkul Lake, 1993, P & V s.n.

Chaerophyllum schmalhausenii Albov. 2n=22. Georgia: Adjaria, distr. Khulo, Bodzauri, 1987, O & D 364.
Ferula grigoriewii B. Fedtsch. 2n=22. Tadzhikistan: Badakhshan, Valley of Pjandzh River, Shakhdarinski Mts, near Malvodzh, 1981, P & K 963.
Ferula pachyphylla Korovin. n=11. Kazakstan: Prov. Chimkent, Karatau Mts, Baidzhansai, 1973, P & K 1441.
Heracleum pastinacifolium K. Koch. n=11. Armenia: distr. Razdan, Tsakhkunets Mts, near Tsakhkadzor, 1977, P & K s.n.
Laserpitium alpinum Waldst. et Kit. 2n=22. Ukraine: Karpatian Mts, near Kvasi, Sheshul Mt., 1989, D 9.
Laserpitium hispidum Bieb. n=11. Russia: Krasnodar Prov., Gorjachyi Kljuch, 1987, 0 & D 19.
Peucedanum vaginatum Ledeb. 2n=36. Russia: Khakasia, near Shira, 1993, P & V 48.
Pimpinella anthriscoides Boiss. 2n=20 Armenia: distr. Razdan, Tsakhkunets Mts, near Takjarlu, 1977, P & K 164.
Pimpinella rhodantha Boiss. n=9. Georgia: Adzharia, distr. Khulo, near Goderdzi Pass, 1987, 0 & D 381.
Seseli peucedanoides (Bieb.) Koso-Pol. 2n=22. Russia: N. Caucasus, Valley of Baksan River, near Zhankhoteko, 1976, P 7.

* * *

Reports by **L. Michael HILL**, Department of Biology, Bridgewater College, Bridgewater, Virginia 22812. Localities in Virginia. Vouchers at BDWR. This work was supported by the Gwathmey Memorial Trust.

APIACEAE
Conium maculatum L. 2n=22. Hill 94335.
ARACEAE
Arisaema triphyllum (L.) Schott. 2n=28. Hill 9340.
ASTERACEAE
Ambrosia trifida L. 2n=24. Hill 94378.
Arctium minus Bernh. 2n=36. Hill 94294.
Rudbeckia laciniata L. 2n=54. Hill 95134.
BORAGINACEAE
Myosotis scorpioides L. 2n = 66. Hill 95418.
CANNABACEAE
Humulus lupulus L. 2n=20. Hill 95132.
CAPRIFOLIACEAE
Lonicera japonica Thunb. 2n=18. Hill 95991.
CARYOPHYLLACEAE
Stellaria pubera Michaux. 2n=32. Hill 95111.
FABACEAE
Coronilla varia L. 2n=16. Hill 94336.
Melilotus albus Medicus. 2n=24. Hill 95229.
Trifolium pratense L. 2n = 14. Hill 95982.
LAURACEAE
Lindera benzoin (L.) Blume. n=12. Hill 95632.
LILIACEAE
Ornithogalium umbellatum L. 2n=36. Hill 95376.
Trillium cernuum L. 2n=10. Hill 91379.
PAPAVERACEAE

Stylophorum diphyllum (Michaux) Nuttall. n=10. Hill 95348.
POLYGONACEAE
Rumex crispus L. 2n=60. Hill 94566.
PRIMULACEAE
Lysimachia lanceolata Walter. n=17. Hill 94651.
RANUNCULACEAE
Caltha palustris L. 2n=32. Hill 92421.
SOLANACEAE
Datura stramonium L. 2n=24. Hill 93477.

* * *

Reports by **Stéphane PLANTE**, Faculté de foresterie et de géomatique, Université Laval, Herbier Louis-Marie, Pavillon Charles-Eugène Marchand, Sainte-Foy, Québec, CANADA, G1K 7P4. Vouchers in QFA. Collector SP = S. Plante.

ACERACEAE
Acer spicatum Lam. 2n=26. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-91-204.
ARALIACEAE
Aralia nudicaulis L. 2n=24. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-90-57; Sainte-Foy, forêt Einstein, SP-90-23.
ASTERACEAE
Aster acuminatus Michx. 2n=18. Canada, Québec: Sainte-Foy, forêt Einstein, SP-91-127.
Aster cordifolius L. 2n=16. Canada, Québec: Sainte-Foy, forêt Einstein, SP-91-243.
Aster puniceus L. 2n=16, 16+1B, 16+3B, 16+4B. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-92-216, SP-92-217, SP-92-201, SP-92-220.
Bidens comosa (Gray) Wieg. 2n=48. Canada, Québec: baie Missisquoi, près de Noyan, M. Blondeau s.n. (progeny from herb. specimen).
Bidens connata **Muhl. var.** *anomala* (Nutt.) Farw. 2n=48. USA, New-York: Wayne county, Woolcott, A. P. Nelson 1662 (progeny from herb. specimen)
Bidens connata **Muhl. var.** *fallax* (Warnst.) Scherff. 2n= 48. Canada, Québec: bois humide, comté de Nicolet, près de Bécancour, M. Blondeau QS93121 (progeny from herb. specimen).
Bidens eatonii **var.** *fallax* Fern. 2n=48. Canada, New-Brunswick: Northumberland county, shore of Barnaby River, D. Bérubé & D. Marteri 11185 (progeny from herb. specimen).
Bidens eatonii **var.** *fallax* Fern. 2n=48. USA, Massachusetts: West Newbury, Merrimac River, tidal marsh, F. Caldwell 525 (progeny from herb. specimen).
Bidens heterodoxa (Fern.) Fern. & St.-John. 2n=48. Canada, Québec: Iles-de-la-Madeleine, marais salés, SP-94-1.
Bidens heterodoxa **var.** *orthodoxa* (Fern.) Fern. & St.-John. 2n=48. Canada, Québec: Iles-de-la-Madeleine, marais salés, SP-94-26.
Bidens infirma Fern. 2n=48. Canada, Québec: grève intercotidale du fleuve Saint-Laurent, près de Saint-Vallier, comté de Bellechasse, Anse Saint-Vallier, E. Roberts s.n. (progeny from herb. specimen).
Bidens tripartita L. 2n=48. Finland, Lake Vanajavesii, Hattelmala, R. Lampinen 5501-5544 (progeny from herb. specimens).
Solidago macrophylla Pursh. 2n=18, 18+1B. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-92-170, SP-92-180.
Solidago rugosa Mill. 2n=18. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-92-187.

CAPRIFOLIACEAE

Viburnum alnifolium Marsh. 2n=18, 18+1B, 18+2B. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-91-78, SP-90-54, SP-92-72.

Viburnum cassinoides Michx. 2n=18, 18+1B. Canada, Québec: Sainte-Foy, forêt Einstein, SP-90-110; Tewkesbury, réserve écologique de Tantaré, SP-91-99.

Lonicera canadensis L. 2n=18. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-90-82.

CORNACEAE

Cornus canadensis L. 2n=44. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-90-117.

LILIACEAE

Clintonia borealis (Ait.) Raf. 2n=28, c. 32. Canada, Québec: Sainte-Foy, forêt Einstein, 2n=28 (10 plants); Tewkesbury, réserve écologique de Tantaré, 2n=28 (10 plants), 2n=c. 32 (1 plant) SP-91-108.

Medeola virginiana L. 2n=14, 21. Canada, Québec: Sainte-Foy, forêt Einstein, 2n=14 (10 plants); Tewkesbury, réserve écologique de Tantaré, 2n=14 (9 plants), 2n=21 (1 plant) SP-90-249.

Streptopus amplexifolius (L.) DC. 2n=32. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-90-76; Sainte-Foy, forêt Einstein, SP-91-134.

Streptopus roseus Michx. 2n=16. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-90-62; Sainte-Foy, forêt Einstein, SP-92-138.

Trillium erectum L. 2n=10, 10+1B. Canada, Québec: Sainte-Foy, forêt Einstein, 2n=10 (10 plants); Tewkesbury, réserve écologique de Tantaré, 2n=10 (9 plants), 10+1B (2 plants) SP-92-73, SP-92-74.

Trillium undulatum Willd. 2n=10. Canada, Québec: Sainte-Foy, forêt Einstein, SP-90-13; Tewkesbury, réserve écologique de Tantaré, SP-90-87.

Uvularia sessilifolia L. 2n=14. Canada, Québec: Sainte-Foy, forêt Einstein, SP-90-85.

OXALIDACEAE

Oxalis montana Raf. 2n=22. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-90-5.

PINACEAE

Abies balsamea (L.) Mill. 2n=24. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-91-204.

POACEAE

Brachyelytrum erectum (Schreb) Beauv. 2n=22. Canada, Québec: Sainte-Foy, forêt Einstein, SP-90-100; Tewkesbury, réserve écologique de Tantaré, SP-91-72.

PORTULACACEAE

Claytonia caroliniana Michx. 2n=16, 16+1B, 16+2B, 16+3B, 16+4B. Canada, Québec: Tewkesbury, réserve écologique de Tantaré.

RANUNCULACEAE

Anemone canadensis L. 2n=14. Canada, Québec: Sainte-Foy, forêt Einstein, SP-90-88.

Caltha palustris L. 2n=32. Canada, Québec: Sainte-Foy, forêt Einstein, SP-91-25.

Coptis groenlandica (Oeder) Fern. 2n=18. Canada, Québec: Sainte-Foy, forêt Einstein, SP-90-28.

SAXIFRAGACEAE

Chrysosplenium americanum Schwein. 2n=18. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-90-67.

Ribes americanum Mill. 2n=16. Canada, Québec: Tewkesbury, réserve écologique de Tantaré, SP-90-75.

Tiarella cordifolia L. 2n=14. Canada, Québec: Sainte-Foy, forêt Einstein, SP-90-36.

VIOLACEAE

Viola pallens (Banks) Brainerd. 2n=24. Canada, Québec: Tewkesbury, réserve écologique

de Tantaré, SP-90-152.

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6. News from Molecular Biosystematists 6

edited by Dan J. Crawford
Department of Plant Biology
The Ohio State University,
Columbus, Ohio 43210-1293, USA
Fax: 614-292-6345;
e-mail: dcrawford@magnus.acs.ohio-state.edu

Pleae send your contributions to Professor Crawford at the above address stating whether or not you are IOPB Member. Thank you.

Christopher Haufler, Department of Botany, University of Kansas

Having a laboratory whose central focus is biosystematics means having a research program with a consistent theme but having a constantly moving technical target. The consistent theme of research in my laboratory is reconstruction of the evolutionary history of ferns. Toward this goal, with my students and other colleagues, I have considered modes and mechanisms of change through time from the individual level, to the population, through the species, and even among genera. To address such a broad systematic range, we have examined ecology, morphology, chromosomes, isozymes, and (most recently) DNA. It has been our desire to use emerging technologies to illuminate and refine our questions about how evolution has forged the great diversity that we observe among fern species.

Special Features of Ferns: We approach the study of fern evolutionary biology through hypothesis testing and we started with available hypotheses about the genetics and breeding systems of individuals. Because ferns have high chromosome numbers and bisexual gametophytes, it had been hypothesized that they have polyploid genetic systems and inbreeding mating systems. We and others used isozymes to falsify these working hypotheses (HAUFLER and SOLTIS, 1986) and suggest new testable hypotheses to explain how ferns could accumulate so many chromosomes and while retaining diploid genetic systems (HAUFLER, 1987, 1989). The discovery of widespread genetic diploidy in ferns were valuable from a practical level. Instead of having to treat ferns as "special" organisms with aberrant genetic systems, populations of ferns could be analyzed with the same algorithms as those of seed plants.

Isozymes as species fingerprints in reconstructing reticulate phylogenies: A fortuitous offshoot of these isozyme studies was the demonstration that genetic identities among fern congeners was about half that in the angiosperms. This discovery was fortuitous in that isozyme profiles could function as diploid species fingerprints in reconstructing the intricate reticulations that characterize the evolutionary history of many fern genera. The availability of stable, precise genetic markers for differentiating diploids that had very similar morphologies proved to be a very powerful tool. We were able to unlock and clarify some of the mysteries surrounding some members of the genus *Cystopteris* (HAUFLER et al., 1985, 1990; HAUFLER and WINDHAM, 1991), but the extraordinary complexity of *C. fragilis* remains a puzzle that is not yet fully resolved.

We had more success with *Polypodium*. Starting with a set of hypotheses based on morphology, chromosomes, and a remarkable artificial crossing program (Shivas, 1961), we first used isozymes to confirm some and falsify other origins of allopolyploids. Turning to

elements of biogeography and cryptic morphology (spores and scales), we developed a revised set of hypotheses, collected appropriate materials, and again used isozyme fingerprints to test the new profiles of reticulate evolution. Once a clear and well substantiated picture of allopolyploid speciation had been developed (HAUFLER et al., 1995a), we were able to use this phylogenetic roadmap to illuminate persistent questions about morphological features.

Diploid phylogenies -- a job for cpDNA: Although isozymes proved to be an ideal tool to address questions about allopolyploid speciation, the extraordinary genetic distance between diploid sister species in *Polypodium* made us question the reliability of isozymes in reconstructing the phylogeny of the primary species in the *P. vulgare* complex. We turned to the more conservative chloroplast DNA genome to address these biosystematic questions. Restriction site analysis provided evidence that there were two distinct groups of species within the *P. vulgare* complex (HAUFLER et al., 1995b). Species within each group differed by only a few restriction sites whereas many site changes accumulated between the two groups. We began developing hypotheses about the ancestors of the complex and discovered that there was a huge number of restriction site changes separating the putative tropical ancestor from the temperate ingroup. Bolstering the isozyme evidence, these data also indicated that fern species accumulate extraordinary genetic distinctness before speciation takes place.

The genus and beyond -- *rbcL* sequencing: Because even restriction site analysis failed to yield a well resolved picture of the ancestry of the *P. vulgare* complex, we turned to sequencing of the very popular *rbcL* gene. Used by most biosystematists to consider relationships at intergeneric and higher taxonomic levels, *rbcL* proved to be of value within *Polypodium* (HAUFLER and RANKER, 1995). Not only did sequencing this gene help to show the association between temperate and tropical *Polypodium* species, but these preliminary data indicate that additional analysis within the family Polypodiaceae will help to resolve questions of intergeneric relationship.

Breeding systems: In addition to addressing phylogenetic questions, members of my lab have been interested in discovering the actual mechanisms that promote outcrossing mating systems in ferns. Most recently, we have been trying to integrate the various responses by gametophytes to exogenous chemical stimuli and have developed a model that builds on the work of SCHNELLER (1988) and describes a situation in which all of the evidence points to a system in which subterranean spore banks may be activated by gametophytes on the soil surface and induced to produce sperm (HAUFLER and WELLING, 1994). These sperm, that would be temporally and probably genetically distinct, could then fertilize the eggs produced by the surface level gametophyte. If such a mechanism is active in other species, we may be able to formulate comprehensive hypotheses that show how patterns of genetic diversity in populations are promoted by processes active at the level of the gametophyte.

Summary: I hope that this brief discussion demonstrates how broad-based and fluid I think an effective program in biosystematics of ferns needs to be. Embracing available technologies and coordinating new discoveries with past work has enabled us to make the most effective steps forward in reconstructing evolutionary histories. It has always been my goal to build on the shoulders of previous workers and, reciprocally, to recognize that cytology, morphology, and biogeography can provide valuable filters for interpreting new molecular results. At the same time, new perspectives from molecular studies can help to craft novel hypotheses at the whole organism level. Ultimately, the possibility of fully integrating the processes that control the patterns of genetic diversity in populations with our hypotheses about phylogeny drives my continuing desire to be a biosystematist. I feel truly fortunate to be working with fellow biosystematists who regularly invite the interweaving of studies of individual mating systems, population genetics, and phylogenetic reconstruction in trying to understand the great diversity of the biological world.

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7. IOPB General Meeting: Minutes

IOPB Business Meeting, 1 August 1995 - Minutes

by IOPB Secretary/Treasurer Peter C. Hoch (hoch@mobot.org), Missouri Botanical Garden, St. Louis, MO 63166, U.S.A.

1. IOPB President Peter H. Raven convenes the meeting at 5:10pm; c. 40 members present

Peter Raven begins by extending deepest thanks to the organizers of the IOPB VI International Symposium in Tromsoe for their fine work, specifically Brynhild Moerkved, Torstein Engelskjoen, Ulf Molau, Bengt Jonsell, and Liv Borgen. He also thanks the many colleagues from the former Soviet Union for attending, and Bengt Jonsell, the Bergius Foundation, and the organizers for their efforts to help these colleagues. Dr. Raven observes that the institutional and individual connections are strong among these groups, and that the continued interest and assistance of the developed countries are very important for the future stability and development of the countries of the former Eastern block. The opportunity for international collaboration in biosystematic research has never been better,

nor more important for the conservation of nature.

2. Report by Shoichi Kawano, for the Nominating Committee:
Shoichi Kawano presents the results of the elections for the period 1995-1998 (published shortly before the meeting in the IOPB Newsletter No. 24). There are no questions or comments.

3. Report by Secretary/Treasurer Hans C. M. den Nijs:
On the membership:
At the end of 1992 following the V International Symposium in St. Louis, there were about 250 members. During the following years, there has been an increase, such that at this meeting the IOPB Directory includes 295 members (270 personal and 25 institutional members). However, about 40-50 members are in arrears for their dues, and all have been sent dun invoices to remind them to pay. The improved situation in Eastern Europe gave new opportunity for colleagues to join, so ten new personal members from there are welcomed. As decided during the 1992 St. Louis meeting, and in accordance with the IOPB constitution, those members that do not pay by the ultimate date of 1 November 1995 will be deleted from the IOPB Directory, which will be published in the first Newsletter of 1996.
On the financial position of IOPB:
Members should make every effort to pay their dues in a way to avoid banking transfer charges. For European currency, Eurocheques are preferred, since they are free of charge. The establishment of a US currency account has saved IOPB about $ 1,000, so all payments in US dollars should be sent to the dollar treasurer. International Postal Money Orders are also free of transfer charge, if they are made out to IOPB. We anticipate being able to establish a credit card account, which will be announced in a subsequent issue of the Newsletter.

Actual financial status:

Balance received 12/1989 from former treasurer:	US$ 4,371.-
Balance per 06/06/92 (end of first period in charge):	US$ 4,246.-

Accounts for period (06/06/92--14/07/95) are as follows (1 US$ = DFL 1.85):

CREDITS				
Postal Giro Account	DFL 253.-			
ABN/AMRO DFL-Account	DFL 856.-			
Spaarbeleg Savings Account	DFL 4,072.-			
Credit interest c.	DFL 200.-			
	DFL 5,381.-	=	c.	US$ 3,261.-
ABN/AMRO US$-Account				US$ 425.-
Missouri Botanical Garden/Regional Treasurer			c	US$ 3,200.-
	TOTAL CREDITS		c.	US$ 6,786.-
DEBITS				
Payments, IOPB Newsletter No.24, c.	CHF 2,900.-	=	c.	US$ 2,340.-
Total assets per 14/07/95			**c.**	**US$ 4,450.-**
Balance for period (06/06/92--14/07/95) is positive by			**c.**	**US$ 204.-**

Continued publication of the Newsletter at its current standard will depend on the payment of 1995-98 membership dues by those who have not done so. Mailing a separate bill for membership dues, rather than relying on announcements in the Newsletter, very likely will substantially speed up and increase the number of payments. However, this will require the additional postage costs for the mailing of invoices. Institutional membership is a special category, since they commonly pay for only one year at a time, not a three-year period, and require separate invoices each year. To cover the added administrative costs, Hans den Nijs took the freedom to bill the postage costs to the institutes.
Hans den Nijs estimates that if printing costs remain more or less constant, the costs for the coming 3 years (1996-1998) will be about US$ 40. Therefore he has proposed to the IOPB Council that, as of the close of the IOPB 1995 Symposium, the membership dues for the coming 3-year period be raised to US$ 40. That proposal was approved in **Council;** after brief discussion, the Assembly agrees with this decision.
Finally, Hans den Nijs gratefully acknowledges the continued support of the Geobotanisches Institut ETH in Zurich, which has not charged the costs of mailing the Newsletter to IOPB, and of ETH and the University of Amsterdam for not charging IOPB for postage, secretarial, and other administrative costs.

4. Scientific comments by IOPB President Peter H. Raven:
One clear observation that emerges from this meeting is that more is known biosystematically about the arctic flora than for that of any other region. It is important that studies on this very well-known flora be encouraged and continued. Our level of knowledge here compares very well with - and actually is much greater than - that of other "well-known" floras, for example, in central Europe, eastern North America, or California. The gathering of this type of knowledge is not possible without the cooperation of many persons and institutions.
What is not yet clear is how the patterns found in the arctic can be compared, since comparable information is not available for any other region. This suggests that IOPB, or at least IOPB members, might in the future pursue in-depth studies of some other areas or floras. Without a serious, coordinated effort to gather this type of information for areas, we will not be able to make the sort of broad, insightful comparisons that have animated the best talks of this meeting. We might take the prescient advice of early biosystematist David Keck, who suggested at the First International IOPB Symposium in 1962 that those who espouse the "new systematics" would do well to "go to the tropics," those marvelously rich but poorly known regions. We are not now laying the foundations for biosystematic comparisons around the world, and we may wish to, especially if we wish to achieve for the extraordinarily complex and speciose tropical communities the sorts of critical insights that speakers at the present Symposium have achieved for the arctic.

5. The status of official IOPB publications:
Peter Raven wishes first to acknowledge Krystyna Urbanska, who in 1983 resurrected the IOPB Newsletter, defunct for about 10 years, and reformed it into the centerpiece of the IOPB. One can trace the subsequent development of the entire field of biosystematics in the pages of this publication. Krystyna retires as the Newsletter Editor by January 1, 1996.
IOPB has developed a formal institutional association with the Society for the Study of Species Biology (SSSB), and currently co-edits the official SSSB journal, Plant Species Biology (PSB); IOPB has its own Editorial board, and several IOPB members sit on the SSSB Editorial Board. There are interesting possibilities inherent in this arrangement, especially as they pertain to the ability of our small organization to reach a larger audience and to stimulate the development of our field.
A an offer from the SSSB has been made to adopt PSB, possibly using a new title, as the official journal of the IOPB (it would also remain the official journal of the SSSB). IOPB

would co-edit and co-publish PSB, and IOPB members would receive the journal and could publish up to 8 pages/year free of page charges. That proposal would have the effect of increasing IOPB membership dues to about $ 50/year, which is the current reduced PSB subscription rate being made available by SSSB to non-Japanese subscribers (the rate in Japan is Y 8,000 or c. US$ 80 per year). A second, related proposal has been made to publish the IOPB Newsletter within PSB as a separate special section. The IOPB Council has considered these proposals, and nominated a committee, chaired by Clive Stace, which will study these matters and to make recommendations to incoming IOPB President Bengt Jonsell by the end of 1995. The immediate future of the IOPB Newsletter is secure, thanks to the generous offer by a Scandinavian group headed by Bengt Jonsell and Liv Borgen to continue the Newsletter under support from the Bergius Foundation; the publication will be co-edited by Bengt Jonsell in Stockholm and Liv Borgen in Oslo. The earliest possible date for any change in the independence of the Newsletter or merger with PSB would be about Jan. 1998. We urge all IOPB members to consider publishing more papers in PSB and to subscribe to and support that journal. We also encourage members to renew their IOPB memberships, and to purchase the proceedings volumes of the past several IOPB symposia. The committee will address the question of whether the IOPB wants to proceed further in its cooperation with SSSB and the publication of the journal PSB, or should prefer to function independently.

6. Recognition of service:

We begin by extending our gratitude to Krystyna M. Urbanska, for her extraordinary service to the IOPB. She has served as Council member, President, and Editor of the Newsletter.

The re-establishment of the IOPB Newsletter by Krystyna was a pivotal development for IOPB, increasing communication and membership after the critical and difficult separation of IOPB from IAPT in 1983. She was able to convince to underwrite the preparation and mailing costs of the Newsletter for the entire 12 years of her editorship. As many members, librarians, and others have commented, the quality and production standards of the Newsletter are extremely high.

During this time, the IOPB Symposia became regular triennial events, as did the election of new officers, which has built confidence in the organization. Krystyna hosted an excellent IOPB Symposium in Zurich in 1986, and edited the resulting proceedings volume published at Academic Press (London).

In recognition of service, Peter Raven proposes to present the third IOPB Award to Krystyna Urbanska (you will find the text of the Award elsewhere in this issue, p. 17). The Assembly unanimously approves this resolution by acclamation and gives Prof. Urbanska a standing ovation. In brief remarks, Krystyna acknowledges the resolution with thanks, and expresses her confidence that the Newsletter will continue in the good hands of her Scandinavian colleagues.

Peter Raven continues by recognizing the service of further members: Liv Borgen, who has served IOPB in various capacities from 1981 to the present, most recently as one of the major organizers of the fine Tromsoe meeting. Hans den Nijs who took on the difficult task of being Secretary/Treasurer for six years, in the Executive W. Hardy Eshbaugh, who is unable to be with us, but who served as the "US currency Treasurer" from 1991-1994. And the following retiring members of the IOPB Council: Mary T. K. Arroyo, Delphine Cartier, Hsu Ping-sheng, Kunio Iwatsuki, Herwig Teppner, and Tetsukazu Yahara. Finally, Peter Raven acknowledges Shoichi Kawano, who is completing his service in IOPB Executive. As President, he organized the wonderful IOPB Symposium in Kyoto in 1989, and edited the fine proceedings volume, also published at Academic Press (London).

7. Closing remarks:
Peter Raven introduces Bengt Jonsell as the incoming IOPB President. Prof. Jonsell thanks the Assembly for helping to make the 1995 International Symposium in Tromsoe a great success. He promises to work hard for the organization, especially by continuing publication of the fine IOPB Newsletter. These are exciting times of change for IOPB and the world, and Bengt Jonsell looks forward to continued success working with the members of the organization. Finally, the new President-Elect Konrad Bachmann takes the floor to announce the next IOPB Symposium 1998 in the Netherlands.

The meeting adjourns at 6:00 pm.

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8. IOPB Award 1995

By Peter H. Raven, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166, USA
Past President of IOPB

During the VI IOPB International Symposium in Tromsoe, Norway, IOPB resolved to give the third IOPB Award to Krystyna M. Urbanska, in recognition for her enormous contributions to the growth and development of the IOPB and, through her own research program with asexually reproducing plants, to plant biosystematics. The text of the resolution reads as follows:

The International Organization of Plant Biosystematists
is deeply grateful to
Professor Krystyna M. Urbanska
for her long and devoted service to the Organization and to the science of plant biosystematics.
For more than twenty years, she has served with distinction in many leadership roles, including
President of the Organization and especially
Editor of the *IOPB Newsletter* for more than 12 years.
The International Organization of Plant Biosystematists is unanimously resolved to record its appreciation of her lifetime contributions to plant biosystematics.
Tromsoe, Norway, August 1, 1995.

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9. Presidential Address

writes Bengt E. Jonsell, IOPB President:

As your new President I should like to thank you for the confidence bestowed and say that I am looking forward to the work with the nice team which is the IOPB Executive and Council. The coming three-year period will bring about a thorough discussion of the future role and policy of IOPB initiated by our Past President Peter Raven before the Tromsoe meeting. We will with great interest consider the offer from SSSB (Society for Study of

Species Biology) to link in some way IOPB to the Journal of Plant Species Biology as suggested by Shoichi Kawano, one of former IOPB Presidents and a current IOPB Council Member. A subcommittee chaired by Clive Stace and consisting of Konrad Bachmann, Liv Borgen, Peter Hoch and Suzanne Warwick was set up to study in depth this issue and suggest possible solutions to the Eexecutive before the IOPB General Business Meeting in 1998.
The Tromsoe symposium was - at least to me - a very inspiring event and I should like to thank all those who contributed to this success with papers, posters, organizational, and/or practical efforts. Another important task which remains is to edit and to publish the Symposium proceedings volume; Invited Speakers have been asked to deliver their manuscripts by November 15. The Symposium volume will appear in Opera Botanica, the joint Scanddinavian series of monographs.
As IOPB President, I should like to keep contact with IOPB members as much as possible, and to stimulate the recruitment of new members. Please spread the knowledge about IOPB in your institutions and send notes on your work to the Newsletter.
From 1996 on the Newsletter will be a joint Scandinavian enterprise. It will be edited jointly by myself and Liv Borgen; it will continue to appear twice a year. We are glad to announce that the constant features of the Newsletter "IOPC Chromosome Data" and "News from Molecular Biosystematists" will be continued and edited as before by Clive Stace and Dan Crawford (see pp. 7 and 11). Other contributions should be sent from now on to Liv Borgen, Botanical Garden and Museum, Trondheimsveien 23B, N-0562 Oslo, Norway and/or to Bengt Jonsell, Bergius Foundation, Box 50017, S-104 05 Stockholm, Sweden. We will let you know at a later date the instructions as to preparation of your contributions and the deadlines.

B.J.

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10. Farewell/Welcome Note from the Former Secretary/Treasurer

writes Hans den Nijs, our former Secretary/Treasurer:

As many of you are aware, it is a rule in our Organization to have Executive and Council elections before the triennial Symposium is held. In this way, the new Officers can be presented officially during the Business Meeting held in conjunction with the scientific meetings, and they immediately can start their work.
During this Business Meeting my service time as Secretary/Treasurer came to close; Peter Hoch was elected as the new IOPB officer in this capacity, and Leo van Raamsdonk became our new Regional Treasurer for European currency. As from now they will try to convince you to pay your dues. I will help our President-Elect Konrad Bachmann in preparing the 1998 Symposium that will be held in the Netherlands, most likely Amsterdam. I hope to see very many of you in three years from now. We will try hard to organize our major IOPB event in the same perfect and smooth way as our Scandinavian friends did this summer. However, it will be difficult to match them...
Back to the changes in Secretary/Treasurer offices: I served IOPB for six years and it was a pleasure to do that, but it is logical to step down after that time. It is good that other people will help now profiling IOPB which urgently needs young blood. Everyone who remembers the St. Louis Symposium and the way Peter Hoch was acting as the right hand of Peter Raven, the President-Elect of that meeting, will join me in expecting that Peter will do a perfect job for IOPB. Everyone who knows the conscientious work of Leo van

Raamsdonk will be sure as I myself am that part of IOPB finances are in very good hands indeed. I should like to wish both of them a very satisfactory and successful service period. Best luck, Peter and Leo.
We all could help them in fulfilling their duties by responding quickly to their inevitable requests to pay our membership dues in time. Thank you for running through your files and - in case you haven't done that yet - for running to your bank/post office and doing the necessary.

H. d. N.

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11. IOPB Symposium 1998

writes Konrad Bachmann, IOPB Vice-President (President Elect):

I have the pleasure to announce that the next IOPB Symposium 1998 will be held in the Netherlands. The Symposium venue is not yet definite but it will possibly be held at the University of Amsterdam. Our former Secretary/Treasurer Hans den Nijs will be included in the Organizing Committee which soon will begin the preliminary work on the overall Symposium theme and other pertinent issues. Should you have any suggestions concerning the Symposium, please contact me or Hans den Nijs*. We are looking forward to seeing many IOPB Members at the Symposium.

*Editor's remark: Addresses/fax numbers etc. of Konrad Bachmann and Hans den Nijs are given in the list of IOPB Executive and Council (p.).

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12. Meetings - Past and Future

writes David F. Murray, IOPB Council Member, Museum, Univ. of Alaska, 907 Yukon Drive, Fairbanks, AK 99775-1200, USA.
Fax: +1 907 474 5469; e-mail: FFDFM@aurora.alaska.edu

The workshop "Apomixis and Taxonomy" was held 8-11 August 1995 in Pruhonice, the Czech Republic, sponsored by the Institute of Botany, Academy of Sciences. About 50 people from 14 countries assembled to give papers and join discussions. Excellent preparation, perfect weather, and ideal surroundings contributed to full enjoyment of presentations on the complexity of the apomictic process, the consequent genetic and morphological variability in populations and clones, and species concepts to deal with these results. Expectedly, examples came from work in Asteraceae, Ranunculaceae, and Rosaceae, developed from a wide range of analytic and experimental approaches. Several papers based on these presentations are scheduled to appear in a special issue of Folia Geobotanica and Phytotaxonomica.
Context for the workshop was established at the beginning of each of the first two days with reviews by John Richards (U.K.) of the controls of breeding systems on genetic variability and the variability of apomictic clones. Well known for his work both with breeding systems in general and with *Taraxacum* in particular, his comments then and throughout the workshop provided amplifications, transitions, and, at the end, the glue to bind our var-

ious contributions into a whole. The intricacies of apomixis and the classification of initial, intermediate, and final products, up to and including embryogenesis and endosperm formation, were treated by Nogler (Switzerland), Czapik (Poland), Pajak (Poland), Teppner (Austria), and Solntseva (Russia). Applications of DNA studies to, among other things, the identification of genotypes as the means to evaluate morphological variation within and among genotypes were the subjects of papers by Nybom (Norway), Bräutigam (Germany), Antonov (Russia), Campbell (U.S.A.), and Shi and coauthors (U.K.).

Case studies of apomictic complexes emphasizing a variety of themes were based on a number of taxa: *Amelanchier* (Campbell, U.S.A.); *Taraxacum* (Kirschner and Stepanek, Czechia, and Mihokova, Slovakia); *Potentilla* (Eriksen, Sweden, Ertter, U.S.A., and Leht, Estonia); *Rubus* (Holub, Czechia, and Weber, Germany); *Hypericum* (Martonfi and Brutovska, Slovakia); *Sorbus* (Mikolas, Slovakia); *Ranunculus auricomus* (Gutermann, Austria, and Ericsson, Sweden); *Hieracium* (Chrtek, Czechia, and Shi, U.K.).

This reporter had the temerity, on the third day, to lead off with the question of species concepts for apomictic taxa, joined by Guttermann (Austria), Ericsson (Sweden), Weber (Germany), Holub (Czechia), and Ertter (U.S.A.). I arrived at the workshop simply amazed by a tradition that accepts formal recognition of, for example, a bazillion species in the *Ranunculus auricomus* complex. As was pointed out, there are 2000 or so species of *Carex*, but it is not the number of taxa per se that is so stunning, it is the large number of taxa so narrowly defined, extending even to the naming of clones.

The whys and hows became clearer, all the more so because it was possible to discuss the complexity of these taxonomies with the authors themselves as in the case of the *R. auricomus* treatment by Stefan Ericsson. He and others such as Jan Kirschner and John Richards, who, in telling of their experience with *Taraxacum*, showed just how deep the tradition is in Europe to create formal taxonomies for apomictic complexes. Equally clear from greenhouse and garden experiments, such as those being conducted at the Institute of Botany in Pruhonice, is just how very carefully variation is appraised before being formally described.

North American ambivalence for naming apomictic microspecies may be due, at least in part, we concluded, to the huge impact of the biological species concept on us, a paradigm to which we are susceptible if for no other reason than the frequent repetition of it. Although there is an extensive literature on how inappropriate that concept is to what plants actually do, the asexual products of apomixis tend to be looked upon as something other. Jan Kirschner suggested that many of the North American agamic complexes may behave differently from those in Eurasia, where a different vegetation history reduced the original complexity and contributed to the geographic separation of sexual parents from their apomictic derivatives.

Whatever, we do not to have groups of enthusiasts who come together regularly for field trips just to view fields of apomictic Taraxaca! They know their plants well and in great detail. A day long bramble ramble led by Josef Holub introduced everyone first hand to the countryside and, by means of numerous concrete examples, to the complexity of taxa in the genus *Rubus*.

Convenors Jan Kirschner and J. Stepanek were ably assisted by Jindrich Chrtek, Jr., in particular, but also by others on the Institute staff. Several of us are also indebted to Jiri Sojak who, with little notice, made possible for us very productive study of critical specimens of *Potentilla* for which he is a recognized authority.

The desire to meet again was strong enough that the group decided to approach the organizing committee for the next IOPB meeting scheduled for Amsterdam in 1998 in hopes of having the topic apomixis and taxonomy made part of that program.

A full list of participants and their snail-mail and e-mail addresses can be obtained from Jan Kirschner at: kirschn@csearn.bitnet.

* * *

13. Request for Information and Material

FREY Ludwik Dr., W. Szafer Institute of Botany, Polish Academy of Sciences, Dep. of Plant Systematics, Lubicz 46, 31-512 Krakow, Poland, would appreciate papers and information concerning grasses - especially tribus Aveneae; herbarium material of *Agrostis alpina* and *A. rupestris* from Tatra Mts., Appenines (!), Pyrenees and Spain.

MIZIANTY Marta Dr., W. Szafer Institute of Botany, Polish Academy of Sciences, Dept of Plant Systematics, Lubicz 46, 31-512 Krakow, Poland, would appreciate seeds and herbarium materials of *Dactylis*, *Agropyron*, *Elymus* as well as information on taxonomy and chromosome numbers and nomenclature of those genera.

* * *

14. Miscellaneous News and Notes

Publications:

ACKERMANN, J. D., 1995: An Orchid Flora of Puerto Rico and The Virgin Islands. 203 p., 97 plates. Hardcover, $ 35.-. Order No. MEM 73. ISBN 0-89327-394-5.

LUER C., 1975: The Native Orchids of the United States and Canada, Excluding Florida. 363 p., color plates. Hardcover, $ 41.-. Order No. 015-6. ISBN 0-89327-015-6.

Send orders to: Scientific Publications Department
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Change of address: Dr. Colin J. Webb
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e-mail: raven@mobot.org

Editor Newsletter: **Liv BORGEN** **(see also JONSELL!)**
Bot. Garden and Museum, University of Oslo,
Trondheimsveien 23B, N-0562 Oslo 5, Norway
Phone: +47 22 85 17 78; Fax: +47 22 85 18 35
e-mail:liv.borgen@toyen.uio.no

Co-Editor Newsletter "Molecular News":
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Dept. of Botany, Ohio State University, 1735 Neil Ave,
Columbus, OH 43210-1293 USA.
Phone: +1 614 292 8952; Fax: +1 614 292 6345;
e-mail: dcrawford@magnus.acs.ohio-state.edu

Co-Editor Newsletter "Chromosome Data":
Clive A. STACE
Dept. of Botany, University of Leicester,
Leicester LE1 7RH, U.K.
Phone: +44 116 252 3381; Fax: +44 116 252 2791;
e-mail (Secretary): JMDCW1@Leicester.ac.uk
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Phone: +1 314 577 5175; Fax: +1 314 577 9596;
e-mail: hoch@mobot.mobot.org

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Member *ex officio* for 1998 Symposium:
Hans C. M. DEN NIJS
Hugo de Vries Lab., University of Amsterdam,
Kruislaan 318, NL-1098 SM Amsterdam, The Netherlands.
Phone: +31 20 525 7660; Fax: +31 20 525 7662;
e-mail: njis@popmail.bio.uva.nl

Council

Randall J. BAYER, Dept. of Botany, University of Alberta, Edmonton, Alta, T6G 2E9, Canada.
Fax: +1 403 492 9457; e-mail: randallbayer@mts.ucs.alberta.ca

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e-mail: crisci@lasbe.org.ar

Philip GARNOCK-JONES, School of Biological Sciences, Victoria Univ. of Wellington, P.O. Box 600, Wellington, New Zealand.
Fax: +64 4 4715331; e-mail: Phil.Garnock-Jones@vuw.ac.nz

Herbert HURKA, Institut für Biologie, Univ. Osnabrück, Barbarastr. 11, D-49076 Osnabrück.
Fax: +49 541 969 2870; e-mail: hurka@cipfb5.biologie.uni-osnabrueck.de

Shoichi KAWANO, Dept of Biology, Faculty of Science, Kyoto University, Kyoto 606, Japan.
Fax: +81 75 753 4122

Jan KIRSCHNER, Institute of Botany, Academy of Sciences, CZ-25243 Pruhonice 1, Czech Republic.
Fax: +42 1 643 6529; e-mail:kirschn@csearn.bitnet

Tatsuyoshi MORITA, Biological Lab, Faculty of Education, University of Niigata, 8050 Ikarashi-ninocho, Niigata-shi, 950-21 Japan.
Fax: +81 25 263 1277; e-mail: morita@ed.niigata-u.ac.jp

David F. MURRAY, Museum, Univ. of Alaska, 907 Yukon Drive, Fairbanks, AK 99775-1200, USA.
Fax: +1 907 474 5469; e-mail: FFDFM@aurora.alaska.edu

Jürg STÖCKLIN, Botanical Institute, University of Basel, Schönbeinstrasse 6, CH-4056 Basel, Switzerland.
Fax: +41 61 267 3504

Suzanne I. WARWICK, Centre for Land and Biological Resources Research, Agriculture and Agri-food Canada, K. W. Neatby Bldg, C.E.F., Ottawa, Ontario, Canada K1A OC6.
Fax: +1 613 995 1823; e-mail: warwick@ncccot2.agr.ca

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