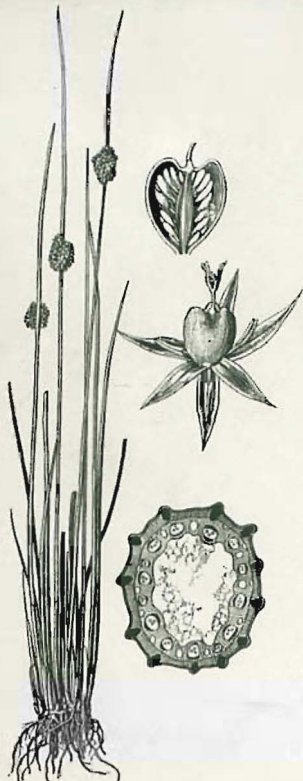


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International Organization of Plant Biosystematists

Newsletter No. 34

Edited by

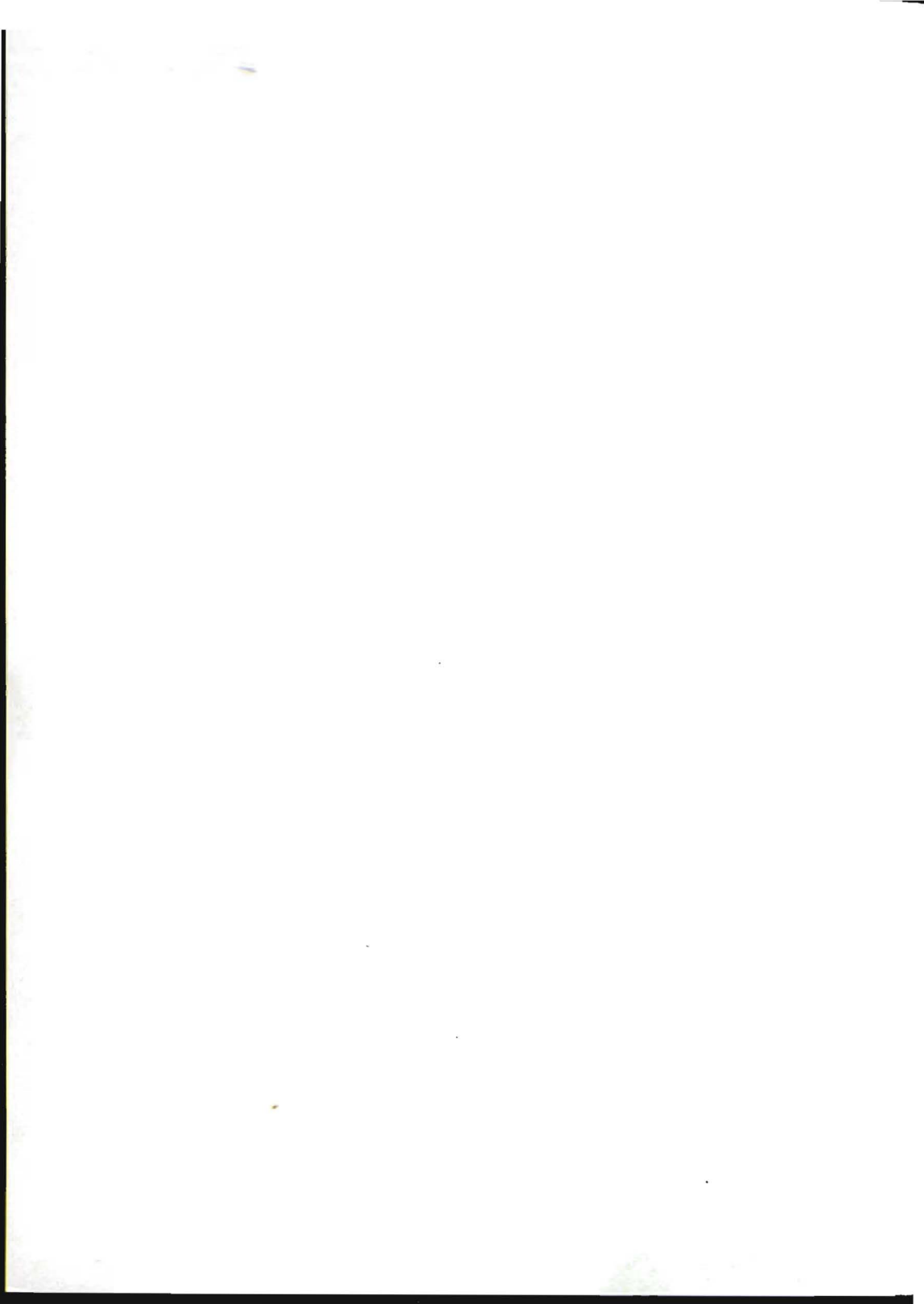
J. Kirschner & L. Drábková
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Issued from

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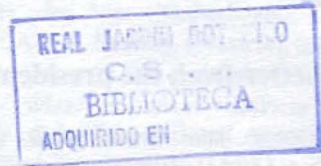
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P1423

IOPB NEWSLETTER NO. 34



Contents

1	Letter from the president	1-4
2	News from IOPB Business Meeting	5-4
3	Profiles	8-17
	L. Katinas: División Plantas Vasculares of Museo de La Plata, Argentina, and the LP herbarium	
	H. Chapman: Molecular Ecology and Evolution Laboratory, Department of Plant and Microbial Sciences, University of Canterbury, New Zealand	
4	IOPB Chromosome Data 18	18-24
5	Announcements	25
6	Individual Research News	26
7	Changed addresses	26
Forms		
	IOPB Membership Application Form	27
	Research News Form	28

Letter from the president

The International Organization of Plant Biosystematists has entered a new century and a new millennium. As the incoming President of the IOPB, I look forward to serving the membership for the next three years. My main goals are to maintain and develop the website, increase membership in the Organization, develop new collaborations with other botanical societies, and aid research and education in plant biosystematics.

The IOPB held its first meeting of the millennium at Botany 2001 in Albuquerque, New Mexico USA. This was the first convention held jointly with American botanical societies including the Botanical Society of America, American Bryological Society, and American Society of Plant Taxonomists. I was the local representative for the IOPB and I organized all the events for the Organization. The IOPB events included the IOPB Symposium, the IOPB reception, IOPB Business Meeting, and the IOPB Banquet, which was held jointly with the American Society of Plant Taxonomists. The theme of the IOPB Symposium was: The Origin and Biology of Desert Flora. Five speakers participated in the symposium including Bonnie Crozier, University of Texas, Austin-Historical relationships in the American desert plant family Cactaceae; Louise Lewis, University of Connecti-

cut, Storrs- Green algae of desert microbiotic crusts: Survey of North American taxa; Vic Landrum, Washburn University-Four families and 40 million years of evolution and adaptation to xeric environments; Esteban Muldavin, University of New Mexico-Some floristic characteristics of the northern Chihuahuan Desert: a search for its northern boundary; and G. Anthony Verboom, University of Cape Town- Phylogenetics of the Cape grass genus *Ehrharta* (Ehrharteae): evidence for diversification in a summer-arid system. The proceedings of the Symposium will be published in *TAXON*.

The IOPB Business Meeting was held on 15 August at the Botany 2001 Convention. Konrad Bachmann, IOPB President convened the meeting with 25 IOPB members in attendance. A full report of the minutes of the meeting is presented later in this Newsletter. It is important to highlight several important changes adopted at the Business Meeting as well as discuss proposals made at the meeting. A major change adopted at the meeting is the reduction of publication of the IOPB Newsletter to one issue per year and making it available on the IOPB Website. This change was made to reduce costs associated with the production, printing, and mailing of the Newsletter. It is crucial that the website be developed and maintained. This issue will

be the last printed version produced. From now on the Newsletter will be published on-line for members and will be printable for libraries and institutes.

It was proposed and accepted that the IOPB shall change from a three-year membership cycle to a yearly cycle. This change will make dues collections more efficient and the membership list easier to administrate. There will be an annual mailing to members that will include a dues invoice and other information as necessary. A new fee schedule was adopted as well. The new dues are \$15 per year for individuals and \$30 per year for institutions. It is clear that the IOPB presently has scant financial resources needs to increase dues to maintain a healthy society.

The current officers for the 2001-2004 term are:

President: Tim K. Lowrey, Albuquerque, USA

Vice-President: (President-Elect): Gonzalo Nieto Feliner, Madrid, Spain

Past President: Konrad Bachmann, Gatersleben, Germany

Secretary: Nancy Morin, Flagstaff, USA

Treasurer: Peter Hoch, St. Louis, USA

Editor: Jan Kirschner & Lenka Drábková, Praha, Czech Republic

Editor for Chromosome Data: Clive Stace, Leicester, UK

The following individuals were elected by mail vote to the IOPB Council for the term of 2001-2004: R. Bayer (Australia), P. Catalan (Spain),

E. Conti (Switzerland), J. Crisci (Argentina), E. Kuta (Poland), D. Murray (USA), H. den Nijs (Netherlands), C. Pires (USA), T. Stuessy (Austria) and T. Yahara (Japan). The election of Tod Stuessy, who is also Secretary-Treasurer of the International Association of Plant Taxonomists (IAPT), will facilitate increased collaboration with the IAPT. Tod is a strong proponent for initiating discussion on a number of potential points of collaboration including: (1) renewal of the chromosome counts column in TAXON; (2) joint production of a searchable CD-ROM of all previously published chromosome counts (i.e., from Darlington and Wylie, Fedorov, Cave et al., IAPT, and lastly the MO indices); (3) reestablishment of an IOPB column in TAXON; and (4) joint sponsorship of symposia and book products; (5) joint international meetings sponsored by the two organizations; and (6) joint sponsorship of workshops in developing countries on laboratory or other techniques (ranging from phylogenetic reconstruction, employing Internet resources better, sampling techniques for biosystematic research, DNA laboratory techniques and analysis, new chromosomal techniques, etc.). I believe there is merit in these and other ideas for collaboration that will strengthen both organizations. As president I will strive to adopt those collaborations that will be beneficial to IOPB.

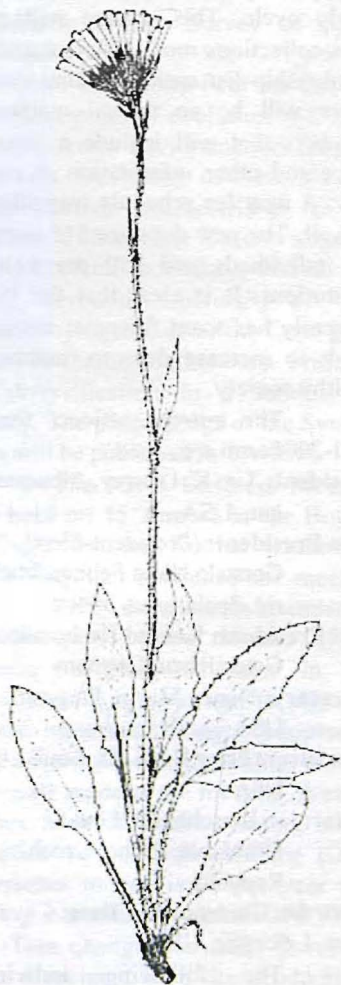
The planning for the next meeting of the IOPB has begun. Dr. Pilar Catalan (University of Zaragoza) presented an offer to hold the IOPB

Symposium 2004 at the Botanical Garden of the University of Valencia (Universitat de València Jardí Botànic), organized by a committee from several Spanish institutions under the direction of Dr. Gonzalo Nieto Feliner of the Real Jardín Botánico, Madrid. Other members of the organizing committee are Dr. Pilar Catalan (Universitat de Zaragoza), Dr. Josep A. Rosselló and Dr. Jaime Güemes (Universitat de València Jardí Botànic). The executive and council of IOPB adopted this proposal.

It is important that IOPB establish and maintain an IOPB website that will provide the primary means of disseminating the Newsletter. I will work in conjunction with the Council to transfer the website to the University of New Mexico. The New Mexico Natural Heritage Program in the Museum of Southwestern Biology at New Mexico has agreed to maintain the website. I will work closely with Jan Kirschner, Editor of the Newsletter and Nancy Morin, Secretary to develop an effective website. I believe that creation of a useful website will help to maintain current members and attract new ones.

We encourage IOPB members to send information and ideas for the website to either Nancy or Jan.

Tim K Lowrey



Hieracium vaponicum
(*H. nigrescens* group)

News from IOPB Business Meeting

Appendix (distributed 12 July 2001):

Opportunities for Collaboration between IOPB and IAPT:

At the time of founding of IAPT in 1950, the organization was viewed in a very broad context, appropriate for its time. It was to be a truly international organization dedicated to all aspects of plant systematics, from nomenclatural through evolutionary and all areas in between. The journal *TAXON* began publication in 1951, and the contents of the journal reflected broad aspects of plant systematics. The Association also has traditionally shouldered responsibility for help with plant nomenclature, through interactions with the Nomenclature Section of the International Union of Biological Sciences (which convenes the nomenclatural sessions during each International Botanical Congress).

During these past fifty years, we have seen many changes in plant systematics. We have witnessed changes in data emphasis on chromosomes, cytogenetics, palynology, secondary products, isozymes and now DNA. We have seen interest ebb and flow on conceptual and philosophical issues that resulted in phenetics and now cladistics. IAPT and *TAXON* have been helpful vehicles to foster these changes, and many useful articles and books (e.g. the chromosome number indices) were published during these past five decades.

The IOPB was developed to increase focus and stimulate interest in biological aspects of plant systematics. That is, to keep populational and evolutionary research an active and meaningful part of the broad spectrum of activities in our field, in essence, continuing to emphasize the important "New Systematics" (or "biosystematics") perspectives from the 1940s. For many years the IOPB and IAPT had a very close and mutually beneficial relationship, with joint projects, including the useful plant chromosome numbers column published with every issue of *TAXON*.

In recent years, however, the IOPB pulled away from the IAPT and developed its own newsletter and activities. The reasons for this were many, but surely in part due to the slowly narrowing focus of IAPT, which continued with more emphasis on historical and nomenclatural aspects of plant systematics, and less on biosystematics. The IOPB has demonstrated that it can survive and work independently, and this is an important point. The IAPT, on the other hand, while also surviving during these years without difficulty, has endured a slowly eroding membership, but at the same time through prudent financial management, has accumulated a very sound financial basis upon which to contemplate new initiatives.

The new mandate for IAPT is to broaden its scope once more, and to fulfill its role as helping develop plant systematics world-wide in all its numerous dimensions. Toward that end several new initiatives have already

been instituted: (1) international editorial board for TAXON with representatives from different continents dealing with many taxonomic groups and many types of investigations; (2) a Silver Jubilee series of reviews in TAXON on all aspects of plant systematics; (3) the support of an international symposium in Vienna in October, 2001, on "Deep Morphology"; (4) development of a new research grants program to stimulate research activities especially in developing countries; (5) establishment of the new inexpensive Student Membership category; and (6) support for other international and regional symposia through various means, including prizes for best papers/posters, and direct financial aid.

The IAPT sees that renewed collaboration with IOPB would be very much in the interests of promoting systematic botany throughout the world. Forging once more closer links between the two organizations would take advantage of the broader biological and more modern appeal of IOPB plus the larger and more financially secure IAPT with an existing broad network of individual members and institutions.

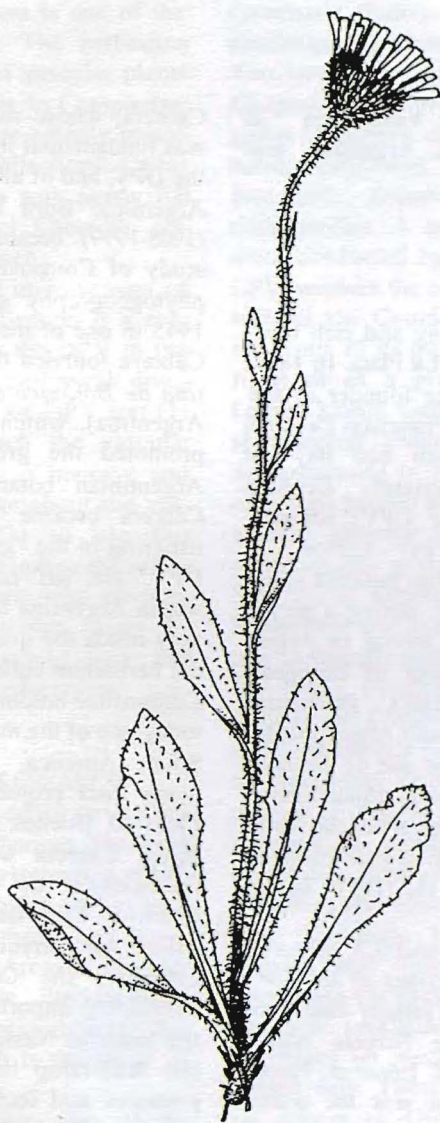
IAPT specifically would have interest in discussing: (1) renewal of the chromosome counts column in TAXON; (2) joint production of a

searchable CD-ROM of all previously published chromosome counts (i.e., from Darlington and Wylie, Fedorov, Cave et al., IAPT, and lastly the MO indices); (3) reestablishment of an IOPB column in TAXON; and (4) joint sponsorship of symposia and book products therefrom; (5) joint international meetings sponsored by the two organizations; and (6) joint sponsorship of workshops in developing countries on laboratory or other techniques (ranging from phylogenetic reconstruction, employing Internet resources better, sampling techniques for biosystematic research, DNA laboratory techniques and analysis, new chromosomal techniques, etc.).

The main point of this note is to open the door wide for collaborations between IOPB and IAPT. The IAPT certainly needs broadening to be more responsive to its mandate of helping to develop plant systematics world-wide. Perhaps the IOPB may view the IAPT as a willing partner with resources to help reach more persons interested in evolutionary and population-level research and teaching. We welcome further discussions.

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Hieracium uechtritizianum

Profiles

División Plantas Vasculares of Museo de La Plata, Argentina, and the LP herbarium

L. Katinas

BRIEF HISTORY

Botany has had a long and rich tradition at the Museo de La Plata. In 1887, as an initiative of the founder of the Museo de La Plata, Francisco Pascasio Moreno, the Museum had its first Botany Section (currently División Plantas Vasculares or DPV) administered honorarily by Carlos L. Spegazzini. This Italian botanist came to Argentina in 1879, during a period characterized by the arrival in Argentina of a large number of European naturalists. Spegazzini's fascination with Patagonia, in South Argentina, led him to the creation of one of the most interesting and complete collections of vascular plants of this part of the world. This constituted the first collections of vascular plants of the DPV in the Museo de La Plata.

In the XIX and XX centuries the herbarium collections at the DPV increased in number, largely due to the efforts of men like Nicolás Alboff, Augusto Scala, and Lorenzo Parodi. Especially significant was the contribution of Parodi to the organization and caring of the herbarium. Foremost among Parodi's students was Angel L.

Cabrera, whose role in the herbarium was fundamental in the development of the DPV, and of all botanical science in Argentina. Born in Madrid, Cabrera (1908-1999) became immersed in the study of Compositae systematics and phytogeography starting in 1930. In 1945 in one of the rooms of the DPV, Cabrera founded the *Sociedad Argentina de Botánica* (Botanical Society of Argentina), which to the present has promoted the great development of Argentinian botany. One year later Cabrera became head of the DPV, ushering in the "golden years" for the DPV. He led numerous expeditions within Argentina that greatly improved very much the quantity and quality of the herbarium collection, especially the Compositae holdings, which constitutes today one of the most important ones in South America. He also developed many flora projects, among them the Flora of Buenos Aires and Flora de Jujuy. Cabrera was followed in the management of the DPV by Aída Pontiroli, Elías de la Sota, and Jorge Crisci, the current director. Crisci has continued the Compositae tradition, developing important studies mainly in the subtribe Nassauviinae (Mutisieae). His leadership has brought new approaches and techniques to the DPV such as numerical taxonomy, cladistics, historical biogeography and biodiversity conservation.

THE HERBARIUM

With about 500,000 specimens, the LP herbarium is one of the largest in Argentina. The herbarium contains collections of vascular plants with especial emphasis in Compositae. The type specimens are equally important, with two main collections: Carlos Spegazzini's collection with nearly 700 specimens, and Angel Cabrera's collection with 500 specimens.

The care and improvement of the vascular plant collection is a continuing investment by the DPV in the effort to understand biological diversity. The missions of the DPV are: (1) to improve and enrich the vascular plants collection; (2) to improve and transfer the knowledge about the vascular plants; and (3) to use this knowledge for understanding the scientific, economic, esthetic, and environmental value of vascular plants by means of public (exhibitions) and formal (university) educational programs.

GENERAL OUTLINE RESEARCH

Research of the DPV relies on the collections of the LP herbarium. The main research focuses on systematics, which is the cornerstone of other studies such as historical biogeography and biodiversity conservation. Areas of research in the DPV include Pteridophytes, Poaceae, aquatic plants, although the main goal of research is the study of Compositae.

The systematic line of research includes: (1) Systematic revisions. A main goal of the staff of the DPV is the knowledge of genera that

inhabit principally South America and in particular Argentina through systematic studies. Some of the Compositae genera revised or in revision are *Ainsliaea*, *Baccharis*, *Barnadesia*, *Chaptalia*, *Chevreulia*, *Chiliotrichum* group of genera, *Doniophyton*, *Gochnatia*, *Leucheria*, *Liabum*, *Lucilia*, *Moscharia*, *Triptilion*, *Trixis*; (2) Floristic studies. A large portion of the work conducted by researchers in the DPV involves the contribution to floras such as the Compositae of Argentina and some of its provinces (Chaco, San Juan) or of a given area (Valle de Lerma, Martín García island), and the surrounding countries Paraguay and Santa Catarina in Brazil. Other families or groups treated are Araceae, Poaceae, aquatic vascular plants families, and pteridophytes of Argentina; (3) Checklists. As an imperative of biodiversity knowledge and to speed the dissemination of floristic studies, many checklists are being developed or contributed such as the Compositae of Argentina, Falkland Islands (Islas Malvinas), and an illustrated catalogue of the Compositae of Buenos Aires province. The information contained in the type specimens deposited in the LP herbarium is also being processed, starting with the large type collections of Cabrera and Spegazzini, to provide catalogues for those working on South American taxa and; (4) Cladistic analyses based on morphological and molecular data. These will be carried out on genera of Compositae and Onagraceae (a joint project with the Smithsonian Institution/Andrew W. Mellon Foundation). The aim of these studies

is to elucidate the evolutionary relationships in these plant families and to provide the framework necessary for further studies in historical biogeography and biodiversity conservation.

A second research line of the DPV staff deals with historical biogeography, mainly focusing in areas and taxa of South America. Different approaches are being applied such as ancestral areas method, cladistic biogeography, panbiogeography, and parsimony analysis of endemism, according to the underlying hypothesis on taxon or area relationships.

Finally, both lines of research converge in their application to conservation biology, such as the selection of areas for conservation through parsimony analysis of endemism, panbiogeography and cladistic methods.

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Hieracium fritzei

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Sciences
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Hazel Chapman

A major research interest in my laboratory is the evolutionary changes occurring within the introduced European genus *Hieracium* L., especially changes associated with levels of apomictic vs sexual reproduction, rates of somatic mutation, and both intra and inter-specific hybridisation. Our *Hieracium* research group includes Gary Houlston (PhD student), Dr Steve Trewick and Dr Mary Morgan-Richards (Post-doctoral researchers), Dr Ilia Iline (Research Assistant), and Beth Robson (Technical support). We collaborate with Dr Ross Bicknell (Crop and Food Research), and Dr's Anna Krahulcová and František Krahulec from the Czech Botanical Institute, Prùhonice.

In this article I am using the taxonomy currently accepted in New Zealand. Ten species of *Hieracium* are now naturalised in New Zealand; five from the stoloniferous subgenus *Pilosella* (Hill) S. F. Gray; *H. pilosella* L., *H. aurantiacum* L., *H. praealtum* Gochnat, *H. caespitosum* Dumort., and *H. x stoloniflorum* Waldst. et Kit., and five from the sub genus *Hieracium*, the most common of which is *H. lepidulum* (Stenstroem) Omang.

Hieracium seed was most probably inadvertently introduced to

New Zealand during the mid-late 1800's as a contaminant of grass seed. *H. pilosella* has since become a major invasive weed of native tussock grassland (Chapman et al 2000), and both *H. praealtum* and *caespitosum* are increasing in both density and extent, and becoming established in habitats previously occupied by a near monoculture of *H. pilosella* (Pers. obs). *H. lepidulum* is the only invasive non-stoloniferous species in New Zealand, and is currently becoming a major threat to indigenous sub-alpine and alpine grassland.

All five members of the sub genus *Pilosella* are facultative aposporous apomicts, and no diploid sexuals have ever been recorded in New Zealand. Most New Zealand populations of *H. pilosella* are predominantly pentaploid, often with a scattering of tetraploid and aneuploid individuals. Hexaploids and octaploids are rare (Chapman and Lambie 2000). Flow cytometry of pentaploids has shown that their mean DNA mass varies among populations (Houlston and Chapman in prep). Gary Houlston, as part of his PhD thesis, has shown that the frequency of sexual offspring within typical mixed ploidy populations varies between 0.2 %-21 % (Houlston and Chapman 2001). Gary is currently carrying out experiments to determine the role environment plays in determining the frequency of sexual offspring.

Recently we have found populations that comprise predominantly tetraploid, obligate sexual plants. A combination of Inter Simple Sequence

Repeat (ISSR) and allozyme analyses has shown that these obligate sexuals have evolved on site (in preparation). In both the field and glasshouse the sexuals look smaller than their apomictic ancestors, but appear to be out-competing them. We are currently monitoring the spread of the newly evolved sexuals, and carrying out competition experiments between apomictic vs obligate sexual individuals. We aim to establish what selection pressure is maintaining obligate sexuals in the field. We have demonstrated a mechanism by which obligate sexuals can evolve from crosses between facultative apomicts, with the sexuals representing the homozygous recessive genotype (Chapman & Bicknell 2000).

A combination of both intra and inter-specific hybridisation undoubtedly play a major role in the evolution of this subgenus in New Zealand. Evidence for hybridisation comes from both morphology and the relatively high number of aneuploids recorded from the field (Chapman and Brown 2001). Post doctoral researchers Mary Morgan-Richards and Steve Trewick are currently looking for molecular markers to identify hybrids, in order to unravel this complex situation. Chloroplast DNA haplotypes, ISSR's, Random Amplified Polymorphic DNA (RAPDs) and allozyme markers are all being used. We are also interested in the role of the environment on the morphology of these hybrids, which are extremely plastic.

Populations of *H. pilosella* are full of genetic variation (Chapman et al. 2000). While we have demonstrated

that recombination must be responsible for much of this variation, it is likely that transposition and/or other somatic mutation events also play a role. We are currently developing a project to investigate rates of somatic mutation using a combination of trans-marker genes and flow cytometry.

Another *Hieracium* research project just beginning in my laboratory is an investigation into evolution within the diplosporous triploid *Hieracium lepidulum* (Stenstroem) Omang. This adventive species has recently become invasive in lowland grassland, under native beech (*Nothofagus*) forest and, most alarmingly, in sub-alpine and alpine grassland. Preliminary studies with ISSR markers have shown that there is variation within all populations, but that there is little gene flow among them. We are beginning to investigate the origin of this variation and its role in adaptation. We are combining genetic analyses with ecophysiological studies in collaboration with Dr. Ralph Bunnard.

Speciation in Mistletoes

Other research projects under way include an investigation into incipient speciation in the New Zealand mistletoe *Peraxilla tetrapetala*. We are looking for evidence of genetic divergence through host switching among populations of *P. tetrapetala* growing on different host species. Specifically, we are comparing genetic variation between mistletoe populations parasitising *Nothofagus solandri*, *Nothofagus fusca/truncata* and *Quintinia serrata*. We are using Amplified Frag-

ment Length Polymorphism's (AFLPs) as our markers. This research is in collaboration with Dr. David Norton of the School of Forestry, University of Canterbury. Our results show that while there is genetic divergence according to host species, it is not statistically significant (Chapman & Norton under review).

The origin of the South Island 'beech gap'

A number of New Zealand plant species show a major disjunction across the central part of the South Island. One of the most famous examples is the 'beech gap', a distance of over a hundred kilometres where none of the native southern beech (*Nothofagus*) species occur. Several hypotheses have been put forward to explain this disjunction, the most popular two being vicariance: a) Intense Pleistocene glaciations with refugia north and south of the gap, b) Pliocene and Pleistocene tectonic upheaval, leading to unstable surfaces, unsuitable for *Nothofagus* forests, in the gap. In each of these hypotheses beech is assumed to have widely re-colonised during the Holocene, but not into the gap. An alternative hypothesis is for long distance dispersal of seed across the gap, which is an inherently unsuitable environment for beech establishment. In this scenario southern populations, of some species at least, were eliminated during glacial maxima and have re-colonised during the Holocene by long distance dispersal events of seed and pollen from northern populations. Terry

Thomsen, for his MSc thesis, and in collaboration with Dr. Steve Wagstaff from Landcare Research, is using sequences from the region between the *trnL* and *trnF* genes in the chloroplast genome to test these hypotheses. Preliminary results are unexpected, with different haplotypes on either side of the gap hinting at an early origin of the disjunction. Shared haplotypes among closely related species suggest chloroplast sharing has occurred.

References

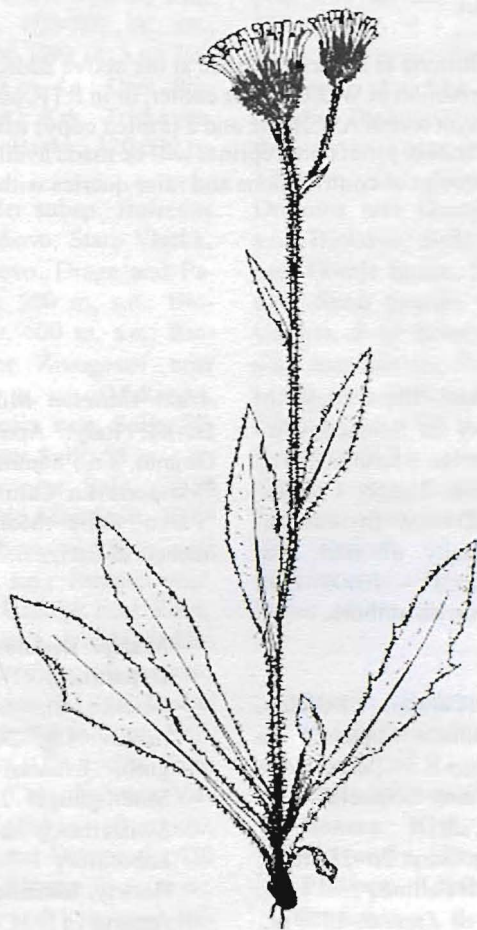
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Chapman, H. M. & Bicknell, R.A. 2000. Recovery of a sexual and an apomictic hybrid from crosses between the facultative apomicts *Hieracium*

caespitosum and *H. praealtum*. *New Zealand Journal of Ecology* 24, 81-86.

Chapman, H. M. & Lambie, S.C. 1999. IOPB chromosome data -*Pilosella officinaris* in New Zealand. *IOPB Newsletter* 31, 12.



Hieracium slovacum

IOPB Chromosome Data 18

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Please send contributions to Professor Stace at the above address (preferably by email with the contribution in WORD 98 or earlier, or in RTF, but failing that on a 3.5 inch microdisc with text in ASCII-file and a printed copy) using the exact layout of the present list. 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:

Marija Bedalov, Department of Botany, Faculty of Science, University of Zagreb, Marulicev Trg 20 II, HR-10000 Zagreb, Croatia; & **Pasquina Bianco**, Institute of Botany, University of Bari, Via Amendola 173, I - 70100 Bari, Italy. Vouchers with authors.

Arum italicum Mill. subsp. *italicum*. 2n=84. Italy: Apulia: Frasanito near Otranto, s.n.; Sammichele di Bari, s.n.; "Masseria La Cattiva" near Turi, s.n.; "Parco delle Monache" near Sammichele di Bari, s.n.

ARACEAE

Arum apulum (Carano) Bedalov. 2n=56. Italy: Apulia: "Masseria La Cattiva" near Turi, s.n.; "Parco delle Monache", s.n.; "Lama Sciuscia" near Sammichele di Bari, s.n.
Arum cylindraceum Gasp. 2n=28. Italy: Lucania: Madonna di Pollino, 1530 m, s.n.; Lago di Zapano, 1380 m., s.n.; vicinity of Rifugio di Gasperi, s.n.

Marija Bedalov & Vesna Bronic, Department of Botany, Faculty of Science, University of Zagreb, Marulicev Trg 20/II HR-10000 Zagreb, Croatia; **Aldo Antonietti**, Strättlighügel 20, CH-3645 Gwatt, Switzerland; & **Philippe Küpfer**, Laboratory of Evolutionary Botany, Institute of Botany, Emile-Argand 11, CH-2007 Neuchâtel, Switzerland. Vouchers with authors.

ARACEAE

Arisarum vulgare Targ. Tozz. $2n=56$. Croatia: Makarska 50 m, s.n.; Solta, 100 m, s.n.; Veli Drvenik near Trogir, 50-100 m, s.n.; Kornati, Kravljacica, 30 m, s.n.; Veli Losinj, 90 m, s.n.

Arum cylindraceum Gasp. $2n=28$. Croatia: Brac, Vidova Gora, 770 m, s.n.; Brac, Cetiri Cikare, 570 m, s.n.; Kozjak near Split, 600-700 m, s.n.; Klaricevac, near Senj, 490 m, s.n.; Losinj, Osorscica, 430 m, s.n.; Cres, Predoscica, 400 m, s.n.; Krk, Triskavac, between Punat and Baska, 320-330 m, s.n.

Arum italicum Miller subsp. *italicum*. $2n=84$. Croatia: Biokovo, Stara Vlaska, 1200 m, s.n.; Biokovo, Drage and Papici, over Drasnice, 500 m, s.n.; Biokovo, Gornje Igrane, 600 m, s.n.; Biokovo, Brikva, over Zivogosce near Gornje Igrane, 550 m, s.n.; Makarska, 100 m, s.n.; Zrnovnica near Split, 50-100 m, s.n.; Solin near Split, 50 m, s.n.; Kastel Kambelovac near Split, 20-50 m, s.n.; Kastel Luksic near Split, 20-50 m, s.n.; Kozjak between Split and Trogir, 600-700 m, s.n.; Pantana near Trogir, 20 m, s.n.; Uzdolje near Knin, 400 m, s.n.; Starigrad, Velika Paklenica, 30 m, s.n.; Karlobag, 50 m, s.n.; Velebit, between Karlobag and Baske Ostarije, 100 m and 390 m, s.n.; Veli Losinj, 20-50 m, s.n.; Osorscica, from 100 to 530 m, s.n.; Cres, between Vodicice and Predoscica, 280 to 410 m, s.n.; Cres, between Beli and Dragozetic, 420 m, s.n.; Cres, near Merag 50 m, s.n.; Krk, between Kuka and Krk, near Punat, 20 m, s.n.; Istria, Marinci, between Certovlje and Buzet, 190 m, s.n.

Arum maculatum L. $2n=56$. Croatia: Lake Plitvice 730 m, s.n.; near Udbina, S of Krbavsko polje, 840 m, s.n.; Japlenski vrh, near Delnice, 840 m, s.n.; Gornje Jelenje, beginning of National Park Risnjak, 800 m, s.n.; Lukovo near Bribir, 500 m, s.n.; Velebit, Miskovo bilo, between Alan and Krizpolj, 840 m, s.n.; Vratnik, near Senj, 698 m, s.n.

Arum orientale Bieb. subsp. *longispathum* (Reichb.) Engler. $2n=28$. Croatia: Biokovo, over G. Tucepi, on the way to Vosac and Sv. Jura, 1200-1300 m, s.n.; Biokovo, Papici over Drasnice and Gornje Igrane, 600 m, s.n.; Biokovo, Brikva over Zivogosce near Gornje Igrane, 550 m, s.n.; Mosor, over Sitno Gornje, 950 m, s.n.; near Udbina, S of Krbavsko polje, 840 m, s.n.; near Barleta, 560 m, s.n.; between Lipeji and Barleta, 570 m, s.n.; near Gospic, Ostra 580 m, s.n.; near Gospic, Podostrza, 565 m, s.n.

Dracunculus vulgaris Schott. $2n=28$. Croatia: Solta, Grohote, 100 m, s.n.; Veli Drvenik 50 m, s.n.; Biokovo, Papici over Drasnice and Gornje Igrane, 600 m, s.n.

Marija Bedalov, Department of Botany, Faculty of Science, University of Zagreb, Marulicev trg 20/II HR-10000 Zagreb, Croatia; **Roman Kish**, Uzhgorod State University, Uzhgorod, Ukraine; & **Philippe Küpfer**, Laboratory of Evolutionary Botany, University of Neuchâtel, 11, rue Emile-Argand, c.p. 2, CH-2007 Neuchâtel, Switzerland. Vouchers with authors.

ARACEAE

Arum cylindraceum Gasp. $2n=28$. Ukraine: Uzhgorod District, Nevicke village, 300 m, s.n.; Koncovo village, 106 m, s.n.; Mukachevo District, Sanatory Karpaty village, 150-180 m, s.n.; Perechin District, Saricha village, 200-250 m, s.n.

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ARACEAE

Arum apulum (Carano) Bedalov. $2n=56$. Italy: Apulia, Gioia del Colle, s.n.; 7 km from Noci, Parco la Mandra, s.n.; Putignano, Madonna delle Grazie, s.n.

Arum apulum (Carano) Bedalov x *Arum italicum* Miller subsp. *italicum*. $2n=70$. Italy: Apulia, Gioia del Colle, Noci, s.n.

Arum creticum Boiss. & Heldr. $2n=28$. Greece: Karpathos, s.n.

Arum dioscoridis Sm. $2n=28$. Greece: Kos, Kamari, olive grove, 20 m, s.n.; Zini, Kefalos, 300 m, s.n. Cyprus: Xylofagu, s.n.

Arum euxinum R. Mill. $2n=28$. Turkey: Bitllis, N.Hizan, Abant Sea, 1550 m, s.n.

Arum hygrophilum Boiss. $2n=28$. Cyprus: Androlykou, s.n. Syria: Oasis of South Damas, s.n.

Arum italicum Miller subsp. *albipathum* (Steven ex Ledeb.) Prime. $2n=84$. Russia: SW Caucasus, Sochi District, 100-300 m, s.n.

Arum italicum Miller subsp. *italicum*. $2n=84$. Italy: Apulia, Gioia del Colle, Parco la Mandra, s.n.; Apulia, Gioia del Colle, 7 km from Noci, s.n.; Apulia, Locorotondo, s.n.; Campagna, Laura, 5km from Paestum, s.n.; Campagna, Salerno, s.n.

Arum sintenisii (Engler) Boyce. $2n=28$. North Cyprus: Degirmenli, s.n.

Arum pictum L. fil. $2n=28$. Italy: Sardinia, Oristano, Tharros, 20 m, s.n.

Dracunculus canariensis Kunth. $2n=28$. Spain: Canary Islands, Tenerife, from a garden, s.n.

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ARACEAE

Arum cylindraceum Gasp. $2n=28$.

Croatia: Istria, Lupoglav, between Sokolic and Brgudac, near Buzet, 640 m, s.n.; between Sissol and Brgud, near Labin, 700 m, s.n.

A. italicum Miller subsp. *italicum*.

$2n=84$. Croatia: Istria, Drz-Dol (Slun), near Buzet, 480-500 m, s.n.; Buzet-park, 250 m, s.n.; Pazin, 340 m, s.n.; north of Bale, 140 m, s.n.; Gora Glusic near Labin, 370 m, sn.; Pardol (Raska uvala), 120 m, s.n. Italy: Bosco Romagnolo, Cividale near Udine, 150 m, s.n.

A. maculatum L. $2n=56$. Croatia: Istria, Mount Orljak, NE of Brest near Pazin, 800-890 m, s.n.; Vela Ucka near Lovran, 1030 m, s.n. Italy: Mte Matajur near Udine on the way to Tercimonte, 600 m, s.n.

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ARACEAE

Arum italicum Miller subsp. *italicum*.

$2n=84$. Italy: Cimamulera (Piedimulera, Verbano-Cusio-Ossola), 450 m,

s.n.; Anzuno (Domodossola, Verbano-Cusio-Ossola), 520 m, s.n.

Arum maculatum L. $2n=56$. Switzerland: Le Suchiez-Voëns (St. Blaise, Neuchâtel), 560 m, s.n.; "Poët Sentier", Rive droite (Frochaux), 920 m, s.n.; "Poët Sentier", Rive droite (Frochaux), 950 m, s.n.; Sous Frochaux, 610 m, s.n.; Sous Frochaux, Champs-Mantel 605 m, s.n.; Ermitage, Neuchâtel 500 m, s.n.; Glasbach near Heulensiedlung (Kirchlindach, Bern) 580 m, s.n.; Gorge de la Jogne (Broc, Fribourg) 700 m, s.n.

Marija Bedalov, Department of Botany, Faculty of Science, University of Zagreb, Marulicev trg 20, HR-10000 Zagreb, Croatia; **David Draper Munt & Antonia Rossello Graell**, Museum, Laboratory and Botanical Garden, University of Lisboa, R. da Escola Politecnica 58, PT-1294 Lisboa Codex, Portugal; & **Philippe Küpfer**, Laboratory of Evolutionary Botany, Institute of Botany, c.p. 2, CH-2007 Neuchâtel, Switzerland. Vouchers with authors.

ARACEAE

Arum cylindraceum Gasp. $2n=28$.

Spain: Jaén, Sierra de Cazorla, entre Loma de Enmedio Los Arenales et Cuerda de las Alcanetas, s.n.

Arum italicum Miller subsp. *italicum*.

$2n=84$. Spain: Barcelona, Castellar del Valles, Casamado, s.n.; Islas Baleares, Mallorca, Randa Poble, s.n. and Rande Cura s.n.; Islas Baleares, Menorca, Es

Mercadal, s.n. Portugal: Sota Mainhos, s.n.

Arum pictum L. fil. $2n=28$. Spain: Balearic Islands, Mallorca, Can Guiza, s.n.

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Reinilda Duré, Museo Nacional de Historia Natural, San Lorenzo, Paraguay; and **Deidamia Franco**, Departamento de Biología, Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Asunción, Paraguay. All localities in Paraguay. Vouchers in BCN and PY except where stated otherwise (BCN, University of Barcelona Herbarium, is the merged BCC + BCF; the latter two abbreviations are still used for material present before the merger). Specimens belonging to other taxa than Lythraceae and Myrsine have been identified or confirmed by the following researchers: A. Krapovickas (Malvaceae), R. Vanni (Fabaceae), M. Dematteis (Asteraceae) and A. Schinini (rest of families), from Instituto de Botànica del Nordeste (Corrientes, Argentina); we are grateful to all of them. Research financed by Spanish Government (MEC - AECl): Hispano-Argen-

tinian-Paraguayan Research Project CROMOPAR (1998-2001).

ASCLEPIADACEAE

Blepharodon nitidum J. F. Macbr. $2n=22$. Departamento de Cordillera, Saltos de Piraretá, 26.12.1998, J.Molero, A. Rovira, D. Franco & B. Benitez 19.98.

ASTERACEAE

Angelphytum indutum (Chodat) H. Rob. $2n=64$. Departamento Cordillera, Cerros de Tobatí, 3.02.1998, J.Molero & A. Rovira 59.98.

Bidens pilosa L. $2n=72$. Departamento de Paraguari, Caañabé, 28.11.1998, J. Simón & B. Benitez 51.98.

Porophyllum ruderale (Jacq.) Cass. $2n=44$. Departamento de Misiones, Villafloresta, 28.11.1998, J. Simón & B. Benitez 45.98.

CONVOLVULACEAE

Marrenia dissecta (Jacq.) Hall. f. $2n=32$. Departamento Central, Areguá, 3 km from Luque, 20.05.1998, A. Elizeche & B. Benitez 773.98.

EUPHORBIACEAE

Sebastiania brasiliensis Spreng. $2n=40$. Departamento de Concepción, 19 km from Concepción to San Luis, $23^{\circ} 15' 51''$ S, $57^{\circ} 21' 56''$ W, 23.11.1996, J. Molero & A. Duré 1027.

FABACEAE

Cajanus cajan (L.) Millsp. $2n=22$. Departamento de Cordillera, Atyrá, 8.11.1999, J.Molero & B. Benitez 16.99.

Crotalaria incana L., s.l. 2n=14. Departamento de Misiones, Villaflorida, 28.11.1998, J. Simón & B. Benitez 40.98.

Desmodium cuneatum Hook. & Arn. 2n=22. Departamento de Misiones, San Miguel, 28.11.1998, J. Simón & B. Benitez 42.98.

Desmodium incanum DC. 2n=22. Departamento de Misiones, Villaflorida, 22.11.1998, J. Simón & B. Benitez 42.98.

Desmodium incanum DC. 2n=44. Departamento de Cordillera, Cerros de Tobatí, 13.12.1998, J. Molero & A. Rovira 57.98.

Dioclea paraquarensis Hassler. 2n=22. Departamento Central, seeds from Areguá, collected by E. Bordas in 1998, cultivated in Jardín Botánico de Barcelona.

Erythrina crista-galli L. 2n=42. Departamento Central, Areguá, 20.05.1998, A. Eliceche & B. Benitez 770.98.

Indigofera suffruticosa Mill. 2n=16. Departamento de Misiones, San Miguel, 22.11.1998, J. Simón & B. Benitez 34.98.

Mimosa polycarpa Kunth. 2n=26. Departamento Central, Areguá, 20.05.1998, A. Elizeche & B. Benitez 778.98.

Senna obtusifolia (L.) H.S. Irwin & Barneby. 2n=28. Departamento de Cordillera, 3 km from Areguá to Luque, 20.05.1998, A. Eliceche & B. Benitez 770.98.

Sesbania virgata (Cav.) Pers. 2n=12. Departamento Central, Areguá, 3 km from Luque, 20.05.1998, A. Eliceche & B. Benitez 774.98.

LYTHRACEAE

Cuphea campylocentra Griseb. 2n=16. Departamento de Amambay, Bella Vista, estancia Apa-mi, 22° 08' 37" S, 56° 31' 06" W, 28.11.1996, J. Molero & R. Duré 1115, BCF and PY.

Cuphea calophylla subsp. *mesostemon* (Kochne) Lourteig. 2n=16. Departamento Misiones, San Miguel, 28.11.1998, J. Simón & B. Benitez 28.98.

Cuphea carthagenense (Jacq.) J.F. Macbr. 2n=16. Departamento San Pedro, Villa del Rosario, 24° 26' 11" S, 57° 00' 80" W, 25.11.1999, J. Molero & R. Duré 56.99.

Cuphea persistens Koehne. 2n=24. Concepción, Serranía San Luis, portón Garay-cué, 22° 44' 06" S, 57° 22' 09" W, 23.XI.1996, J. Molero & R. Duré 1062, PY.

Cuphea polymorpha A. St.-Hil. 2n=16. Departamento de San Pedro, Arroyo Tapiracuái, 24° 40' 33" S, 56° 24' 02" W, 29.XI.1996, J. Molero & R. Duré 1058, BCF and PY.

Cuphea pterosperma Koehne. 2n=32. Departamento San Pedro, Aguaray-Guazú river, 318 km from Asunción, 23° 51' 41" S, 56° 30' 28" W, 29.11.1996, J. Molero & R. Duré 1124, PY.

Heimia salicifolia (Humb., Bonpl. & Kunth.) Link. 2n=16. Departamento de Cordillera, Cerros de Tobatí, 3.12.1998, J. Molero & A. Rovira 54.98.

MALVACEAE

Sida rhombifolia L. 2n=14. Departamento de Misiones, San Miguel,

28.11.1998, J. Simón & B. Benítez
32.98.

MYRSINACEAE

Myrsine matensis (Mez) Otegui
(=*Rapanea matensis* Mez). $2n=46$. De-
partamento de Cordillera, Cerros de
Tobatí, 3.12.1998, J.Molero &
A.Rovira 60.98.

ONAGRACEAE

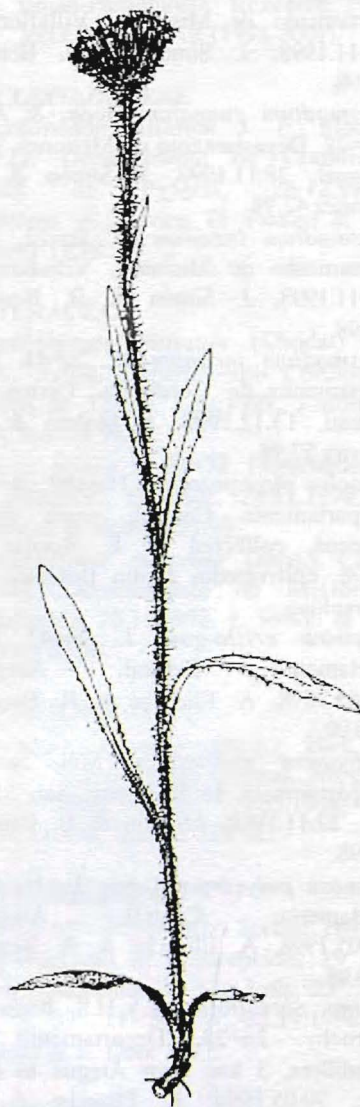
Ludwigia nervosa (Poir.) H. Hara.
 $2n=16$. Departamento de Cordillera,
Cerros de Tobatí, 3.12.1998, J. Molero
& A. Rovira 56.98.

SOLANACEAE

Solanum reflexum Schrank. $2n=24$.
Departamento de Cordillera, Atyrá, A.
Elizeche & B. Benítez 779.98.

TILIACEAE

Luehea candicans Mart. $2n=36$. De-
partamento Cordillera, Saltos de Pira-
retá, 28.11.1998, J.Molero, A. Rovira,
B. Benítez & D. Franco 7.98.



Hieracium nigrostylum

5

Announcements

First announcement of the IXth International IOPB Meeting.

The IXth International IOPB Meeting will take place in Valencia (Spain) in May 2004.

The general topic of this meeting will be
Plant Evolution in Mediterranean Climate Zones.

It has been planned to be a three day meeting (plus optional excursions either before of after the meeting).

Oral communications as well as posters will be welcome on topics including the following subjects: Multiple approaches to comparing mediterranean floras throughout the world; Biogeographic (and Phylogeographic) patterns in the Mediterranean region; Speciation models in the Mediterranean region (including polyploidy, hybridization, vicariance); Conservation and genetic diversity of rare and restricted species; Symposia on specific vascular plant families; Ecological factors in differentiation and speciation.

Organization will be undertaken by three institutions (Universidad de Valencia, Consejo Superior de Investigaciones Científicas, Universidad de Zaragoza).

Organizing committee:

Gonzalo Nieto Feliner (nieto@ma-rjb.csic.es)

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Josep A. Rosselló (rossello@uv.es)

A first electronic circular will be available by the end of 2002.

6

Individual Research News

Prof. William F. Grant

Recent publication:

Grant, W. F. (1999): Interspecific hybridisation and amphidiploidy of *Lotus* as it relates to phylogeny and evolution.- In: P. R. Beuselinck, ed. *Trefoil: The Science and Technology of Lotus*, American Society of Agronomy and Crop Science Society of America, CSSA Special Publ. No. 28, Madison, Wisconsin, pp. 43-60.

Prof. Lazarus W. Macior

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Publications:

Macior, Tang, Ya, Zhang Jian-Chen (2001): Reproductive Biology of *Pedicularis* (Scrophulariaceae) in Sichuan Himalaya. - *Plant Species Biology* 16 (1): 83-89.

Futher papers:

Plant. Species Biology 12: 1-7

Novon 8: 455-456 (new var. of *Pedicularis longiflora*)

Plant Species biology 11: 165-171 (*Pedicularis bracteosa*)

7

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Reports by:

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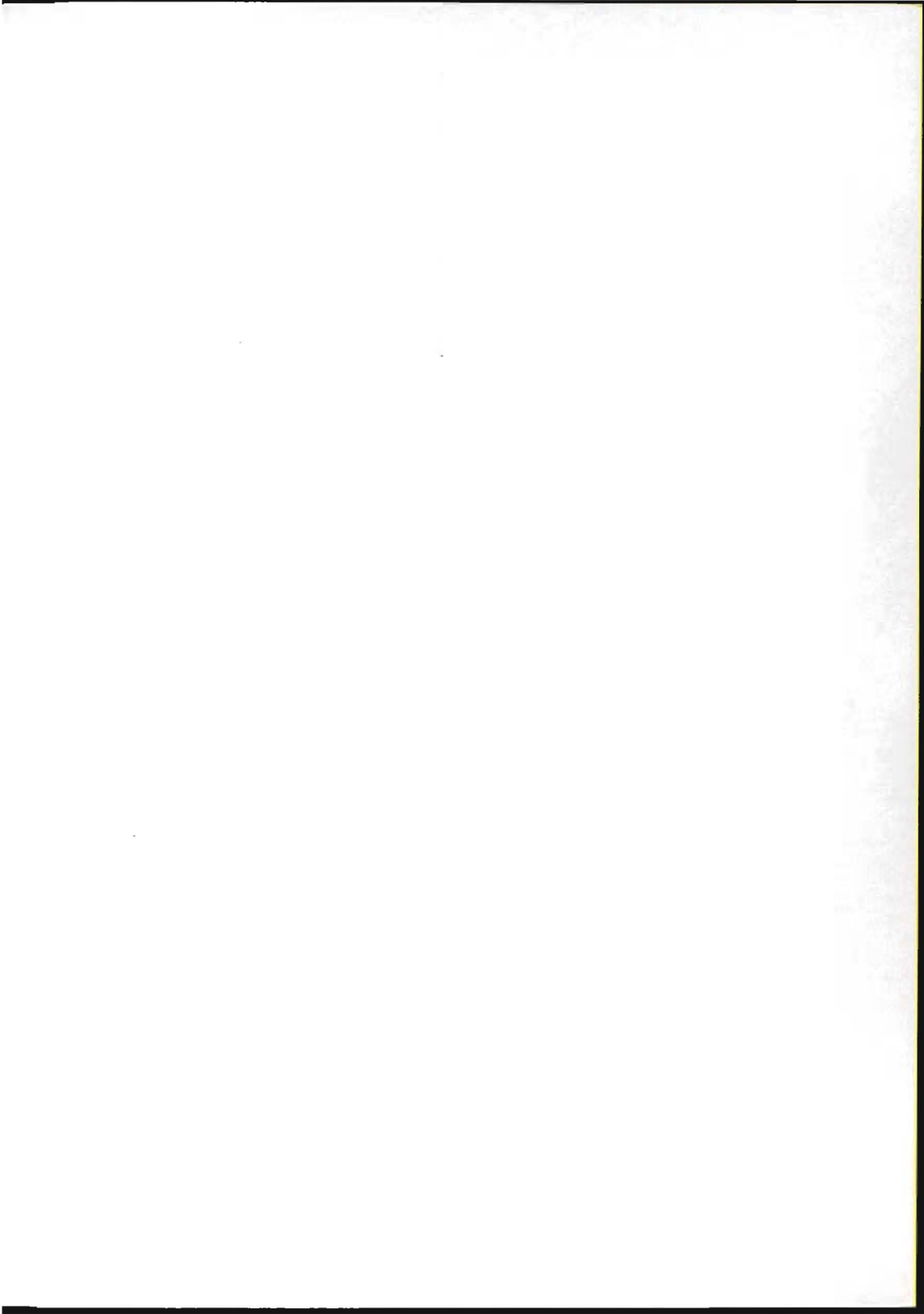
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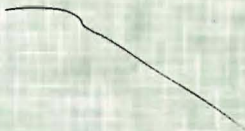
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