

INFORME TÉCNICO

**“CURSO DE TÉCNICAS ESPECIALIZADAS DE CONSERVACIÓN DE
ORQUÍDEAS Y CONGRESO INTERNACIONAL DE CONSERVACIÓN DE
ORQUÍDEAS”**

CODIGO F01-1-FI-082

FECHA DE PRESENTACIÓN: 21 de Diciembre de 2001.

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CODIGO F01-1-FI-082

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**INFORME DE LA PARTICIPAION AL FIRST INTERNATIONAL
ORCHID CONSERVATION CONGRESS**

PERTH – AUSTRALIA

SEPTIEMBRE 2001.

PROYECTO FIA C98 – 1A-022

ENRIQUE MATTHEI JENSEN

COORDINADOR

CONTENIDO DEL INFORME TECNICO

PROGRAMA DE FORMACION PARA LA INNOVACION AGRARIA

1. Antecedentes Generales de la Propuesta

Nombre: Enrique Matthei Jensen

Código: C-98 - 1-A-022

Entidad Responsable Postulante Individual.

Coordinador: Enrique Matthei Jensen

Lugar de Formación (País, Región, Ciudad, Localidad): Perth, Australia

Tipo o modalidad de Formación: Congreso

Fecha de Realización: Septiembre 2001.

Participantes: Presentación de acuerdo al siguiente cuadro:

Nombre	Institución/Empresa	Cargo/Actividad	Tipo Productor (si corresponde)
Enrique Matthei J	Particular	Coordinador	
Nimena Calderon	Univ. de Talca	Investigador	
Mauricio Cisternas	Universidad de Valparaiso, Quillota	Investigador	
Nimena Alvarez	B T A S A	Coordinadora	

Problema a Resolver: detallar brevemente el problema que se pretendía resolver con la participación en la actividad de formación, a nivel local, regional y/o nacional

Como llevamos 3 años de investigación con grandes avances ya que prácticamente partimos de cero, pues estas flores son casi desconocidas en la literatura científica, aún quedan una serie de interrogantes por dilucidar

En tal sentido el haber asistido a este Congreso sobre orquídeas fue un verdadero espaldarazo, pues nos allano el camino al tener la posibilidad de tomar contacto personal con un pleyade de botánicos e investigadores de renombre internacional, así como cultivadores a gran escala de esta especie

2. Antecedentes Generales:

La Fundación para la Innovación Agraria, dependiente del Ministerio de Agricultura se encuentra desarrollando un programa orientado a potenciar la floricultura chilena, aprovechando la diversidad edafo-climática que ofrece nuestro país, como una forma de diversificar la producción agrícola. Dentro de este rubro, la domesticación de flores silvestres, donde quedan incluidas nuestras orquídeas terrestres pertenecientes al género *Chloraea*, con hermosas y casi desconocidas flores primaverales, quedaron incluidas en un proyecto de investigación, de cuatro años de duración, caratulado bajo la sigla C-98-1-A-022.

El proyecto nació de fondos concursables a fines del año 1998, después de una prolongada observación de estas vistosas flores en un predio situado en la Zona Central de Chile en las cercanías de Yumbel, Octava Región. Y cuenta con el apoyo de connotados investigadores de la Universidad de Concepción (Micorrizas), Universidad de Talca (Fisiología Vegetal), Universidad Católica de Valparaíso, sede Quillota (Genética), más un organismo coordinador: Biotecnología Agropecuaria S.A. de Santiago.

En este ámbito se consideró apropiado participar en el Primer Congreso de Conservación de Orquídeas que se realizó en Perth, la capital de Australia Occidental, la segunda semana de Septiembre del año 2001.

Cuatro participantes pertenecientes al Staff asistieron a este evento. Se presentaron dos trabajos de investigación sobre nuestras orquídeas: Uno referido a las micorrizas asociadas a esta especie y el otro a los agentes polinizantes.



FOTOGRAFIA N° I. Participantes: Ximena Alvarez, de Biotecnología Agropecuaria S.A., Mauricio Cisternas, egresado de Agronomía de la Universidad Católica de Valparaíso Sede Quillota, Dra. Ximena Calderón, Fisiología Vegetal, Universidad de Talca, Dr. Enrique Matthei J., Coordinador del Proyecto C98-1-A-022. Antes de emprender el viaje a Australia 16 de Septiembre del 2001.

3. Itinerario Realizado: presentación de acuerdo al siguiente cuadro:

Fecha	Actividad	Objetivo	Lugar
20-23 Sept 01	Curso de Propagacion y Conservacion	Implementar los conocimientos	Univ. de Western. Australia
24 Sept 01	Visita a Terreno	Analizar el habitat natural	
24-28 Sept 01	Asistencia al Congreso		Univ. de Western. Australia

4.- RESULTADOS OBTENIDOS:

En forma muy resumida queremos resaltar que el leitmotif de este Congreso fue la conservación de las orquídeas, que se encuentran, a igual que muchas otras plantas, amenazadas, otras en vía de desaparecer y otras ya lamentablemente extinguidas. El denominador común a todo este proceso de degradación del medio ambiente es siempre el mismo: destrucción del hábitat natural , uso inadecuado de agroquímicos , disminución por los agentes polinizantes , introducción de malezas que compiten con la vegetación autóctona, y en el caso particular de las orquídeas terrestres de ultramar , el tráfico , aún sin poder ser controlado, en un mercado mundial siempre ávido de especies nuevas y exóticas.

El Congreso tuvo dos facetas de desarrollo: una de laboratorio, que se llevó a efecto en la Universidad de Western Australia, así como salidas a terreno en el Kings Park de Perth inmediato a la Universidad.

Quedamos gratamente impresionados del excelente equipamiento de los laboratorios que incluyó también interiorizarse del funcionamiento del microscopio electrónico y microanálisis.



Foto N° 2. El Profesor Andrew Batty de la Universidad de Western Australia enseñando las técnicas de infestación micorríticas de semillas en el Kings Park de Perth.



Foto N° 3: Observación de cortes histológicos de Rizomas micorrizados, Laboratorios de la Universidad de Western Australia. Al centro George Mugambi, del National Museums de Kenya.



Foto N° 4: En el Centro de Microscopía y Microanálisis de la Universidad de Western Australia.

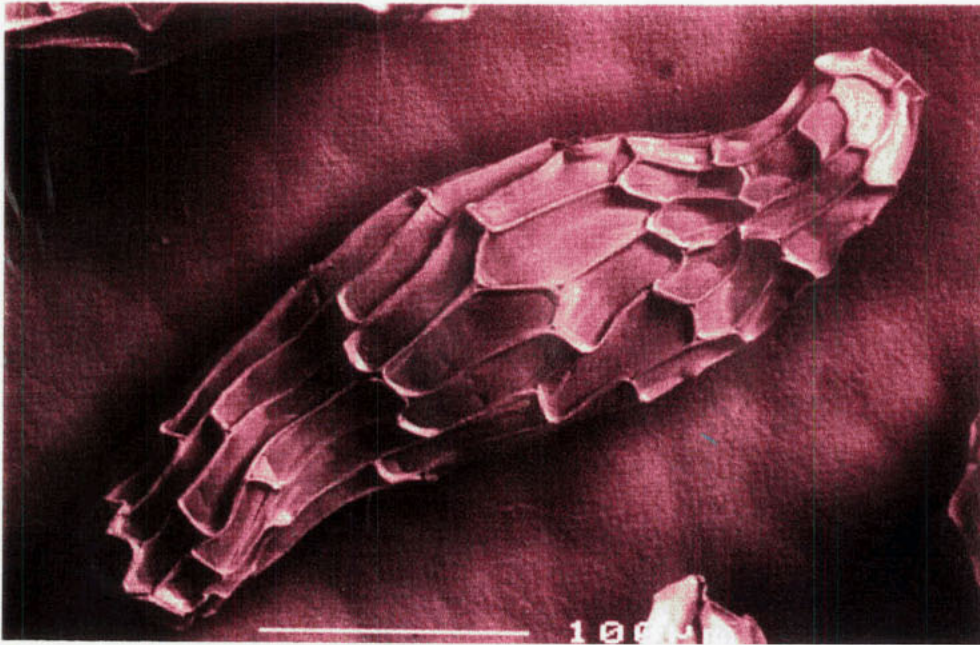


Foto N° 5:

Microfotografía captada en el Microscopio electrónico de una diminuta semilla de Orquídea terrestre.



Foto N° 6. Curso teórico práctico de cultivos de Orquídeas terrestres generadas en laboratorios de la Western university y posteriormente trasladadas a los invernaderos del Kings Park and Botanical Garden, de Perth.

La segunda fase fue la presentación de los trabajos en el salón de conferencias del Regency Hyatt Hotel en el centro de Perth. Ciento treinta y dos asistentes de 21 países asistieron a este evento. Hubo una salida a terreno, en bus durante todo el día para ver el florecimiento de miles de orquídeas en distintas condiciones de suelo. Se abordó el tema de las orquídeas en forma general abarcando todas las facetas de su crecimiento y desarrollo tanto en el laboratorio, salidas a terreno y trabajos presentados en el Congreso.



Foto N° 7: La Dra. Margaret Ramsay Directora de la Unidad de Micropropagación del Royal Botanic Gardens, Kew, Reino Unido, dictando el curso "El rol de las técnicas *ex situ* para la reinserción de Orquídeas terrestre en el Reino Unido. Para mí sigue siendo una de las candidatas a ser invitada a Chile por sus conocimientos teórico-práctico.



Foto N° 8 y 9. El Dr. Kingsley Dixon enseñando técnicas de tinciones de hongos micorríticos en los Laboratorios de la Universidad de Western, Australia..



Foto 10 y 11: Al recorrer la campiña florida en las inmediaciones de Perth, recordé nuestro desierto florido y el gran potencial turístico que subyace casi sin explorar y explotar. Después de ver con que entusiasmo e interés observaban y disfrutaban este panorama no me cabe la menor duda que vendría a Chile si sólo supieran que esta realidad existe.



Lo que más nos llamó la atención fue el gran número de personas, tanto de altísimo nivel científico y académico, como simples cultivadores, que se interesaban “realmente” por estas plantas. Este cariño y admiración por las orquídeas fue francamente contagiante. Al final, uno sentía, que casi sin darse cuenta, había pasado a formar parte de esta gran “cofradía” o “hermandad”, que tiene ribetes internacionales.

Así como son muchas las personas que quieren, cuidan y estudian a las orquídeas, tanto terrestres como epífitas, así también es el número de instituciones, tanto públicas como privadas, que existen actualmente, y que están permanentemente preocupadas de su conservación y bienestar. El intercambio de información a través de publicaciones es constante, variado e intenso.



Foto N° 12. El Señor Trevor Hein, mi nuevo amigo alemán, que optó por la ciudadanía Australiana fue una valiosa ayuda en detectar a cultivadores de orquídeas en gran escala.

Nos dimos cuenta, de la importancia de crear en nuestro país una Sociedad Chilena de Orquídeas, a fin de crear conciencia de la importancia de estas flores y su potencial aún adormecido y poder estar constantemente informado a través del canje de publicaciones de los últimos trabajos de investigación, que se llevan a efecto a nivel mundial.



Foto N° 13, 14 y 15. Recopilando información sobre Orquídeas en la Library and Information Service, la Biblioteca de Perth el 19 de Septiembre del 2001.



5. APLICABILIDAD.

Nos tocó el periodo de la consagración de la primavera, para hablar con Strawinski el Perth. Cientos de miles de flores tapizaban el suelo, sin embargo, la gran mayoría de las orquídeas australianas son bellas pero diminutas. Cuando dimos a conocer las fotografías de nuestras orquídeas todos quedaron fascinados por su belleza, su tamaño y por ser tan desconocidas.

La otra ventaja competitiva a nuestro favor radica en las características naturales edafoclimáticas y la mano de obra aún relativamente barata. Hay que tener siempre presente que el mercado está permanentemente ávido de variedades nuevas.

Aprovechar la ola que están nuevamente de moda las orquídeas es el desafío. Así por ejemplo la revista estadounidense Town and Country, en un artículo sobre estas plantas las considera perfectas para floreros ultrarrefinados. Muchos coleccionistas pagan miles de dólares por las variedades más exóticas. De las 27 especies nuevas, todas sudamericanas descubiertas recientemente, una de ellas fue bautizada en honor a Gorbachov, su nominación *Maxillaria gorbatschowii*, reconoce su contribución a la paz en el mundo y a la conservación de la biodiversidad. Igualmente los genetistas bautizaron con el nombre de Hillary Clinton a un híbrido de orquídea obtenido recientemente.



Foto N° 16, 17 y 18: El Wildflower Festival inaugurado el 21 de Septiembre del 2001, en el Kings Park de Perth, fue un evento enmarcado dentro del Congreso de Conservación, que permitió ver abundantes flores de orquídeas silvestres australianas.



6. Contactos Establecidos.

Institución/Empresa	Persona o Contacto	Cargo/Actividad	Fono/ Fax	Dirección	E-mail
Kings Park & Botanic Garden	Dr. Kingsley Dixon	Science Directorate		West Perth WA 6005	
Kings Park & Botanic Garden	Dr. Stephen Hopper	Science Directorate		West Perth WA 6005	
Heintech Consulting	Dr. Trevor Hein	Heintech Consulting		13 Mirador Road Morley WA 6062 Australia.	whiggins@oze-mail.com.au
University of Ljubljana/Kings park & Botanic Garden, Department of Biology	Ms. Nika Debeljak	Department of Biology		Vecna Pot 111 Ljubljana 1000	nika.debeljak@k2.net
Kings Park & Botanic Garden	Dr. Mark Brundrett	Science Directorate		West Perth WA 6005	
Royal Botanic Gardens, Kew Herbarium	Dr. Phillip Cribb	Chairman		Richmond Surrey TW9 3AE, United Kingdom	cribb@rbgke.w.org.uk
Ecology Australia Pty Ltd.	Geoff Stocker	Director/Botanist		88 B Station Street Fairfield VIC 3078	ecology@oze-mail.com.au
IUCN/SSC Orchid Specialist Group	Dra. Shelagh Kell	Executive Officer		36 Broad Street Lyme Regis Dorset DT73QF	shelagh.kell@dia1.pipex.com



Foto N° 19. Con el Profesor K. Sivasithamparam, experto en micorrizas de la Facultad de Agronomía de la Universidad de Western Australia.



Foto N° 20: Emotivo encuentro con la Dra. Hanne Rasmussen, del Danisch Forest & Landscape Research Institute, Dinamarca, conocida autora de un tratado sobre micorriza.



Foto N° 21. La Sra. Ruth Rudkin, que preside un Consejo de Conservación de Orquídeas, el Dr. Geoff Stocker, investigador y cultivador de orquídeas, con quien hemos empezado un intercambio epistolar y el Dr. Ed de Vogel autor de un CD-ROM sobre orquídeas del Sudeste Asiático del Nationaal Herbarium Nederland, Leiden, Países Bajos.



Foto N° 22. Entrega de vino chileno al Dr. Kingsley Dixon, Director del congreso y miembro de la Kings park Authority.

7. DETECCION DE NUEVAS OPORTUNIDADES Y ASPECTOS QUE QUEDAN POR ABORDAR.

Desde el punto de vista científico existe un gran campo de investigación aún no explorado. El genero *Chloraea* se considera entre los más primitivos hallándose géneros afines sólo en Australia, Nueva Zelandia y Nueva Guinea, y el territorio australiano es uno de los más antiguos y estables de la Tierra. El trabajo sobre las micorrizas chilenas causó interés, pues existe la posibilidad de una afinidad fúngica entre nuestras orquídeas y las australianas. En tal sentido, el profesor K. Sivasithamparam, experto en micorrizas de la University of Western Australia, nos hizo saber que están abiertas las puertas de su facultad para un becario chileno y además iniciar un fluido intercambio de información.

Finalizado el Congreso quedamos con la sensación que el camino que hemos tomado es el correcto. Con los conocimientos y técnicas adquiridos estamos en mejores condiciones de acelerar la marcha. Contamos con un respetable número de expertos de alto nivel mundial, científico, práctico y académico, que de ahora en adelante están dispuestos a ayudar a disipar cualquier duda que se nos presente.

En tal sentido la comunicación cara a cara, como bien ya lo afirmara Aristóteles, sigue siendo la más efectiva. No sólo permite estrechar lazos de amistad indelebles y permanentes sino que también un fluido intercambio de valiosa información.

Quedamos con la sensación de una deuda de gratitud con los organizadores australianos del Congreso en Perth y también con la gran mayoría de los participantes que presentaron trabajos. El alto nivel científico y académico su capacidad organizacional, lo bien dotado de los laboratorios de la Universidad de Western Australia, los numerosos asistentes, en su gran mayoría de procedencia anglosajona y sud este asiático, que realmente quieren y se interesan por las orquídeas, las cuidan y ayudan eficientemente en su conservación y preservación. La generosidad y altura de miran con que expusieron, nos explicaron y nos mostraron lo que ellos sabían, es algo que nos dejó gratamente impresionados.

Sin ser un experto en geopolítica, pudimos palpar en el seno del Congreso la estrecha fluida y permanente cooperación que existe entre los parques y jardines botánicos del Reino Unido, Canadá, Sud Africa y otros países de la Comunidad Británica de Naciones. El Comun Welth es un organismo viviente, coordinado, eficiente y dinámico, unido por la tradición y el idioma inglés.

8. RESULTADOS ADICIONALES.

A mí me interesaba realmente tomar contacto con un cultivador de orquídeas serio y confiable. Durante el Congreso tuve la oportunidad de conocer Dr. Geoff Stocker (PhD, MSc, For, Dip For) de Queensland, Australia. Entre sus numerosas publicaciones está el libro *Dendrobium and its Relatives*, al que le pedí lo autografiara.

Cultiva miles de orquídeas. Todos los años viaja a Japón y los Estados Unidos para venderlas. Cuando le mostré las fotografías de nuestras Chloraeas, quedó vivamente interesado. Fue él quien me propuso hacer un Joint Venture. Estamos en contacto para ver si logramos establecer un convenio que nos favorezca a todos.

En cuanto regresé a Chile informé de esta conversación al Sr. René Martorell .

Me hacía notar que vendía orquídeas, tanto en flor cortada como en macetas. Estas últimas, cuando dejan de florecer las tiran a la basura y comprar otra nueva .Sabemos que la flor dura un mes. Lo que no sabía es que las orquídeas son plantas longevas: viven más de cien años!. Las que él cultiva se demoran dos a tres años en florecer, pero también cultiva y vende orquídeas que tardan 10 años.



Foto N° 23. Visita a terreno al “Bush” o matorral que ha soportado los efectos del fuego, en las inmediaciones de Perth, a la derecha el Dr. Stephan Hooper, Director del King Park Botanic Garden y autor del libro *Spider, Fairy and Dragon Orchids of Western Australia*. Y a la izquierda el Dr. Rui Jose Válka Alves, del Departamento de Botánica del Museo Nacional de Rio de Janeiro.

9. MATERIAL RECOPIADO.

Gran parte del material recopilado en Australia quedó en posesión de Doña Ximena Alvarez de Biotecnología Agropecuaria S.A. quien se encargará de fotocopiarlo a fin de distribuirlo. Personalmente adquirí los siguientes Textos.

Tipo de Material	Nº Correlativo (si es necesario)	Caracterización (título)
<i>Libro</i>	<i>1</i>	<i>Dendrobium and its Relatives.</i>
<i>Revista</i>	<i>2</i>	<i>Living Forest . A newsletter for biodiversity conservation in South China.</i>
<i>Libro</i>	<i>3</i>	<i>Spider, Fairy and Dragon Orchids.</i>
<i>Handbook</i>	<i>4</i>	<i>National Parks & Wildlife Service.</i>
<i>Handbook</i>	<i>5</i>	<i>Queen Sirikit Botanic Garden</i>
<i>Revista</i>	<i>6</i>	<i>Danthonia Newsletter of the Australian Network for Plant Conservation.</i>
<i>Abstract</i>	<i>7</i>	<i>Northampton Midget Grenhood.</i>
<i>Abstract</i>	<i>8</i>	<i>The Gran Canaria Declaration .</i>
<i>Abstract</i>	<i>9</i>	<i>Orchid Specialist Group</i>

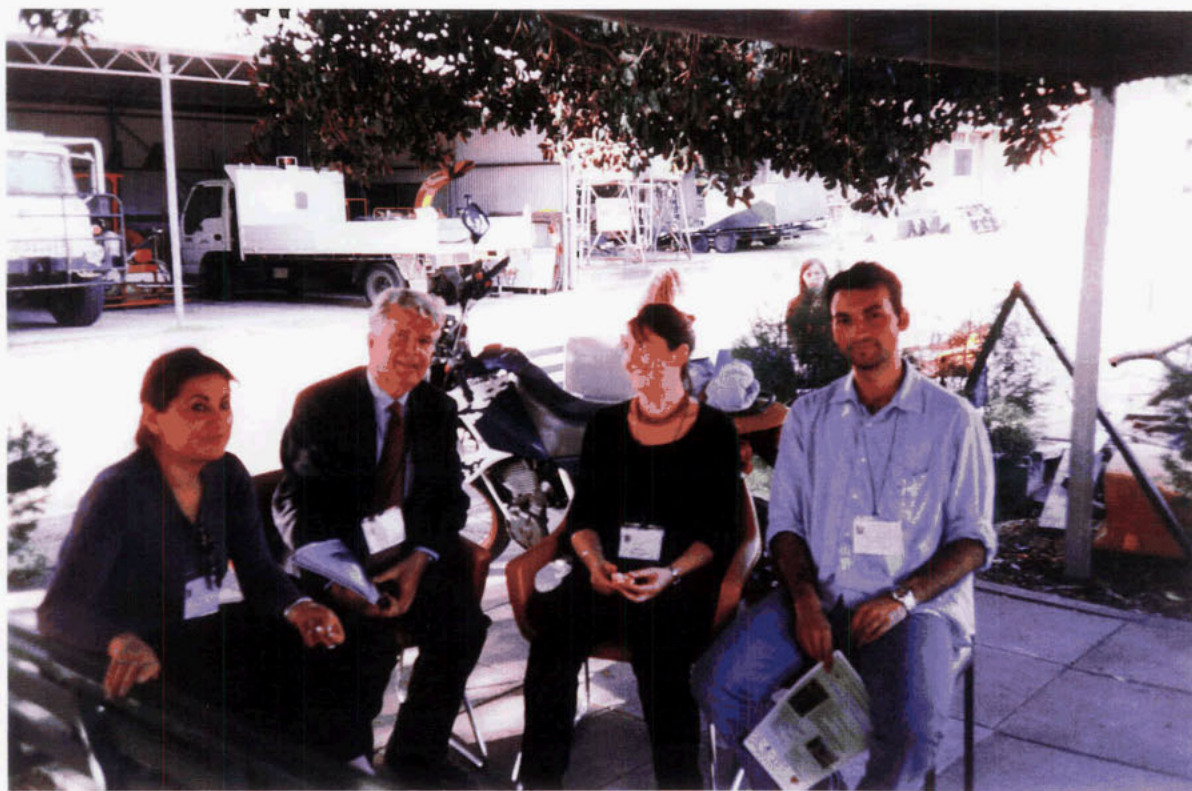


Foto N° 24 . Con Shelagh Kell, Executive Officer de IUCN/SSC Orchid Specialist Group. Le envié un artículo, que se adjunta al presente informe sobre nuestras Chloreas, para ser divulgado en los medios de difusión que esa organización internacional posee.

10. Aspectos Administrativos

10.1. Organización previa a la actividad de formación

a. Conformación del grupo

___ muy difícil ___ ☒ sin problemas ___ algunas dificultades

(Indicar los motivos en caso de dificultades)

b. Apoyo de la Entidad Responsable

☒ bueno ___ regular ___ malo

(Justificar)

c. Información recibida durante la actividad de formación

☒ amplia y detallada ___ aceptable ___ deficiente

d. Trámites de viaje (visa, pasajes, otros)

☒ bueno ___ regular ___ malo

e. Recomendaciones (señalar aquellas recomendaciones que puedan aportar a mejorar los aspectos administrativos antes indicados)

10.2. Organización durante la actividad (indicar con cruces)

Ítem	Bueno	Regular	Malo
Recepción en país o región de destino	☒		
Transporte aeropuerto/hotel y viceversa	☒		
Reserva en hoteles	☒		
Cumplimiento del programa y horarios	☒		

En caso de existir un ítem Malo o Regular, señalar los problemas enfrentados durante el desarrollo de la actividad de formación, la forma como fueron abordados y las sugerencias que puedan aportar a mejorar los aspectos organizacionales de las actividades de formación a futuro.

11. CONCLUSIONES FINALES:

Las orquídeas crecen en todos los continentes a excepción de la Antártida. Su capacidad de adaptación al medio ambiente en que viven es enorme. En el caso particular de Australia, los aborígenes transhumantes que han vivido por cuarenta mil años como dicen ellos, en el interior del interior, han practicado quemadas del “bush” o matorral, a fin de tener pasto verde para atraer a los canguros después de las primeras lluvias. El fuego se ha generado también espontáneamente desde tiempo inmemoriales, por la combustión de ciertas plantas que se inflaman con el calor reinante, así como por los rayos durante las tormentas eléctricas.

Esta fotografía, tomadas durante nuestro recorrido en terreno muestran el mismetismo de una orquídea, cuyo tallo ennegrecido engaña a los canguros, al suponer que el fuego la ha quemado, pues en realidad han emergido después que la onda calórica ha pasado. Tanto los árboles y el matorral circundante empiezan a echar nuevos brotes después de las primeras lluvias otoñales. (ver fotografía).



Mencionemos también que el interés por estas plantas pertenecientes a la familia de las Orquidaceas, no es solo por la belleza de sus flores , sino que en muchos países asiáticos, sobre todo en China, se emplean en la medicina tradicional. Más de 60 hectáreas del género *Dendrobium* se cultivan para estos fines solo en la provincia de Yunnan .

No puedo dejar de recordar lo que dijera en una de sus intervenciones el Dr. Phillip Criw, del Royal Botanic Gardens , Kew, Reino Unido: "El cultivo masivo de las orquídeas no ofrece mayores dificultades que el cultivo de la papa". Una frase, que por la investidura de su interlocutor nos llenó de optimismo.

La participación nuestra durante la primera semana en los laboratorios de la Universidad de Western Australia fue decisiva para aprender , en un verdadero curso propedéutico, las técnicas de reproducción, tanto *in vitro* como por semillas, de las orquídeas terrestres.



Foto N° 25. Cultivo bajo cubierta de *Dendrobium officinale* en la Provincia de Yunnan. En China las orquídeas son utilizadas en la medicina tradicional desde tiempos inmemoriales.



Foto N° 26, 27, 28, 29. Grata sorpresa durante el viaje fue toparse tanto en Ciudad del Cabo, Johannesburg y Coala Lumpur con la venta de hermosas proteas y orquídeas



Foto N° 30, 31 y 32.
Venta de flores de
orquídeas, tanto
terrestres como
epífitas, en distintas
ciudades que
visitáramos durante la
gira.





12. CONCLUSIONES INDIVIDUALES.

La asistencia a este Congreso sobre orquídeas en Perth , nos hizo dar un gran paso, desde nuestro sendero de investigación tortuoso y angosto en un comienzo, a un camino ancho y de alta velocidad, en Australia .Todos los participantes provenían de países donde las orquídeas son consideradas la realeza de las plantas por sus flores de escultural elegancia ,diversidad y color.

Se necesita realizar una estrategia de relaciones públicas para posesionar nuestras orquídeas nativas, tanto en nuestro país como en el exterior. Allende de nuestras fronteras los resultados serán visibles en forma más rápida, pues hay una avidez insatisfecha por flores nuevas y exóticas, características que por ahora reúnen nuestras Chloraeas.

Los congresos internacionales son también una vitrina de gran valor comunicacional y a Dios gracias, tenemos gente capacitada como para hacer llegar trabajos de alto nivel de investigación a esos eventos .

La fundación de una Sociedad Chilena de Orquideología sería una paso importante para entrar a este círculo internacional de investigadores y cultivadores de orquídeas, por el gran número de trabajos que se publican y a los cuales se podría tener acceso , así como también la realización de exposiciones , eventos, congresos, etc.

Tenemos las puertas abiertas para aclarar cualquier duda que se nos presente en el futuro inmediato, tanto con los científicos de Perth ,como de cualquier otro lugar de donde provenían los que expusieron sus trabajos .

Nuestro contacto con el Sr. G. Stocker ,investigador y cultivador de orquídeas , que vende miles de flores todos los años, está hecho y hemos empezado a tener una fluida correspondencia para llegar a un acuerdo con miras a comercializar las Chloraeas.

De seguro que más de algún admirador de estas plantas que tuvimos la suerte de conocer en el Congreso en Australia ,vendrá a Chile en cualquier momento para conocer más de cerca nuestra versatilidad en orquídeas terrestres.

Por último quisiera expresar nuestra gratitud por la realización del viaje. Si bien es cierto que salí de mi casa con la sensación de sentir como mía la afirmación del historeador contemporáneo Eric Hobsbawn “. No puedo mirar en futuro con gran optimismo”, cuatro días después que se obscurecieran los cielos de Nueva York y se nublaran las esperanzas de millones de personas, el haber participado en este evento de tan alto nivel organizacional como científico, como fue este Primer Congreso Internacional de Conservación de Orquídeas en Perth , Australia ,nos renovó con creces nuestra fe y nuestra confianza. Nos permitió realizar nuestra vocación en la búsqueda incesante de la domesticación de nuestras orquídeas silvestres, dentro de límites más amplios y humanos.

Vayan pues, nuestros agradecimientos a la Fundación para la Innovación Agraria, en la persona de su Directora Ejecutiva Doña Margarita d' Etigny , institución que ha apoyado nuestra gestión con generosidad y visión desde un comienzo.

Quiera Dios que lo aprendido en esa lejana latitud, podamos transformarlo en hechos concretos, al ir despejando el velo de interrogantes que aún cubre el fascinante y mágico mundo de nuestras orquídeas terrestres del ámbito chileno-patagónico.



Foto N° 33. Los habitantes de Perth, la capital de Australia occidental han encontrado en Swan-River, con cisnes de color negro, una fuente inagotable de belleza y recreación.

Enrique Matthei Jensen.
Coordinador del Proyecto FIA.
C98-1-A-022.

De: Geff Stocker <gstocker@austarnet.com.au>
Para: Enrique Matthei J.. <ematthei@cepri.cl>
Fecha: Lunes 22 de Octubre de 2001 10:19 AM
Asunto: Re:

Dear Dr Matthei

My apologies for not getting back to you sooner - so much to do after I finally returned from Perth.

I am quite willing to do what I can to help you get your project up and running. At this particular time I could probably help most with ideas on marketing and setting up your nursery facilities. Do you plan to only propagate and sell Chilean orchids or would you consider others. What you have is unique and should sell well initially but I am concerned that you may not have enough local species to hold markets once you establish them (for instance the South African *Disa spp* might be a useful supplement).

Going on experience with species such as Disas, it should be possible to grow them to flowering size in three or four years (perhaps less) but plants do not have to be flowering size to be sold to hobbyists. It is very difficult at this time to place a value on each plant but you may get from US\$5 (near flowering) to \$10 (flowering size) wholesale. If you can direct sell (via the internet or mail order you could double these prices but probably not sell the quantity. You could also ask much higher prices for new releases but the willingness of collectors to pay high prices will not last as others start to propagate from your stock. It is quite important to keep a stream of new varieties coming through your nursery.

You should really try to aim at markets in the US, Japan and perhaps Europe. Although I would like to handle your plants here, Australia is probably too small a market and our quarantine too strict for it to ever be of much significance to you. The same applies to NZ.

For my part I am willing to give you whatever assistance I can and see how the project develops. I think that perhaps we should leave thought of any formal commercial agreement (including the exchange of plant material) until you have a better idea of how you might proceed.

As a matter of interest, over the past couple of weeks I have been working on an outline for a similar project for AUSAID - the Australian Government's Aid Agency - as there has been a proposal to do a similar project in Samoa (but rather more orientated to tropical species and cut flower production). I am not sure yet whether this project will go ahead but I am accumulating some information which may also be useful to you.

With very best wishes

Geoff

----- Original Message -----

From: Enrique Matthei J..

To: gstocker@austarnet.com.au

Sent: Thursday, October 11, 2001 7:34 AM

Dear Mr. Stocker,

As of yet, I have not had time to sink my teeth into your fine book. I have been organizing my photos that I took in your country, and I have been feeding and refeeding as a cow the works that were presented at the First International Orchid Conservation Congress in Perth.

Now that I have time and with my faithful dictionary by my side, I am now starting to see the light from some dark passages in the documentation from this Congress. I have almost no time, I am starting to fill the orchids circulating in my blood stream.

Instead of a long detailed contract with thousands of clauses and pages of small letters print, I think any commercial relationship is based on mutual confidence.

16/11/01

I have had some time to think about our conversation. I would like you to send me a brief about how you would like us to work together. Mean time I will start to draft a contract with the help FIA (Fundación para la Innovación Agraria) that is co-financing my project in such a way that we both can achieve our goals.

If I remember correctly, you are interested in the seeds and tissue culture so that you can multiply them.

I am in the process of analyzing the problems that might occur with the exportation of the seeds and plants to Australia.

For our joint venture I would like to ask you some question. First of all how long do you think that it will take you, from seed to commercial flower? Secondly, what price do you think that these flowers or plants will bring on the market?

Waiting your comments.

Sincerely

Dr. Enrique Matthei Jensen

Sres.

Shelag Kell

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Dear Shelagh,

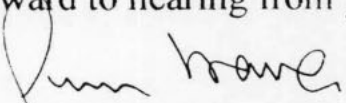
Here I am, already at home after the First International Orchid Conservation Congress that took place in Perth, W. Australia where I got a huge quantity of new information. Let me tell you it was a pleasure to meet you and know the outstanding activity you carried on in order to protect and save the orchids worldwide.

As I told you, I am sending you information about what we are doing in order to protect and conserve our outstanding and native Chlorarea Orchids.

I took the photographs by myself with my own camera in my country-side but it is not my intention they can be published. I will try to send you more information as we begin to discover the hidden world under the beautiful native Orchids (Chlorarea).

I congratulate you once again for your wonderful and successful work you have been doing through your magazine.

Looking forward to hearing from you soon,


Enrique Matthei.

RECOGNIZING THE IMPORTANCE OF THE CHILEAN ORCHIDS

The rich variety of the Chilean native flowers including the Orchids has suffered a very strong and irrational abuse. To create a very sustained development in the natural resources area the Agrarian Innovation Office (FIA) depending on the Chilean Ministry of Agriculture wants to emphasis not only the promotion of regulations and protections of our native flowers but also a strong motivation to investigate its potential that it is considered as a genetic national resource that means it has possible economic and commercial uses.

So, through economic cooperation sources, it was possible at the end of 1998 to initiate a domestication project of Chilean Orchids (Chlorarea). This investigation is registered under the FIA abbreviation C98-1A-022 and it has a duration of 4 years.

The Chlorarea classification was created by the English Botanist John Lyndley in 1827. He principally based it on Chilean collections. Some of them were described more than a century ago by the French Astronomist and Botanist Louis Feuillée when he visited our coasts in 1714.

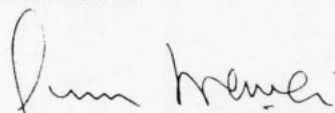
The project began because of the continued observation of these beautiful flowers in farm in Yumbel, central part of Chile, and it is supported by well-known researchers from Concepción University (mycorrhiza) Talca University (vegetal physiology) and Catholic University from Valparaíso based in Quillota (genetic).

This project is based, in its first step, on the study of Chilean *Ch. crispa*, *Ch. gavilu* and *Ch. virescens* that live in the same habitat. They have a very similar growing period of time that means, late October to the middle December.

Spite of its beauty, it has not been easy to get the little information that exists of these native Orchids. Maybe, because of the long period of time they need to grow or their great capacity to change, it seems they have not been considered a lot.

Definetely, to reproduce them for the first time either by their seed or artificially was an achievement. At the same time, mycorrhizas associated with their rhizomes were isolated, pathogenic agents that affect them were studied either in a natural environment as in a low cultivation. Also the anthropic action that affects its development specially the reduction of natural agent of pollinization. Seeds and Plus flower pollen were collected and the artificial pollonization were used. The different sustrates, light conditions, water temperature, fertilization, vegetation periods of separation etc are being studied.

In this context it was possible for us to attend the First International Congress of Orchids Conservation that took place in Perth, the Capital of Western Australia, in September 2001. This high-level scientific Congress allow us not only to exchange information and examine new techniques of conservation but also allow us to be in touch personally with a great number of well-known people who love this kind of plants. This fact will allow us to put our beautiful and almost forgotten and now cultivated Chilean-Patagonic Orchids, in the eye of the world.



ENRIQUE MATTHEI JENSEN

FIA PROYECT COORDINATOR C98-1-A-022

Chlorea crispa Ch. *gavilu* y *Ch. vivescens*.

These flowers grow up from the end of October until the middle of Dicember, either in fertile grounds as in poor ones in the center and South of Chile. The main reason of the reduction of this type of flowers is because of the indiscriminated use of agrochemicals. Author photography.



REDESCUBRIENDO LAS ORQUIDEAS TERRESTRES CHILENAS

La riqueza de la flora nativa chilena, que incluye a las orquídeas terrestres ,a sido sometida a una explotación muy intensa y poco racional. Para implementar un desarrollo sustentable en este ámbito de los recursos naturales, la Fundación para la Innovación Agraria (FIA) del Ministerio de Agricultura de Chile, está empeñada, no solo en promover la regulación y protección de nuestra flora , sino que también está dando un serio impulso a investigar su potencial, concebido como patrimonio genético, y por lo tanto, como fuente de posibles usos económicos y comerciales.

Así , a través de fondos concursables , fue posible a fines del año 1998 iniciar un proyecto de domesticación de orquídeas terrestres chilenas del género *Chloraea*. Este trabajo de investigación está rotulado bajo la sigla C98-1-A-022 de la FIA y tiene una duración de 4 años .

El género *Chloraea* fue creado por el botánico inglés John Lyndley en el año 1827, basándose principalmente en colecciones chilenas ,algunas de las cuales fueron descritas por primera vez más de un siglo atrás, vale decir, en 1714 por el explorador, astrónomo y botánico francés Padre Louis Feuillée , al visitar nuestras costas.

El proyecto nació de la prolongada observación de estas vistosas flores en un predio situado cerca de Yumbel en la Zona Central de Chile y cuenta con el apoyo de connotados investigadores de la Universidad de Concepción (micorrizas) Universidad de Talca (fisiología vegetal) y Universidad Católica de Valparaíso ,sede Quillota (genética).

Está circunscrito, en un primer período, al estudio de la *Ch. crispa*, *Ch.gavilu*.y *Ch.virescens* , que conviven en un mismo hábitat y tienen un período de floración bastante similar , vale decir , fines de Octubre a mediados de Diciembre.

No ha sido fácil reunir la escasa información que existe de estas orquídeas nativas, pese a ser tan hermosas y llamativas . Talvés por el largo período que necesitan para florecer o por la gran variabilidad que presentan ,pareciera que han permanecido relegadas al patio trasero.

Un logro fue reproducirlas , por primera vez,tanto por semillas como vegetativamente en laboratorio . Paralelamente se aislaron las micorrizas asociadas a sus rizomas, se estudiaron los agentes patógenos que las afectan , tanto en la naturaleza como bajo cultivo. También la acción antrópica desfavorable a su desarrollo, especialmente a la disminución de los agentes polinizantes naturales. Se recolectaron semillas y polen de flores plus y se comenzó a polinizarlas artificialmente. Se están analizando los distintos sustratos, condiciones de luminosidad ,riego, temperatura, fertilización, períodos de receso vegetativo, etc.

En este contexto nos fue posible asistir al Primer Congreso Internacional de Conservación de Orquídeas celebrado en el mes de Septiembre del 2001 en Perth , la capital de Australia Occidental , al otro lado del mundo . Este evento, de alto nivel organizacional y científico, no solo nos permitió intercambiar información y aquilatar nuevas técnicas conservacionistas ,sino que también nos puso en contacto personal con una pléyade de conocedores y amantes de estas plantas , lo que sin lugar a dudas, hará muy pronto entrar en escena nuevamente a nuestras hermosas , casi olvidadas y ahora cultivadas orquídeas terrestres del ámbito chileno- patagónico.

Enrique Matthei Jensen, Coordinador del Proyecto FIA C98-1-A-022.

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ANEXO 2. PUBLICACIONES ADQUIRIDAS

Se está en proceso de fotocopiado de las publicaciones aquí mencionadas, las cuales serán enviadas a FIA a la brevedad.

The Orchadian

Volume 13, Number 8

www.anos.org.au

June 2001

Official Journal of the Australasian Native Orchid Society



Grower, Hills District Orchids

D.P. Banks

***Dockrillia striolata* subsp. *chrysantha* from Bicheno, Tas. (top)
& *Dockrillia* sp. aff. *striolata* from Watagan Mountains, NSW**

Notice of Annual General Meeting of ANOS Council, Election of Council (2001-2002) & Advisory Committee Meeting.

The above meetings of the Society will be held at the new venue of **Campbelltown R.S.L. Club, Carberry Lane, Campbelltown** (venue for next ANOS Conference and Show) at **10am on Sunday, 26th August 2001**. Hosted by ANOS Macarthur & District Group. Morning tea will be served from 10am and lunch will be available at the club.

The Annual General Meeting (AGM) will be declared open at 10.30am and the Election of Council for 2001-2002 will take place.

The ANOS Advisory Committee Meeting will be held in conjunction with the above, commencing after closure of the AGM.

ANOS Groups and Associated Native Orchid Societies are requested to advise the Secretary the names of their delegates or to nominate representatives to the Advisory Committee Meeting before 19th August 2001.

Nominations For Election To Council

Nominations for election of ANOS Council are called for. These should be signed by a member of the Society, countersigned by the Nominee accepting nomination and lodged with the Secretary no later than 19th August 2001.

The positions to be filled are President, Vice-President, Secretary, Treasurer, Editor, Conservation Officer plus seven Councilors. Proxy Forms for the Election must follow the format set out in Appendix 1 the Society's Rules.



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ARTICLES:

Items for consideration may be submitted to the Editor on disk or via e-mail using Microsoft Word™.

Good quality colour slides, prints or illustrations may be submitted with articles. All efforts will be made to return images after publication.

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Dedicated to the Study and Conservation of Australasian Native Orchids

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Patron; Walter T. Upton

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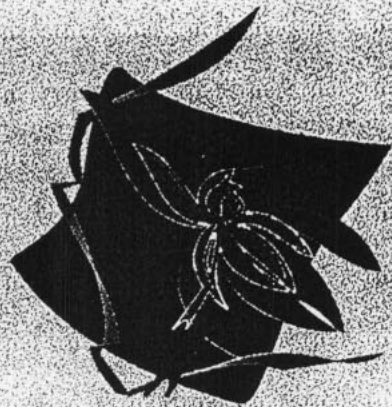
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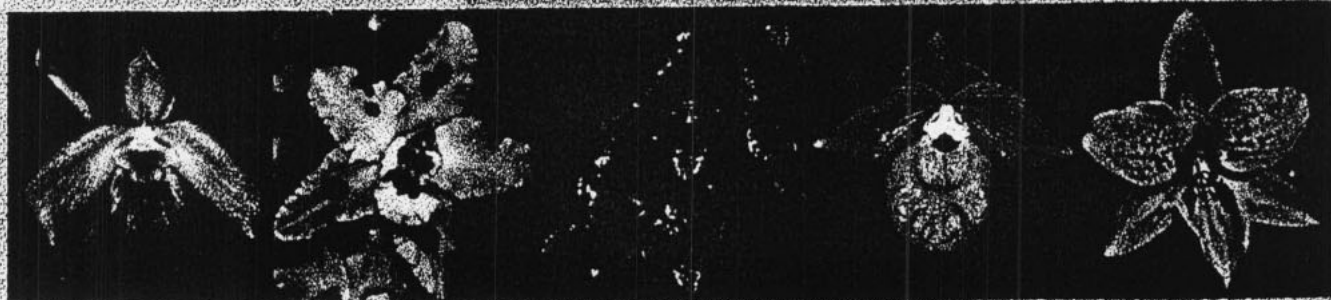
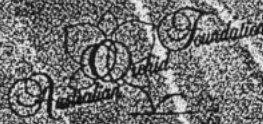


The First International Orchid Conservation Congress

Incorporating the 2nd International
Orchid Population Biology Conference

24-28 September, 2001

Program and Extended Abstracts



The Botanic Gardens and Parks Authority (Kings Park and Botanic Gardens) are pleased to present the inaugural International Orchid Conservation Congress.

This important occasion, which has been over 3 years in the making, offers a unique and incredible opportunity for each of us to come together for a common purpose – to broaden and deepen our networks in orchid conservation around the world and to globalise and collaborate on the issues that we face in conserving the world's orchid flora.

Perth offers a dramatic backdrop for the Congress. Surrounded by one of the oldest, most ecologically diverse and beautiful natural landscapes in the world, and with one of the most biodiverse floras known, delegates are assured of an inspiring botanical and ecological experience.

The First International Orchid Conservation Congress offers an opportunity for us to stretch our limits and blend our perspectives. You'll meet new people and create linkages with professionals from 16 countries from around the world. An important component of the Congress is the meeting of the Orchid Specialist Group of the IUCN which will focus on national action in orchid conservation.

The workshops and sessions that are planned touch on most of the crucial areas in orchid conservation. In addition to learning opportunities, there will be plenty of time to network with colleagues old and new, relax and have fun at receptions, tours and of course, enjoy the splendour of the Kings Park Wildflower Festival. The Festival is the largest natural species flower show in Australia. Delegates will be amazed at the sheer beauty, breadth and diversity of the displays.

Our post-congress tour will offer the opportunity of a lifetime to explore this orchid rich region. The tour will traverse some of the most spectacular wilderness areas and will include the remarkable Stirling Range National Park.

Inspiring speakers, dynamic and practical sessions, exciting tours and fun activities are all part of this inaugural Congress. We invite you to participate to the fullest in this historic congress and help guide and direct orchid conservation on a global scale.

Friday Stream 2: Session A

Pollination biology (1) Chair: **David Roberts**

1. **David Roberts** & Chris C. Wilcock: Levels of fruiting success in the Mascarene Islands orchid flora: implications for conservation. [9:00]
2. **Pati Vitt**: The effects of hand-pollination on growth, survival and reproduction in *Platanthera leucophaeta*, the eastern prairie fringed orchid. [9:30]
3. **Carlos Lehnebach**, A.W. Robertson: Pollination ecology of the genus *Earina* Lindl. in New Zealand. [9:55]

Friday Stream 2: Session B

Pollination biology (2) Chair: **Mark Chase**

1. **Topa Petit** & Doug Bickerton: Preliminary investigation on the pollination, ecology and conservation of the endangered *Caladenia behrii* in South Australia. [11:00]
2. Florian Schiestl, **Colin Bower** *et al.*: Chemical communication in sexually deceptive orchids – implications for evolution and conservation. [11:20]
3. **Colin Bower**: Specific pollinators and Australian sexually deceptive orchids: General principles and implications for conserving their biodiversity. [11:40]
4. **Jim Mant**: Pollination of *Chiloglottis* by sexual deception of Thynnine wasps: ecosystem interactions and implications for conservation. [12:00]

Poster Presentations:

Nura Abdul Karim, K. Sivasithamparam & K.W. Dixon: Pectic zymogram analysis of orchid fungal endophytes.

Ruy José Válka Alves, Regina Braga de Moura & Luiza Carla Trindade de Gusmão: Herbarium orchid database – Museu Nacional, Rio de Janeiro.

Ruy José Válka Alves: Orchids as agents of primary succession on rocks in Brazil.

Georgia Basist, A.C. Lawrie, R.E. Raleigh & R.G. Cross: Identification of threatened *Caladenia* species (Orchidaceae) using traditional and molecular techniques to aid in their conservation.

M.A. Cisternas & Carlos Lehnebach: Pollination studies on *Bipinnula fimbriata* (Poep.) Johnst. in Central Chile.

Stephen Clarke: Recovery planning for three endangered orchid species in SE New South Wales - Crimson Spider orchid (*Caladenia concolor*), Tarengo Leek orchid (*Prasophyllum petilum*) and Rhyolite Midge orchid (*Genoplesium rhyoliticum*)

Alan Dash, Ruth Rudkin, Peter Eigelshoven & Russell Wales: Australasian Native Orchids Society Inc.: The role of ANOS groups in New South Wales in orchid conservation. [X 3]

Trevor J. Edwards, S. Piper, & D.I. Thompson: Conservation threats and the current status of South African terrestrial orchids with respect to *in vitro* germination.

Karina Fitzgerald & D.L. Jones: Endangered *Prasophyllum* R.Br. in south-eastern Australia.

Elizabeth A. Fraser: *Thelymitra matthewsii* – A specialist orchid maintaining a precarious ‘toe-hold’ in New Zealand’s far north?

Wesley Higgins: Conservation through propagation.

Jana Jersakova & Pavel Kindlmann: Orchid population dynamics under human influence.

Saleh B. Kadzimin & Philip Sipen: Cryopreservation of protocorm-like bodies of *Dendrobium* by vitrification technique.

Susana Luna-Rosales, P. Ortega-Larrocea, V. Chávez, A. Barba-Alvarez: *In vitro* symbiotic germination of *Bletia urbana*.

Barabara Rodríguez Marcano, Raymond Tremblay, Elvia Meléndez-Ackerman, Carla Cortés & Owen McMillan: Paternity analysis and gene flow in a lithophytic orchid using AFLP.

General Information

Perth is the capital of Western Australia, Australia's largest state. Western Australia is a place of enormous contrast — lush grape growing areas and wineries, vast deserts, rugged ranges and giant karri forests. The diversity of the scenery and attractions represents an excellent opportunity for pre- and post-conference touring during your stay in the West.

The city of Perth is set along the beautiful Swan River, just a few kilometres from the ocean. The metropolitan area extends from the hills in the east to the vibrant breezy port of Fremantle to the south. Perth is on the same time zone as Singapore and Hong Kong, and in September is two hours behind Sydney, Melbourne and Brisbane. During September, average daily temperatures are mild and pleasant and range from 10 to 20 degrees Celsius.

The Venue

The Congress will be held at the Hyatt Regency in the city of Perth. The venue is five star and within easy walking distance of Perth's business, commercial and entertainment districts. Excellent public transport services are available to the door of the hotel and very regular bus services link the city with Kings Park.

Registration

The Registration Desk, located in the South Foyer of the Hyatt Regency Perth, will be open at the following times:

Sunday 23 rd September	1500 - 1730
Monday 24 th September	0730 - 1700
Tuesday 25 th September	0730 - 1700
Wednesday 26 th September	CLOSED
Thursday 27 th September	0730 - 1700
Friday 28 th September	0730 - 1600

Admission

Admission to all congress sessions, lunches, morning and afternoon teas and social functions is by name badge only. You are therefore requested to wear your name badge at all times.

Lunches, Morning and Afternoon Teas

Lunches, morning and afternoon teas are included as specified for the different registration categories. Lunch will be served daily in Ballroom North and morning/afternoon tea will be served in the poster display area – South Foyer.

Congress Sessions

All plenary congress sessions will be presented in the South Ballroom, and concurrent sessions will be held in the Freshwater Bay Room.

Photo Session

Tuesday 25th, 3:20-3:40 pm in the Hotel Lobby

Sunday	Monday	Tuesday A	Tuesday B	Wednesday	Thursday	Friday A	Friday B
8:30					OSG overview: Phillip Cribb and Shelagh Kell		
9:00	Introduction and launch			Field Trip			
9:30	Conservation overview : Peter Wyse Jackson	Recovery (1): <i>Ex situ</i> studies in Orchid conservation: Margaret Ramsay	Population Biology (1): Jo Willems and Dennis Wigham		Orchid Specialist Group Regional reports: OSG Regional Chairs	Case studies in orchid conservation: Shelagh Kell and Kingsley Dixon	Pollination biology (1): Dave Roberts
10:00	Orchid Conservation overview: Phillip Cribb						
10:30	Morning Tea						
11:00	Phylogeny overview: Mark Chase						
11:30	Species concepts and conservation: Alec Pridgeon	Recovery (3): Recovery of plants to sites: Kingsley Dixon and Hanne Rasmussen	Population Biology (2): Raymond Tremblay and Michael Hutchings		OSG Regional workshops: OSG Regional Chairs	Role of orchid societies and growers in orchid conservation: Henry Oakeley	Pollination biology (2): Mark Chase
12:00	Australian Orchid Conservation: Steve Hopper						
12:30	Lunch Break	Global Warming Talk: Matthew Buckels					
1:30	Case studies and assessment of conservation priorities: Shelagh Kell and Kingsley Dixon	Mycorrhiza for conservation (1): Finn Rasmussen and Lawrence Zettler	Managing the trade in wild orchids: Roddy Gabel		Conservation genetics (1): Diversity and priorities: Mike Fay, Seigy Krauss and Walter Rossi	Taxonomy for conservation: Ed de Vogel	
2:00							
2:30							
3:00	Afternoon tea	Photo Session					
3:30		Mycorrhiza for conservation (2): Finn Rasmussen, Lawrence Zettler and Mark Brundrett			Conservation genetics (2): Recovery and sampling strategies - Seigy Krauss, Mike Fay and Walter Rossi	Conclusions and recommendations: Steve Hopper	
4:00							
4:30	Threatening processes: Harold Koopowitz					NEXT CONGRESS	
5:00	Welcome function	Poster Session					
6:00		Peter Crane: 6:30					
7:00							
8:00							
					Peter Wyse Jackson: 7:30	Congress Dinner Speaker: Henry Oakeley	

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Phillip Cribb	Royal Botanic Gardens, Kew
Kingsley Dixon (Chair)	Kings Park & Botanic Garden
Shelagh Kell	Orchid Specialist Group, SSC, IUCN
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Acknowledgements

The Committee gratefully acknowledge the help and support of Botanic Gardens and Parks Authority staff, the Department of Conservation and Land Management Western Australia, and the staff of Congress West, particularly Elisa Marino, Sharon Boynes and Katie Clarke.

Thanks also to Thalia Economo (Theta Graphics) for designing the conference logo and Peter Hood for graphic design and layout of the numerous Congress documents.

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Special congress lectures and activities.

The history of Angiosperm diversity.

Professor Peter R. Crane

Director, The Royal Botanic Gardens, Kew

Tuesday September 25 at 6:30 pm.

Geography Lecture Theatre, University of Western Australia, Nedlands.

Over the last 15 years the discovery of diverse and exquisitely preserved Cretaceous fossil flowers has yielded a wealth of information on the structure of ancient angiosperms. Integrated with evidence from extant plants, and particularly increasingly secure hypotheses of relationships based on molecular evidence, these data constrain ideas on the pattern and timing of angiosperm diversification. Paleobotanical data provide clear evidence of a major diversification of flowering plants between about 130 and 80 myr before present, but the relatively late appearance of the most diverse angiosperm clades implies extraordinarily high rates of diversification, as well as a relatively recent and rapid origin for much of extant angiosperm diversity over the last several million years. In the coming decades this upward trend in diversity seems likely to be reversed. Increased rates of extinction will be driven in part by direct habitat destruction and degradation, but also by breakdown of geographical and ecological barriers that helped generate and maintain diversity in the past.

Exploring botanic garden's around the world – from Vietnam to voodoo.

Dr Peter Wyse Jackson

Secretary General, Botanic Gardens Conservation International

Thursday September 27 at 7:30 pm.

Constitution Centre, Corner of Parliament Place & Havelock Street, West Perth.

Cost: \$5 donation for supper.

RSVP: (08) 9480 3643 by 26 September 2001.

Dr Wyse Jackson has toured the botanic gardens of the world and his fascinating lecture will explore the way in which many of the 1800 botanic gardens create centres of horticultural excellence. He will take you on a tour from the great to the humble with exciting images of plants and people in action in the world's botanic gardens.

Make sure you put time aside to visit the World Famous Kings Park Wildflower Festival

– a panorama of wildflowers to celebrate springtime.

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First International Orchid Conservation Congress, September 24-28, 2001, Perth, Western Australia. Book of Extended Abstracts.

Hosted by Kings Park & Botanic Garden (Botanic Gardens & Parks Authority); the Orchid Specialist Group of the Species Survival Commission of the IUCN, the World Conservation Union; Botanic Gardens Conservation International; the Australian Network for Plant Conservation; the Hermon Slade Foundation; the Australian Orchid Foundation; Rocla Quarry Products and the American Orchid Society.

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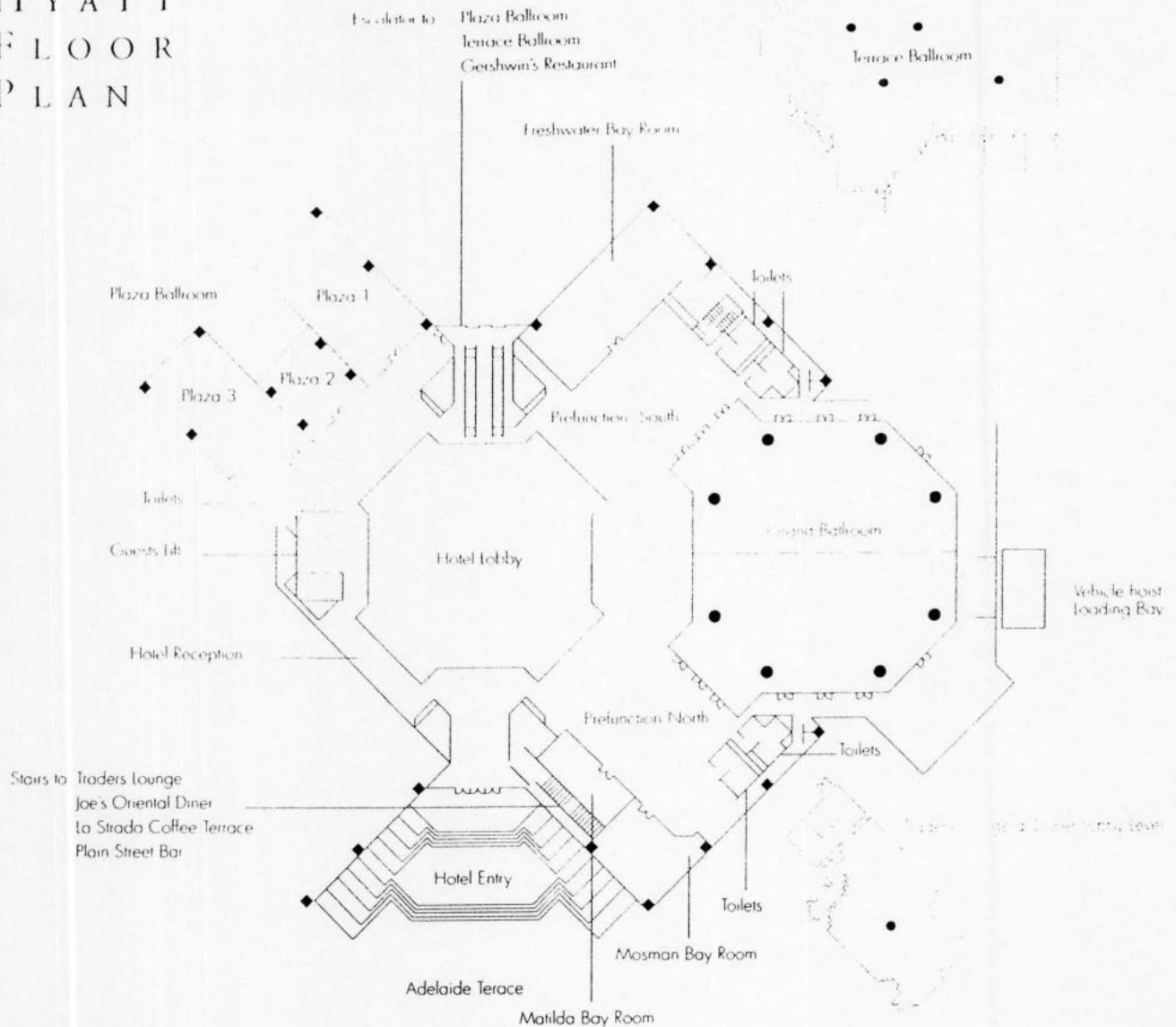
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HYATT FLOOR PLAN



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- Speaker recessed in ceiling
- Multiple line input
- Stage lighting remote control

Poster Presentations

Poster presentations will be displayed from Monday 24th September to Friday 27th September inclusive. All Posters may be viewed in the South Foyer during morning and afternoon tea.

Note: All poster authors are requested to be present on Tuesday 25 September, from 5:00 – 5:45 pm.

Smoking Policy

The Congress has a No Smoking policy for the well being of all its participants. Government legislation requires all public buildings to be smoke free. Persons may smoke in their hotel room on the proviso they have specifically booked a "smoking room".

Parking

Delegates are responsible for their own parking expenses. The daily rate in the Wilson Car Park (located under the Hyatt Regency Hotel) is \$6.00 for delegates of the Orchid Congress. In order to obtain this special Congress rate please ask for a parking voucher from the Congress Registration Desk prior to leaving each day.

Public Transport

The Hyatt Regency Perth is located on a main thoroughfare for public transport. There is an excellent bus service along Adelaide Terrace, and the CAT (Central Area Transport) bus which runs free of charge around the city centre.

If you would like further information on services and schedules, please call Transperth's *Infoline* on **13 62 13**

Mobile Phone Policy

Mobile phones **must be switched off** in the Conference rooms whilst sessions are in progress.

Messages

All messages for delegates will be posted on the message board near the Registration Desk. Delegates are requested to check the board regularly. Messages for delegates may be phoned through to the secretariat on Tel: +61 8 9225 1711 or Fax: +61 8 9225 1712.

Social Functions

Welcome Cocktail Party –Kings Park Wildflower Festival

Come and celebrate the opening of The First International Orchid Conservation Congress, in the Orchid Pavilion. Meet old friends and new colleagues while viewing the array of orchids on display.

Date: Sunday 23rd September
Time: 5.30pm – 7.30pm
Cost: Included for full delegates
Extra tickets are available at \$45.00

All delegates will need to make their own way to Kings Park Botanic Garden which is a short stroll from the city centre. On arrival please present your name badge for entry into the Festival (a map of the area is available in your congress backpack). At the conclusion of the function (7.30 pm), a coach will be available to take delegates to the Hyatt Hotel.

About Kings Park Botanic Garden: Located in the heart of Perth, the capital city of Western Australia, Kings Park and Botanic Garden covers an impressive 400 ha with over two thirds still bushland. For such an urbanised, natural area within five minutes of the central business district it is therefore surprising that 52 orchid species and varieties still grow naturally in many areas — with most of these species in full bloom during the congress time (spring). Within 10 minutes of the congress hotel, it is possible to be wandering through beautiful and extensive displays of wild cowslip orchids (*Caladenia flava*), donkey orchids (*Diuris magnifica*) and spider orchids (*Caladenia*).

Kings Park is also the State's botanic garden, which is free and open 24 hours a day, every day of the year. The botanic garden comprises sweeping landscapes and vistas with planted displays of some of the 10,800 species native to Western Australia. Noteworthy is the *Banksia* garden which represents the largest public collection of this iconic group of Australian species and the award-winning water garden which meanders through landscaped gardens of Western Australian wetland plants.

Kings Park also offers over 50km of walking and nature trails and extensive jogging areas — or just quiet spots for relaxation after a hard day at the congress!

Congress Dinner – Hyatt Regency Hotel – Terrace Ballroom

Date: Friday 28th September 2001
Time: 7.30pm
Dress: Formal – Lounge suits
Cost: Included for full delegates
Extra tickets are available at \$95.00.

The dinner has some special treats in store so we hope to see you there!

Mid Week Day Trip

Date: Wednesday 26 September 2001
Coach Departs: 8.30am
Departure Point: Bus zone on Adelaide Terrace just in front of the lower lobby of the Hyatt Regency Hotel.

Delegates attending the mid-week day trip will visit some of the most species-rich orchid habitats on the west coast of Western Australia. The tour will include sites of special scientific interest and a range of habitats from swamps to granite rocks.

Delegates who have booked to take this tour will need to assemble in the Hyatt Hotel foyer at 8.20am on Wednesday 26 September 2001. On boarding the coach you will receive a tour booklet outlining the days activities and points of interest.

Tip: Wear sturdy footwear and old clothing as you will be going through some rough and burnt terrain to see the orchids. The weather is likely to be fine and warm at this time of the year, however if it looks like raining please bring a raincoat or umbrella. A water drink bottle is also advised. Lunch is provided.

Post-Congress Tour – W.A. Orchids

Departure Date: Saturday 29 September 2001
Departure Time: 8.30am
Departure Point: Bus zone on Adelaide Terrace just in front of the lower lobby of the Hyatt Regency Hotel
Return Date: Wednesday 3 October 2001

The Post Congress Tour of the International Orchid Conservation Congress has been designed to introduce you to the unique and diverse orchid flora of the southwest of Western Australia. Some 60-100 species will be seen over 5 days in a range of habitats and geographical regions in both high and low rainfall areas. Of course, the number of species that flower in 2001 will be influenced by weather and fires. Both common and rare species will be seen and the reasons for the threatened status of our most endangered species explained first hand. Some 32 species of orchids from this region are currently listed as threatened and some are subject to recovery programs co-ordinated by the WA Department of Conservation and Land Management's Nature Conservation Division (Western Australian Threatened Species and Communities Unit) and the Division of Plant Science of the Botanic Gardens and Parks Authority.

Delegates who are booked on the Post Congress tour will need to assemble in the Hyatt Hotel's foyer on Saturday 29 September 2001 at 8:15am. All luggage will be loaded on the coach and the tour will officially depart at 8:30am. Latecomers will be left behind!

Tip: Bring sturdy foot-ware and long pants as we may be walking through thick prickly scrub and occasional burnt swamps that may still be wet. Remember to bring a hat and sun-screen to protect yourself from the sun which will often be strong at this time of year. Spring weather in WA is variable, so be prepared for both cool and warm days. Also, come prepared for occasional showers with a raincoat or umbrella. It is especially important to bring lots of film or recording media for your camera, as you will probably take many more images than you expect due to the magnificent scenery, the spectacular wildflowers and, of course, the beautiful orchids you will see.

First International Orchid Conservation Congress - Session Layout

Start times are given in [square] brackets following the presentation title.

This timetable was correct as at 18 September 2001, however given the current circumstances, some changes can be anticipated. We apologies for any inconvenience this may cause.

Monday A

1. Introduction and Launch. [9:00] ↗
2. **Peter Wyse Jackson**: Plant conservation - an international overview. [9:30]
3. **Phillip Cribb**: Orchid conservation at the cross-roads. [10:00]

Monday B

1. **Mark W. Chase**, John Freudenstein & Kenneth Cameron: DNA data and Orchidaceae systematics: a new phylogenetic classification. [11:00]
2. **Alec Pridgeon**: Modern species concepts and practical considerations for conservation of Orchidaceae. [11:30]
3. **Stephen Hopper**, David L. Jones & Andrew P. Brown: Australian Orchid Conservation. [12:00]

Monday C

Case studies and assessment of conservation priorities. Chairs: **Shelagh Kell** and **Kingsley Dixon**

1. **Wendy Strahm**: Orchids and Red Lists: identifying species in need of conservation action. [1:30]
2. **Yam Tim Wing** & Aung Thame: Orchid conservation at the Singapore Botanic Gardens. [2:00]
3. **Datuk Lamri Ali**: TBA. [2:20]
4. **Weerachai Nanakorn**: Status of Thai native orchids. [2:40]

Monday D

Threatening processes. Chair: **Harold Koopowitz**

1. **Harold Koopowitz** & P.S. Lavarack: The nature of threats to orchid conservation. [3:30]
2. **David Jones**: Threatening processes in Eastern Australia. [4:00]
3. **Carlos Lehnebach** & M. Riveros: Chilean orchids: What do we know about them? [4:20]
4. **RC Srivastava**: The depleting orchid flora of Sikkim and strategies for conservation. [4:40]

Tuesday Stream 1: Session A

Recovery (1): *Ex situ* strategies in orchid conservation. Chair: **Margaret Ramsay**.

1. **Margaret Ramsay**: The role of *ex situ* techniques in re-establishment of terrestrial orchids in the United Kingdom. [9:00]
2. **Nika Debeljak**: Tuber production as a method for improving conservation of terrestrial orchids. [9:30]
3. Colin Night, **Elizabeth James** & S. Akiyama: Reversing the decline of *Diuris fragrantissima*. [9:55]

Tuesday Stream 1: Session B

Recovery (2): Recovery of plants to sites Chair: **Kingsley Dixon & Hanne Rasmussen**

1. **Hanne Rasmussen**: Substrate requirements for recruitment of orchid seedlings. [11:00]
2. **Ruth Raleigh**, R.G. Cross, A.C. Lawrie, F. Coates & A.C.A. Moorrees: Research into the propagation of eastern Australian *Caladenia*. [11:30]
3. Andrew Govanstone, John Hill, **Andrew Pritchard**: Mellblom's Spider-orchid *Caladenia hastata* - Managing the *in situ* recovery of a Critically Endangered Spider Orchid. [11:50]
4. **Andrew Batty**, K.W. Dixon, M. Brundrett, K. Sivasithamparam: Improving the success of translocation of terrestrial orchids. [12:10]

Lunch: Matthew Buckels: The issues and impacts of global warming. [12:30]

Tuesday Stream 1: Session C

Mycorrhiza for conservation (1). Chairs: **Finn Rasmussen** and **Lawrence Zettler**

1. **Leka Manoch** & Kanungnid Busarakam: Biodiversity and distribution of endophytic, pathogenic and rhizosphere fungi from terrestrial orchids in Thailand. [1:30]
2. **Pornpimon Athipunyakom** & Leka Manoch: Diversity of orchid mycorrhiza in Thailand. [1:50]
3. **Penelope Hollick**, J.A. McComb & K.W. Dixon: Natural hybrids as a means for investigating specificity of orchid mycorrhizal fungi. [2:10]
4. **Magali Wright**, David Guest & Rob Cross: The development of mycorrhizal infection in *Caladenia tentaculata*. [2:30]

Delegates Photo. [3:20]

Tuesday Stream 1: Session D

Mycorrhiza for conservation (2). Chairs: **Finn Rasmussen**, **Lawrence Zettler** and **Mark Brundrett**

1. **Mark Brundrett**: Do orchids have true mycorrhizal fungi? [3:40]
2. **Tien Huynh**, C.B. McLean & A. Lawrie: Seasonal observations of the endangered terrestrial spider orchid, *Caladenia formosa* G. W. Carr. [4:00]
3. **Rodrigo Reinoso**, J. Becerra, N. Garido & M. Silva: Determination of new endomycorrhizal fungi from two Chilean orchids, *Chloraea crispa* and *C. gaviu* (Orchidaceae). [4:20]
4. Ann Lawrie, **T. Huynh**, R.E. Raleigh, **C.B. McLean**, R.G. Cross, F. Coates & A.C.A. Moorrees: Molecular biology of mycorrhizal fungi from Australian terrestrial orchids. [4:40]

Tuesday Stream 2: Session A

Population biology (1) Chairs: **Jo Willems** and **Dennis Whigham**

1. **Jo Willems** & D.F. Whigham: The role of long-term, individual based demographic studies in the conservation of terrestrial orchids. [9:00]
2. **Tiiu Kull**, K. Tali & T. Tuuliki: Population dynamics of north temperate orchid species. [9:30]
3. **Fiona Coates** & I. Lunt: Patterns of appearance and transition to flowering in *Prasophyllum correctum* D.L. Jones, a threatened orchid from south eastern Australia. [9:50]
4. Jana Jersakova & **Pavel Kindlmann**: Factors affecting fruit set in *Orchis morio*. [10:10]

Tuesday Stream 2: Session B

Population biology (2) Chairs: **Raymond Tremblay** and **Michael Hutchings**

1. **Dennis Whigham** & Jo Willems: Population studies of terrestrial orchids – habitat management and annual counts of aboveground plants are only part of the picture. [11:00]
2. **Michael Hutchings**: TBA. [11:30]
3. **Raymond Tremblay** & Michael Hutchings: Population dynamics in orchid conservation: A review of analytical methods based on the rare species *Lepanthes eltoroensis*. [11:50]

Lunch: Matthew Buckels: The issues and impacts of global warming. [12:30]

Tuesday Stream 2: Session C

Managing the trade in wild orchids. Chair: **Robert R. Gabel**

1. **Robert R. Gabel**: The impact of international trade on orchids. [1:30]
2. **Geoff Stocker**: CITES – Conservation showpiece or opportunity lost. [2:00]
3. **Gloria L.P. Siu**: TBA. [2:20]
4. **Jin Xiaohua**, Qin Haining & Gloria, Siu Laiping: Traditional usage of orchids in China. [2:40]

Thursday: Session A

Orchid Specialist Group (OSG) Meeting. Chairs: **Phillip Cribb & Shelagh Kell**

1. Introduction: **Phillip Cribb** and **Shelagh Kell** [8:30]
2. OSG strategic plan: **Phillip Cribb**
3. Secretariat report: **Shelagh Kell**

Regional group reports:

4. Afro-Madagascar: **George Mugambi**
5. Australasia: **Kingsley Dixon**
6. East Asia: **Gloria L.P. Siu**
7. Indian Subcontinent: **Udai Pradhan**
8. Meso America: **J Warner**
9. North America: **Marilyn Light**
10. South America: **Alex Hirtz**
11. Europe: **Phillip Cribb**

Thursday: Session B

OSG Regional workshops. Chairs: **Regional Chairs**

1. *Ex situ* conservation group report: **Phil Seaton** [11:00]
2. Use of Revised Red List Criteria, RAMAS Red List and SIS: **Wendy Strahm**
3. Any other business
4. **Date and venue of next meeting:** 17th WOC, Shah Alam, Malaysia.

Thursday: Session C

Conservation genetics (1) Diversity and priorities. Chairs: **Mike Fay, Seigy Krauss** and **Walter Rossi**

1. **Walter Rossi**, M. Cristina Mosco & Luciano Bullini: Genetic erosion in Italian populations of threatened orchids: *Cypripedium calceolus*, *Orchis palustris* and *Dactylorhiza incarnata*. [1:30]
2. **Faridah Quamaruz-Zaman**, Michael Fay, John Parker & Mark Chase: Conservation genetics of rare and endangered British Orchids. [2:00]
3. Peter Hollingsworth, **Richard Bateman** *et al.*: Population genetic structure of species of *Epipactis*. [2:20]
4. **Richard Bateman** & Peter Hollingsworth: Species delimitation and conservation prioritisation: operating at the boundary between phylogenetics and conservation genetics. [2:40]

Thursday: Session D

Conservation genetics (2) Recovery and sampling strategies. Chairs: **Seigy Krauss, Mike Fay** and **Walter Rossi**

1. **Siegfried L. Krauss** & Robyn Taylor: Restoration genetics of *Caladenia* in urban bushland remnants in Perth, Western Australia. [3:30]
2. **Michael F. Fay**, Mark W. Chase, Robyn S. Cowan & Mikael Hedrén: Orchid conservation genetics - How many data do we need? [4:00]
3. **Rod Peakall**, D. Ebert, J. Mant & F. Schiestl: Application of genetic tools for the conservation of orchids: premise and pitfalls. [4:25]

Friday Stream 1: Session A

Case studies in orchid conservation. Chairs: **Shelagh Kell** and **Kingsley Dixon**

1. **Denise Wilson**: Orchid conservation efforts in Costa Rica. [9:00]
2. **John Sawyer** & Peter de Lange: Biogeography and orchid conservation in New Zealand: Case studies from the Department of Conservation orchid files. [9:30]
3. **Gary Backhouse**, Fiona Coates & James Todd: An overview of the conservation status of the orchids of Victoria. [9:50]
4. **Rusea Go** & A. Julaihi: Diversity and conservation of limestone orchids in Sarawak, Malaysia. [10:10]

Friday Stream 1: Session B

Role of orchid societies and growers in orchid conservation. Chair: **Henry Oakeley**

1. **Henry Oakeley**: The importance of the National Plant Collection schemes in orchid conservation. [11:00]
2. **Alan Dash**: The role of the Australian Native Orchid Society Inc. in orchid conservation. [11:30]
3. **Chitrapan Piluek**, Pramote Triboon, Chukiat Tapsan and Derake Tonpayom: Wild orchid conservation for ecotourism in Thailand. [11:50]
4. **Helen Richards**: The Australian Orchid Foundation and conservation. [12:10]

Friday Stream 1: Session C

Taxonomy for conservation. Chairs: **Mark Clements** and **Ed de Vogel**

1. **Mark Clements**: Systematics and its implications for orchid conservation. [1:30]
2. **Ed de Vogel** & André Schuiteman: The project "Orchids of Southeast Asia" on CD-ROM. [1:50]
3. **Stephen Hopper**: Overcoming the taxonomic impediment: A case study in south-west Western Australia. [2:10]

Friday: Session D

Conclusions and recommendations. Chair: **Stephen Hopper** [3:00]

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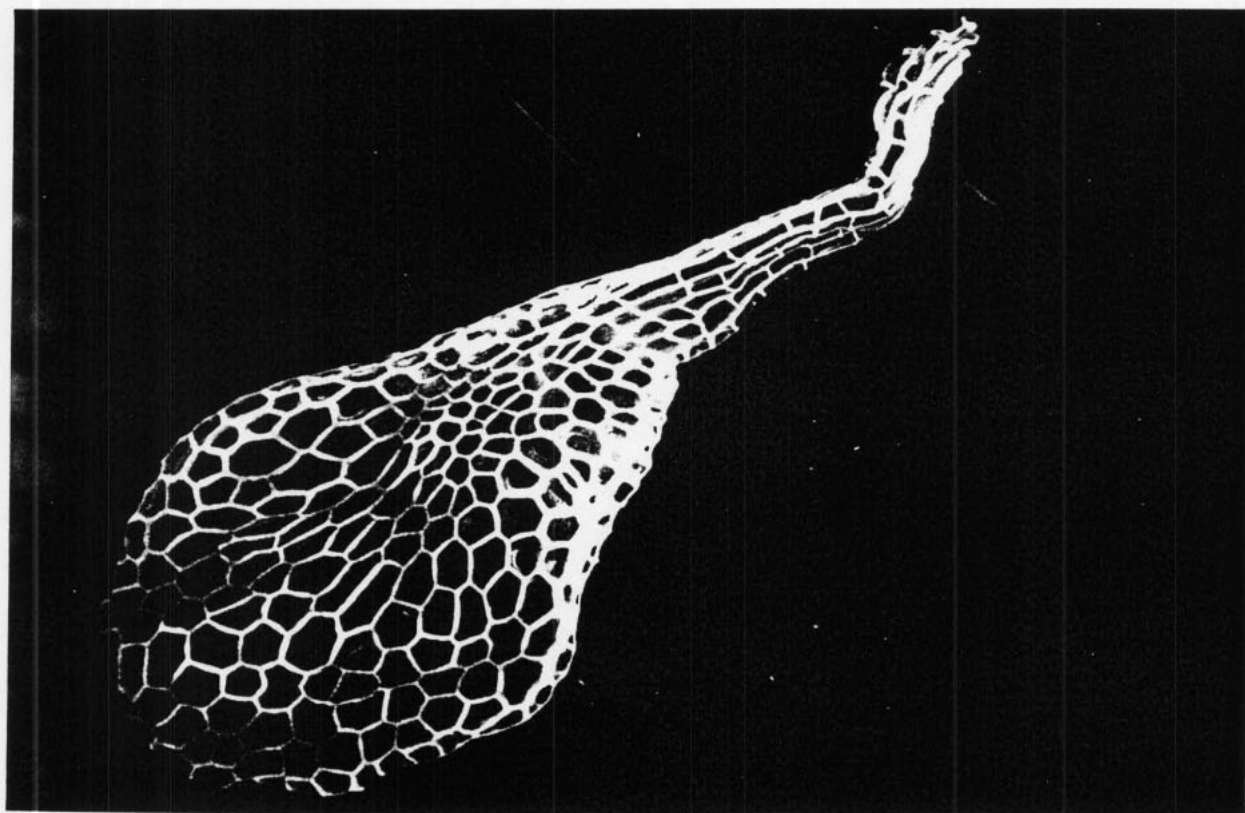
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Asymbiotic Technique of

Orchid Seed Germination



by Aaron J. Hicks

Edited by Robert Huber



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by Aaron J. Hicks



The Orchid Seedbank Project

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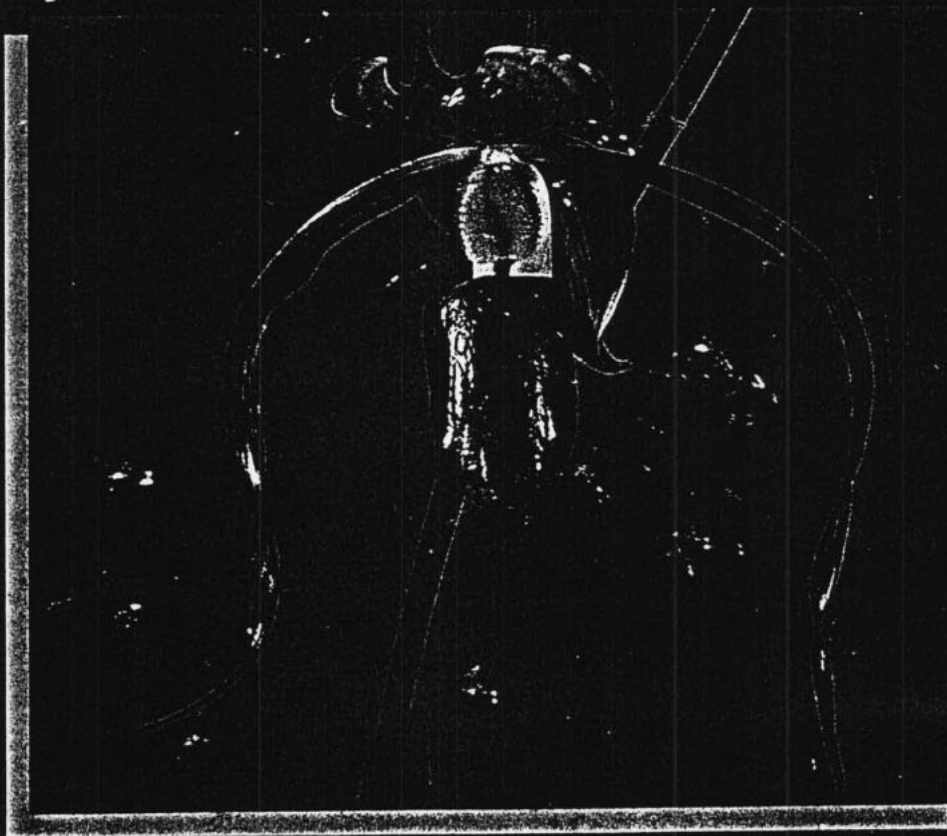
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Status Survey and Conservation Action Plan

Orchids

Edited by Eric Hágsater
and Vinciane Dumont

Compiled by Alec M. Pridgeon



IUCN/SSC Orchid Specialist Group

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Mauricio Cestumay
Orchid Congress. 2001, Perth
Status Survey and Conservation Action Plan

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In 1992, IUCN's Species Survival Commission established the Conservation Communications Fund to garner support for its expansive Publications Programme which promotes conservation by: (1) providing objective scientific information about biodiversity, habitats, and ecosystems; (2) identifying high priority actions for conservation; and (3) delivering the information and recommendations to natural resource managers, decision-makers, and others whose actions affect the conservation of biodiversity.

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The Sultanate of Oman established the Peter Scott IUCN/SSC Action Plan Fund in 1990. The Fund supports Action Plan development and implementation; to date, more than 80 grants have been made from the Fund to Specialist Groups. As a result, the Action Plan Programme has progressed at an accelerated level and the network has grown and matured significantly. The SSC is grateful to the Sultanate of Oman for its confidence in and support for species conservation worldwide.

The Chicago Zoological Society (CZS) provides significant in-kind and cash support to the SSC, including grants for special projects, editorial and design services, staff secondments, and related support services. The President of CZS and Director of Brookfield Zoo, George B. Rabb, serves as the volunteer Chair of the SSC. The mission of CZS is to help people develop a sustainable and harmonious relationship with nature. The Zoo carries out its mission by informing and inspiring 2,000,000 annual visitors, serving as a refuge for species threatened with extinction, developing scientific approaches to manage species successfully in zoos and the wild, and working with other zoos, agencies, and protected areas around the world to conserve habitats and wildlife.

The National Wildlife Federation (NWF) makes a significant annual contribution to the SSC Conservation Communications Fund, in addition to grants for *in situ* conservation coordinated by the SSC. NWF is the largest non-governmental, non-profit conservation-education and advocacy organization in the United States. It emphasizes assisting individuals and organizations of all cultures, in the United States and abroad, to conserve wildlife and other natural resources and to protect the earth's environment to assure a peaceful, equitable, and sustainable future.

The World Wide Fund for Nature (WWF) provides significant annual operating support to the SSC. WWF's contribution supports the SSC's minimal infrastructure and helps ensure that the voluntary network and Publications Programme are adequately supported. WWF aims to conserve nature and ecological processes by: (1) preserving genetic, species, and ecosystem diversity; (2) ensuring that the use of renewable natural resources is sustainable both now and in the longer term; and (3) promoting actions to reduce pollution and the wasteful exploitation, and consumption of resources and energy. WWF is one of the world's largest independent conservation organizations with a network of National Organizations and Associates around the world and over 5.2 million regular supporters. WWF continues to be known as World Wildlife Fund in Canada and in the United States of America.

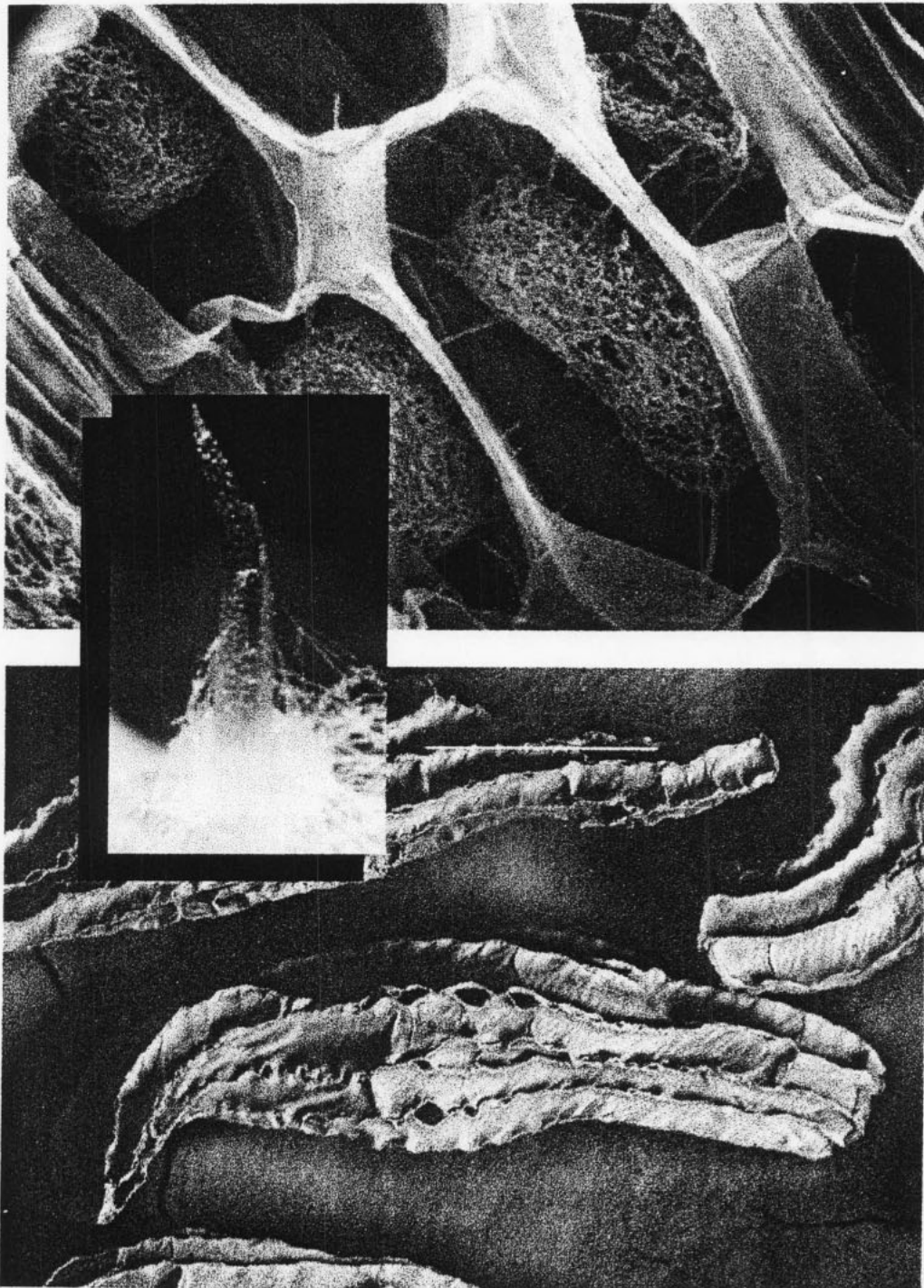
The Taiwan Council of Agriculture (TCOA) has awarded major grants to the SSC's Wildlife Trade and Conservation Communication Programmes. This support has enabled SSC to continue its valuable technical advisory service to the Parties to CITES as well as to the larger global conservation community. Among other responsibilities, the TCOA is in charge of matters concerning the designation and management of nature reserves, conservation of wildlife and their habitats, conservation of natural landscapes, coordination of law enforcement efforts as well as promotion of conservation education, research, and international cooperation.

Publication of *Orchids: Status Survey and Conservation Action Plan* was made possible with a generous grant from the **Foundation for the Conservation of Wild Orchids** (Stiftung zum Schutze und zur Erhaltung wildwachsender Orchideen, Zürich, Switzerland), a foundation dedicated to protection and preservation of wild growing orchids in all parts of the world. Royal Botanic Gardens, Kew, provided a major in-kind contribution in the form of support for Alec Pridgeon, who compiled the Action Plan. Finally, the continuing support of Sir Robert and Lady Sainsbury, for orchid conservation work in general and the Sainsbury Orchid Project in particular, is gratefully acknowledged.

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Orchid Conservation Techniques Manual



First International Orchid Conservation
Congress - Training course
September 2001

Orchid Conservation Techniques Manual

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Front Cover: ESEM of fungal peloton visible in LS of *Prassophylum fimbriata* root. SEM image of *Caladenia arenicola* seed. Symbiotic seedling of *Thelymitra manginii*.

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Acknowledgment: Portions of Brundrett M, Bougher N, Dell B, Grove T, Malajczuk N (1996) *Working with Mycorrhizas in Forestry and Agriculture*. (Pirie Printers: Canberra) have been used in this manual.

Orchid Conservation Training Course - September 20-22, 2001

Topic	Presenters	Time ²	Notes
Thursday September 20, 8:30 am – DAY 1 Kings Park & Botanic Gardens Laboratory			
1. Welcome, Introduction, Presentation of Resources and Group Photo	Kingsley Dixon		
1.1. Laboratory manual with comprehensive bibliography of orchid conservation techniques		0.30	Manual with diagrams, recipes and bibliography
1.2. Orchid Research Kit		0.10	Tools, mounting media, stains
1.3. Laboratory safety and microscope use		0.10	Care of equipment
1.4. Intro to media preparation, axenic methods	Eric Bunn & KPBG staff	0.30	Talk and demos.
Morning tea		0.15	
2. Genetic Diversity and Sampling Issues	S. Krauss, Robyn	1.00	Talk and demo
3. Isolation of orchid fungi			
3.1. Field trip to local bushland	KPBG staff, students	0.45	Collect material, seed baits
LUNCH		4	
3.2. Isolation of orchid fungi and care of isolates	KPBG staff, students	2.00	Isolate fungi from peletons and surface sterilised materials
Afternoon tea		0.15	
4. Propagation and Care of Seedlings			
4.1. <i>In vitro</i> methods, seed germination, cryopreservation, etc.	KPBG staff Margaret Ramsay	1.30	Demos. and lab tour
4.2. Nursery management	Bob Dixon,	0.45	Talk and nursery tour
Total		8	
Friday September 21, 8:30 am – DAY 2 University of Western Australia Teaching Laboratory			
5. Fungi			Video microscope demos
5.1. Identification of soil fungi	Prof. Sivasithamparam	1.30	Talk + demos of orchid fungi
Morning tea		0.15	
5.2. Advanced methods of fungal identification	A/Prof B. Dell & guests	1.00	Talk and demo
5.3. Demonstrations of advanced microscopy techniques using orchid materials	Prof. J. Kuo and graduate students	1.00	UWA Microscopy and Microanalysis Centre
LUNCH		4	
6. Microscopic Methods			
6.1. Introduction to methods	Mark Brundrett	0.30	Slide presentation
6.2. Sectioning, clearing, staining	KPBG staff	1	Hands-on staining, sectioning
Afternoon tea		0.15	
6.3. Useful histology techniques	Mark Brundrett	1	Present results in groups
6.4. Viability testing	Margaret Ramsay, etc.	1.00	Demos and activities
Total		8.30	
Saturday September 22, 9:00am – DAY 3 University of Western Australia Teaching Laboratory			
7. Orchid Propagation & Restoration Case Studies			
7.1. Warm growing terrestrials	Kingsley Dixon etc.	0.30	Talk and demo
7.2. Cool growing terrestrials	Margaret Ramsay	0.30	Talk
7.3. Slipper orchids	as above	0.30	Talk
Morning tea		0.15	
7.4. Tuber induction	Nika Debeljak	0.15	Demo
7.5. Translocation & out-planting	Andrew	0.30	Short presentations
7.6. Habitat management	Mark & Andrew	0.30	Factors threatening orchids
7.7. Recovery plans	Andrew	0.30	Presentation and discussion
LUNCH		4.3	
3.2. View and discuss results of fungus isolation trials		0.30	
8. General Discussion Session	Shelagh Kell*	1.00	*moderator
9. Free time			
10. Conclusions and Presentation of Certificates			Workshop dinner
Total		6.00	
Pollination biology	Colin Bower	1.30	? Monday night 5-6:30, Hyatt