Orchid Conservation International: a progress report

The OCI Trustees have met twice already this year, the first of these meetings was held on the 26th January 2004, the second on the 22nd March, and a third is already in the pipeline for the beginning of May. The purpose of these meetings has been to push forward the establishment of OCI as a charitable trust. The OCI has also employed Lucy Ellerbeck to deal with the administrative side of the charity; as a result of which the OCI is now registered as a limited company and the process has begun to register the organisation with the Charity Commission. This process can take up to 180 days, but hopefully, providing all goes well, OCI should be officially up and running as a charity in the next few months.

OCI's objectives have been laid down as follows:

a. For the benefit of society worldwide, to encourage and provide support for all aspects of the conservation (in situ and ex situ) of orchids and their habitats.

b. To encourage and provide; including education, and training and to disseminate information about orchids and their habitats.

c. To encourage and promote scientific research relating to the subject

d. To encourage, support and engage in fundraising for the furtherance of the above aims.

The Charity has received much support from generous donors, and already fundraising ideas are turning into realities, we are in the process of producing a poster, which has been kindly designed by Ian Cartwright, which is currently being printed, and will hopefully be available to purchase at IOCC II in Sarasota, Florida, in May.

The OCI Development Committee are also in the process of producing an OCI website. This will go live as soon as OCI is registered with the Charity Commission.

Orchid Conservation

Population survey of *Kefersteinia retanae* (Orchidaceae): just an academic exercise?

By Franco Pupulin

To deal with a family of plants including some 25000 species is not an easy task from the point of view of conservation. CITES regulations may offer the erroneous impression that any species in the Orchidaceae is under threat, but hopefully this is not the general rule. Many orchid species have wide geographical distribution, and they span over different kinds of habitats, making them good candidates for survival even when they are forced to face radical environmental changes. Other orchid species, although if they are somewhat restricted in

distribution, form populations by thousands of individuals, and their variation in terms of genetic diversity is likely to be in good health. From a conservation perspective, one of the more urgent tasks is perhaps the effort to scientifically reduce the size of the problem to a manageable number of taxa, for which concrete conservation actions may be undertaken. In this context, the term "scientifically" mainly means the need of an approach based on actual data.

Orchid conservation largely relied in the past on a kind of "emotive" concern. If one look, for example, to the checklist of orchid species considered under threat in Costa Rican wildlife laws, one will find something like a catalogue of the showiest orchids recorded for the country. It includes *Cattleya dowiana* Batem. And *Guarianthe skinneri* (Batem.) Dressler & W.E. Higgins*, Trichopilia suavis* Lindl.*, Huntleya burtii* (Endrés & Rchb.f.) Pfitzer*, Psychopsis krameriana* (Rchb.f.) H.G. Jones, and *Masdevallia reichenbachiana* Endrés & Rchb.f., just to quote some of them.

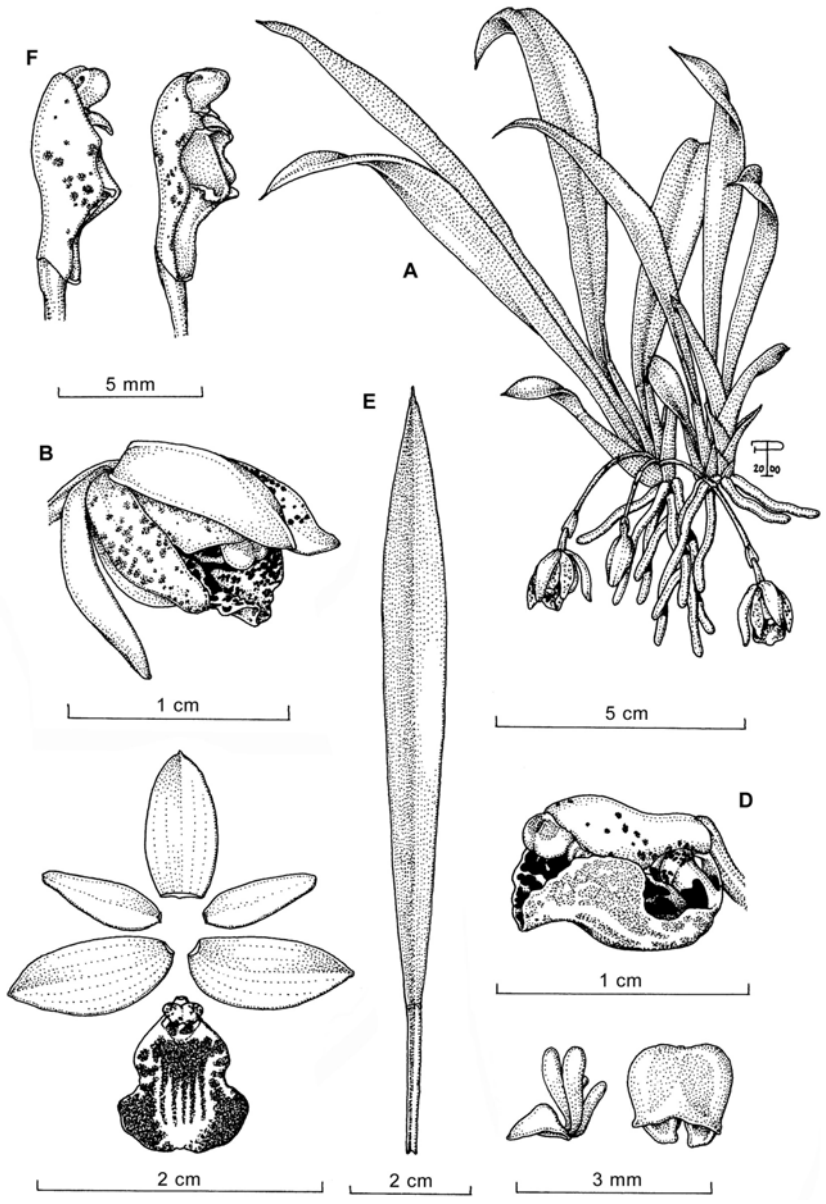
Figure 1

Kefersteinia retanae G. Gerlach ex C.O. Morales. Costa Rica. San José: Pérez Zeledón, Peñas Blancas, ca.800m, flowered in cultivation at Jardín Botánico Lankester, 13 May 1998, *J. Cambronero sub F. Pupulin 708*.

However, Indigenous populations collect *Cattleya dowiana* for horticultural purposes by bags of hundreds, at least since the beginning of twentieth century. In the 10 thousands hectares of pristine forest of Hitoy Cerere biological preserve, on the Caribbean slopes of the Talamanca range, *C. dowiana* is still relatively frequent, and the preserve borders with immense indigenous preserves up to the summit of the Cordillera. This do not means, of course, that we should approve wild collection of *C. dowiana* specimens, but from a scientific point of view the available data suggest that this species is not rare and that viable populations are under protection in areas specifically designed to conserve biodiversity. In spite of its beauty, and perhaps also of its symbolic value, *C. dowiana* could not be one of our priorities in term of conservation. Within A.M. Brenes biological preserve, in the Atlantic watershed of Cordillera de Tilarán in northern Costa Rica, *Trichopilia suavis* is a common species, and I personally saw hundreds of specimens forming large colonies in many trees of the preserve. *Masdevallia reichenbachiana* is surely under collecting pressure from the time of its discovery in the late nineteenth century, but on the basis of herbaria and field-books records other *Masdevallia* species (may be less spectacular) like *M. chasei* Luer, *M. livingstoneana* Rchb.f. & Warcz. *M. walteri* Luer, or *M. zahlbruckneri* Kraenzl. Must be considered rarest and may be under higher threat. *Huntleya burtii* is the only member of the subtribe Zygopetalinae included in the list of threatened orchids in Costa Rica. Nevertheless, during a survey of the conservation status of Costa Rican Zygopetaline (Pupulin, 2001), this species resulted one of the taxa with widest geographical and ecological distribution in the country (including protected areas), and data gathered from herbaria and living collections showed it as a common species in tropical to lower montane wet forests of the Caribbean watershed. On the contrary, based on 240 records, Zygopetalinae species like *Chondrorhyncha albicans* Rolfe, *Kefersteinia microcharis* Schltr., *Kefersteinia retanae* G. Gerlach ex C.O. Morales, and *Warreopsis parviflora* (L.O. Williams) Garay presented very limited distribution, as well as an extremely reduced extension of wild suitable habitats (Pupulin 2001a, 2003). This is not to speak about those orchids that are known only by the single specimen of the type collection, like – to remain in Costa Rica – many species of the genera *Brachionidium, Dichaea, Lepanthes, Macroclinium,*

Malaxis, Palmorchis, Pleurothallis s.l., Stelis, Telipogon, Triphora, or *Stellilabium*, or to remember species like *Warmingia margaritacea* B. Johansen, the only representative of the genus in Mesoamerica, of which only recently a small population of eleven individuals re-appeared in the same fence where the type specimen (now at Copenhagen) was collected at the time of its description (Johansen, 1992; Pupulin, in press).

Figure 2
Kefersteinia retanae. A, habit. B, flower. C, dissected perianth. D, column and lip, lateral view. E, Leaf. F, column lateral and three quarter views. G, pollinarium and anther cap. Illustration voucher: Costa Rica. San José: Pérez Zeledón, Peñas Blancas, ca.800m, 1994, *J. Cambronero s.n.*



How relatively common species were included in official lists of threatened taxa, produced to orientate public policies, and how species probably at risk of extinction were excluded from the lists of plants under concern? The answer is that the amount of available, scientific data about orchid distribution, frequency and ecological requirements of species, extension of suitable habitats, and dynamics of populations, are unfortunately very limited. To gather these data is time-consuming, and it requires intensive fieldwork and scrutiny of historical

materials. In the absence of data, orchid conservation was mostly drove by a general appreciation and concern for taxa commonly seen in collections, or with horticultural value.
Powerful tools to undertake the task of understanding the conservation status of orchid species were recently developed, both working with scientific collections (Solow 1993a, 1993b; Burgman *et al.* 1995, 2000; McCarthy 1998; Solow & Helser 2000; Ponder *et al.* 2001; Burgman 2002; Roberts & McInerny, 2003) and with the *in situ* processes that influence the genetic structure of living populations, including mating systems, population dynamics, mutation rates and gene flow (for a review of the studies on genetic structure of orchid populations, see Tremblay & Ackerman, 2003; for a general review of gene flow and levels of genetic differentiation in plant populations, see Rocha 2003). The cycle of orchid population dynamics workshops offered by Prof. Raymond L. Tremblay in Costa Rica and Melbourne, Australia, gave to over 50 participants (including the author) the opportunity to learn basic scientific methods to record and analyze data relevant to understand the structure and the conservation status of selected orchid species, with a welcome emphasis on less-studied epiphytic taxa. The understanding of evolutionary processes at specific levels will allow us to infer general information on genetic and morphological variations in the orchid family but, once more, we simply cannot apply such techniques to a target of 25,000 taxa. Discussing with Tremblay how to properly select the taxa to work with, in terms of conservation priorities, he strongly favored a non-emotive approach based on personal, field experience, or on adequate sets of data (Tremblay, pers. comm., 2003). In July 2003, the research staff of Jardín Botánico Lankester (JBL), Universidad de Costa Rica, began a survey of the only known population of the orchid *Kefersteinia retanae*, a Costa Rican endemic.

Kefersteinia retanae was described in 1992 on a plant flowered in cultivation at the Botanical Garden of Munich-Nymphenburg on June of the same year. The original plant was likely collected some two or three years before (circa 1989) by Jorge "Coqui" Cambronero at Peñas Blancas, *ca.* 800 m, in northern El General valley, Pérez Zeledón region, Costa Rica (*G. Gerlach s.n.*, USJ!, M, Herb. Königer). The specific epithet honors the pre-eminent Costa Rican orchidologist Dora Emilia Mora-Retana, former director of Lankester Botanical Garden. The ringent, yellowish flowers spotted with purple and the obovate-pandurate lip with the retuse apex and the basal margins up-curved easily distinguish the species. It is the most floriferous species of the genus in Costa Rica and may be elsewhere, and a single growth may bear up to 20 flowers (Pupulin, 2001b). At the type locality a specimen was observed with 42 flowers simultaneously opened (J. Cambronero, pers. comm.). In subsequent years, Coqui Cambronero made new collections at the same locality. They were:

- 2 plants collected in 1994, now in the living collections of JBL, under accessions No. 01132, *J. Cambronero s.n.*, and No. 01868, *J. Cambronero sub F. Pupulin 2578*, the latter the division of a plant cultivated near the type locality;
- 1 plant collected in May 1998, herborized under *J. Cambronero sub F. Pupulin 708* (now at USJ);
- 3 plants collected in May 2000, one of which herborized (*J. Cambronero sub F. Pupulin 2456*, USJ) and two cultivated by the collector at San Isidro de Pérez Zeledón;
- 1 plant collected in June 2000, now in the living collections of JBL, under accession No. 00601, *J. Cambronero sub F. Pupulin 2459*;
- 1 plant without collecting date, now in the living collections of JBL, under accession No. 01113, *J. Cambronero s.n.*

In Costa Rica wild orchid specimens with showy flowers are still actively collected for the large market of private orchid collectors, and the absence of certain species from the largest collections is usually a good indicator of plant rarity.
Actually, all the 9 plants of *K. retanae* known in cultivation and in herbaria were collected in the last 14 years at Peñas Blancas, the only known locality for this species. The northern end of El General valley is an active agricultural region, mainly devoted to coffee plantations. The forest coverture disappeared from the region at increasing rates during the last ten years, and today the lower areas of the valley are totally depleted of the original vegetation. At the type locality of *K. retanae*, the only remnant wood is a narrow patch of secondary mature vegetation of approx. 200 x 100 m, completely surrounded by coffee plantations, some of them shaded with *Eucalyptus* trees. A small creek crosses the wood, which borders with Peñas Blancas River. Cambronero noted that the wood was much wider around 1990, extending at least 300 m from the shores of the river (actually 100 m). However, it seems that in the last few years no woodcutting occurred. According to the system of classification of biotic zones by

Holdridge, the area pertains to the premontane moist forest, but actually the region experiences a rather large dry season, when some of the trees loss their leaves. Geographic coordinates of the area are omitted here for security reasons.
During the first census of the population, plants were recorded and labeled at four different points, 15-50 m apart each other. A total of 22 individuals were recorded, in the following categories: adults (4), juveniles (10), and seedlings (8). Three of the adult plants were pollinated and developing a single fruit. 16 of the individuals were located on two trees, 8 of which on the main trunk of a single phorophyte. The study of the population will be followed at intervals of six months.
A single flower of a *Kefersteinia* species close to *K. retanae* was collected in Costa Rica at Marenco, in Osa peninsula, by Margaret and Michael Dix, and preserved in spirit (*M. Dix & M. Dix 9584*). The flower was probably collected when fading and some of the critical details are not well preserved, preventing a positive determination, but a possibility exists that a second population of *K. retanae* could be discovered in southern Pacific Costa Rica.

Are 22 individuals enough to consider *K. retanae* a "living" species? Will population size maintain variation at the genetic and morphological levels? Will gene flow within the extant population ensure the necessary evolutionary plasticity? Or are we making a kind of biological archaeology, just trying to preserve specimens of a living plant museum, with no future in terms of differentiation and evolutionary diversification? The ultimate reasons for carrying out surveys like that of *K. retanae* go beyond the scope of this paper. Nevertheless, they are useful to push orchid conservation on the side of science, basing it on methods and models, and to produce sets of data that can be shared and discussed. Orchid conservationists are still facing the big dilemma to select a manageable target, but *K. retanae* may be part of it.

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Franco Pupulin is professor at the University of CostaRica, where he works as a researcher at Lankester Botanical Garden. He is particularly interested in the systematics and evolution of advanced orchid groups, mainly in subtribes Oncidiinae and Zygopetalinae. He is also working to several floristic projects in the Mesoamerican region.

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"Biodiversity, status, trade and conservation of native orchid species in limestone areas betweenYunnan, Guizhou and Guangxi"

by Lawrence Chau

The joint programme on "Biodiversity, Status, Trade and Conservation of Native Orchid Species in Limestone Areas betweenYunnan, Guizhou and Guangxi", a collaboration with CITES China, IOB, CAS and the Kadoorie Botanical Garden and Farm has been completed. The Farm organized a "Limestone Orchid Conservation Workshop" in Maolao National Nature Reserve, Guizhou between the 6th-9th April 2004, in cooperation with CITES China; IOB, CAS, Guizhou Forestry Bureau; IUCN, SSC, East Asian Regional OSG; IUCN, SSC, China Plant Specialist Group and China Wild Plant Conservation Association.

Macodes sanderiana

There were to be three main objectives at the Workshop, (a) to have a press release of the results of the programme, (b) to raise awareness of the threats and opportunities of the wild orchids in the core limestone area that was visited, and (c) capacity building in in-situ orchid conservation for the frontline staff of nature reserves in limestone areas between Yunnan, Guizhou and Guangxi.

At the time of writing it was expected that there would be around 70 to 80 participants, from the Yunnan, Guizhou and Guangxi provinces.

Another Workshop on "Orchid Conservation and Sustainable Uses in China/S and SW China" will be held in Hainan, China, in Octiber/November 2004.

Paphiopedilum micranthum in North-east Guizhou, a significant range extension.

By Phillip Cribb, Luo Yi-bo and Gloria Siu

Summary. The well-known slipper orchid *Paphiopedilum micranthum* is recorded here from two localities in North-east Guizhou, well to the north of its previously reported range.

At the invitation of the Guizhou Forestry Department, we visited Guizhou from late May until mid June 2001. The invitation formed part of a long running project between the Institute of Botany in Beijing, Kadoorie Botanic Garden in Hong Kong and the Royal Botanic Gardens, Kew, to study the limestone floras of southern China. Limestone in the region is best known