

IN MEMORIAM

Adelaida Chaverri-Polini*May 21, 1947 - September 20, 2003*

The news of **Adelaida Chaverri's** passing was a shock to the scientific world and a loss to ecological research in tropical montane forests and páramos. In *La Republica* newspaper (October 7, 2003), Luko Hilje Quirós, wrote that his friend had been at the edge of her life, fighting cancer in January 2002, "...but there was no time to die, as there were still so many tasks to be completed, and, in particular, to finish her book on the natural history of Chirripó..."

The authors met Adelaida in the late seventies (Cleef, 1978) and early eighties (Kappelle, 1985) when they researched the Talamancan oak dominated forests and the treeless alpine grasslands, 'páramos'. Adelaida often led us to the summit of *Cerro Chirripó* (3819 m) to experience these majestic ecosystems. She expressed her concern about the extreme fragility of these habitats, the higher incidence of fire over the last three decades and the slow process of regeneration after the frequent burnings.

Adelaida started her career at an early age in mathematics and biology. She studied at the *Universidad de Costa Rica* (UCR), where she met one of her tutors, Luis Fournier Orrigi. She majored in mathematics in 1970 at *Bryn Mawr College* in Pennsylvania, USA, where she met her husband, Christopher Vaughan Dickhaut, with whom she had two children, Andrés and Catalina. Adelaida and Christopher spent a long time studying the natural history of plants and animals in lowland rain forests and upland cloud forests, as well as in alpine páramos.

In the 1970s she helped establish the *Costa Rican Nature Conservation Association* (ASCONA), an ecological activist organization which raised a lot of awareness in Costa Rica. As a result of Adelaida and Christopher's strong involvement in the country's environmental movement, the *Corcovado National Park* was established in 1975, significantly contributing to the consolidation of Costa Rica's *National Park Service* (SPN). Together with Karen Wessberg and Alvaro Ugalde, they were among the first to pay scientific reconnaissance visits to Corcovado, just after the murder in 1974 of Karen's husband, conservationist Nicholas Wessberg. Adelaida found out about the uniqueness of the area's biodiversity and proposed a national park in order to save the last large tract of tropical lowland rain forest along the Pacific coast of Central America.

From 1971 onwards, some Costa Rican conservationists -including Mario Boza, Alvaro Ugalde and Sergio Salas- and a group from the *Club de Montañismo* based at the UCR -such as Adelaida, Christopher, Roger Bourillon, Alfonso Mata and Jorge Moya- explored the Chirripó area and visited neighboring settlements to raise awareness about the importance of conserving this extraordinary site. They also convinced political deputies at the country's parliament to create the *Chirripó National Park* in 1975. This same year, Adelaida and her 'compañeros' efforts made it



possible for *The Nature Conservancy* (TNC) to help create the 100 000 acre *Corcovado National Park* with one of the first international-assisted land acquisitions of 86,485 acres.

A year later, an enormous fire wiped out a significant portion of Chirripó's páramo. Adelaida, Christopher, and plant taxonomist and ethnobotanist Luis Poveda-Álvarez, took a little-used trail to Chirripó, inventoried the enormous damage, and were amazed by the unfortunate fate of so many plants and animals. As Adelaida wrote in her 1976 diary "...some rabbits [*Sylvilagus brasiliensis*] were not able to escape from the rushing fire and were killed and charred almost instantaneously...." For over a decade, Adelaida studied the regeneration of páramo vegetation, putting a firm basis for further post-fire páramo research as was conducted by her *University of Tennessee* colleague, Sally Horn.

In collaboration with Juan Bravo and Grace Solano, Adelaida developed the first management plan for the *Chirripó National Park* during the 1980s, which still serves as a basis for sustainable ecotourism in the Chirripó páramo. With other specialists such as Gerardo Budowski, she elaborated the concept of sustainable ecotourism in Costa Rica. Aware of the need for knowledge on ecology among students doing a M.Sc. on Ecotourism, she lectured at the *Universidad Latinoamericana de Ciencia y Tecnología* (ULACIT).

As an expert on the UNESCO-recognized *Amistad Biosphere Reserve* -the *World Heritage Site* in which the *Chirripó National Park* is located- Adelaida was invited by Olga Herrera (*Smithsonian Institution*, Washington DC) to prepare a data sheet on this bi-national conservation area for a volume of the *Centres of Plant Diversity* book series, edited by S. Davis et al. and published in 1997 in Cambridge, UK, by the *World Wide Fund for Nature* (WWF) and the *World Conservation Union* (IUCN). Due to this detailed publication, the scientific world began to understand the magnitude of Amistad's biotic richness and the specific threats currently endangering its long-term survival.

Adelaida's M.Sc. thesis at the *Tropical Agricultural Center for Research and Education* (CATIE) and the UCR, dealt with the development of a system of privately-owned biological reserves in Costa Rica. She later continued studies at the *Oxford Institute of Forestry* in the UK (COSUDE Grant, 1988), the *Oregon State University* (CONICIT Grant, 1993), the Department of Botany of the *University of Florida in Gainesville* (Fullbright Grant, 1996) and the Department of Forestry of the *Georg-August University* in Goettingen, Germany (DAAD Grant, 2000). She visited the Netherlands, where she worked with this article's authors on the biogeography and community ecology of the páramo flora and vegetation. She had planned to obtain her Ph.D. degree from the *University of Amsterdam* (UVA), but her unforeseen ending did not permit the conclusion of her advanced thesis project.

After having lectured in forest ecology since 1975 at the *School for Environmental Sciences* (EDECA) of Costa Rica's *Universidad Nacional* (UNA), Adelaida became a full professor in the 1980s. She was among the most gifted in terms of passing on the love for the field –definitely a muddy-your-boots mountaineer – and studying the natural history of the living organisms in the wild. Her many students include the director of the OTS-administered *Palo Verde Biological Station*, Eugenio González, and the internationally-renown dendrologist and current *Member of Parliament*, Quirico Jiménez. Other privileged students who studied under her guidance were Geoffrey Venegas and Grace Sáenz (CATIE), and the first author of this 'In Memoriam'.

Adelaida became a distinguished associate and vice-president of the *Tropical Science Center* (TSC, CCT), a non-profit organization established in 1962 by Leslie R. Holdridge and his friend, Joseph Tosi. She was a co-founder of the TSC-run *Monteverde Cloud Forest Preserve* – today probably the most intensely studied and visited montane cloud forest site worldwide (see, e.g. the book published by Nalini Nadkarni and Nathaniel Wheelwright, and the world-renown articles on the extinction of Monteverde's golden toad [*Bufo periglens*]).

At the *La Selva Biological Station*, Adelaida became involved in the activities of the *Organization for Tropical Studies* (OET, OTS), for which she served as a visiting professor on tropical ecology courses at various occasions (1978-1985). For many years, she represented the UNA at the OTS board and served as a Councilor at the international board of the *Association for Tropical Biology* (ATB).

Throughout the 1980s and early 1990s she led UNA's *Research Program on the Ecology and Management of High Elevation Vegetation* (ECOMA), focusing on montane oak forests and páramos in Talamanca. Her work with EDECA researchers Wilberth Jiménez, Isabel Rojas, Ronald Miranda and Marielos Alfaro was crucial to the understanding of the silviculture of the montane oak forest ecosystems and underpinning of strategic plans for their conservation. Within the ECOMA framework, a biological and silvicultural research station was set up in the Talamanca Mountains near the village of La Esperanza del Guarco, along the Pan-American Highway. At this site, a series of one-hectare cloud forest plots were inventoried, measured and monitored for a number of years to get a better insight in stand structure and composition, and growth of century-old epiphyte-loaden magnificent oak trees. She understood the importance of mycorrhiza for natural montane oak tree regeneration and focused at this topic throughout these years, essential for the restoration of these fragile forests.

As an interesting off-spin at the end of the 1990s, the *Ministry of Environment and Energy* (MINAE), represented by its *National System of Conservation Areas* (SINAC), and the *National Biodiversity Institute* (INBio), decided to further develop the infrastructure at the *La Esperanza Pilot Research Area*. Numerous publications on Adelaida's findings were the result of her research efforts, often in collaboration with other experts and partner organizations, including the authors of this article, who were honored to have been part of the prestigious ECOMA team.

Another example of her involvement in environmental organizations and forums is her scientific contribution to Costa Rica's official, EU and UNDP-supported, *State of the Nation* reports throughout the 1990s, for which she coordinated the final editions of the '*In Harmony with Nature*' chapters. As a member of the *Technical Support Group* established by Costa Rica's *National Council of University Rectors* (CONARE) she contributed to the collection and edition of the most updated information on Costa Rica's *Protected Wildlife Areas*. She also worked for the *Wildlife Conservation Society* (WCS), with Jim Barborak, focusing on the development of a *Mesoamerican Trail System* (2000), and with the IUCN on the current state of cloud forest conservation (2001). Another example of Adelaida's interest in environmental action concerns her dedicated involvement in the *Consortium for Sustainable Development for the Andean Ecoregion* (CONDESAN).

In 1998 she wrote a major paper for the FAO journal *Unasylva* (Rome, Italy) which was reprinted in 2002 in FAO's regional bulletin (Santiago, Chile) as part of the UN's *International Year of Mountains*' (IYM2002) dissemination activities. At the same time, she did not forget to publish papers for her own Costa Rican audience in well-accessible journals such as *Ciencias Ambientales* and *Agronomía Costarricense*. At present, she even has some chapters in press in our book on Costa Rican páramos to be published in 2004. Adelaida and Oscar Esquivel Garrote have co-authored one of these chapters that deal with the fragility of the Chirripó Park, its current management problems, its various on-going illegal activities, and a list of recommendations to diminish impact on its environment.

Adelaida had a special 'eye' for observing uncommon species and ecological phenomena in Costa Rica's most elevated highlands. In 1991 Adelaida collaborated with Jim Luteyn, a taxonomist at the *New York Botanical Garden*, in order to locate the extremely rare and new ericoid species *Macleania talamancensis*, only known from the forest-páramo border at *Cerro Chirripó*. Ten years earlier, she had described a new species of fungus called *Acaulospora splendida* with her

German colleague Ewald Sieverding. In *Missouri Botanical Garden's Cutting Edge* (Volume VII, Number 4, October 2000), US plant taxonomist Barry Hammel mentioned he "...encountered a new record for the Mesoamerican flora that had gone unnoticed for 17 years. *Luzula vulcanica Liebm.* was collected at 3775 m elevation on the northeast flank of Cerro Chirripó, Costa Rica's highest summit, by Adelaida Chaverri in 1983 (1161, CR), and correctly identified the same year by Luis Diego Gómez. Neither *Flora Mesoamericana* (Vol. 6, 1994) nor Henrik Balslev's recent monograph (*Flora Neotropica Monograph 68: 1-168. 1996*) picked this up..."

We are forever grateful to Adelaida for her accomplishments, which have become the cornerstone of tropical cloud forest and páramo preservation. As Adelaida's family put it in *La Nación* newspaper (September 24, 2003), Adelaida was "...a thousands winds that blow..., the stars that shine at night..., the sunlight on ripened grain". We have lost a renowned forest ecologist, an outstanding teacher, a devoted naturalist, an enthusiastic mountain hiker, a strong advocate for nature conservation, and a great friend. May she rest in peace and may her legacy continue to inspire us to respect and protect the highlands of Costa Rica's Talamanca Range, one of the last great places on Earth.

Maarten Kappelle

Central America Director of Science,
The Nature Conservancy, Costa Rica

Antoine M. Cleef

Professor of Tropical Vegetation Ecology and Mapping,
Universities of Amsterdam and Wageningen, The Netherlands