



*Shuar women in particular support the *ajas* system and thereby conserve biodiversity (left). The boarding school's ethnobotanical garden already harbours 361 species (right).*



Photos: O. Hölcke

Conserving diversity, disseminating knowledge

Even in biodiversity hotspots, Ecuador's ecological diversity is under threat. Through a small school the indigenous Shuar and Achuar in the south-east of the country are therefore seeking to preserve their biodiverse enclave.

As far as the eye can see, the hills and mountains around Bomboiza are carpeted with shrubs, ferns, trees and bushes. The little settlement lies in the eastern foothills of the Andes cordillera, which rises to 2,900 metres and forms the natural frontier between Ecuador and Peru. This is one of the last outposts of humid, low-growing mountain forest. The region is also home to 38.5 percent of Ecuador's mammal species, 13 percent of its amphibians, 38 percent of its bird species and around 10 percent of its plant species – an astounding diversity when one considers that the Condor Cordillera constitutes only 2.6 percent of the country's total land area.

But all this natural beauty, all this diversity of life is under threat. Discoveries of major copper and gold reserves in the Condor Cordillera have attracted the attention of international mining companies, who now have licences to mine in large parts of the mountain chain. In 1995 the government of Ecuador waged war with Peru over this very territory and has since encouraged settlers to move into this area, wanting to legitimise its claim to the land. The settlers cleared the jungle so that they could grow crops and rear livestock. They saw no value in conserving biodiversity.

to the ways of western civilisation. However, those who are determined to pursue their traditional lifestyle are still a powerful element and they are supported by the mission station run by the Roman Catholic Salesian order in Bomboiza. The boarding school founded by the Salesians, the "Instituto Superior Pedagógico Intercultural Bilingüe Shuar – Achuar" (ISPEDIBSHA), caters for 328 Shuar and Achuar pupils aged between 11 and 18, training them to respect biodiversity and preserve their own culture. ISPEDIBSHA receives advice from Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) on sustainable cultivation systems, agrobiodiversity, species diversity conservation and traditional knowledge.

■ Culture and species diversity on the curriculum

This unique region is home to around 127,000 Shuar, the second-largest indigenous group in Ecuador, and 5,000 Achuar. Over the years the majority of these people have adapted

In addition to learning mathematics and Spanish, pupils are taught to read and write in Shuar. Other subjects on the curriculum for the 180 boys and 148 girls are traditional music and

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dance, agro-forestry and biodiversity. Practical instruction takes place in the orchid garden and the six-hectare ethnobotanical garden laid out by the pupils five years ago. They maintain and manage the garden, which already harbours 361 species including fruit, vegetables and spices, as well as medicinal and spiritual plants such as the liana *Banisteriopsis Caapi*. The bark of this plant and the leaves of *Psychotria viridis* are used to make the hallucinogenic drug "Ayhauashka" (Ayawaska), which plays an important part in Shuar culture. Pupils thus acquire both theoretical and practical knowledge of the cultural, medicinal and economic value of these plants.

The pupils produce around 80 percent of their food from the school's land and the livestock kept there. Only salt, drinks and some other foodstuffs are purchased in the nearby community of Gualaquiza.

■ Pupils take knowledge to the community

Fernando Najamtai is Shuar and at 23 the oldest pupil in the school. After finishing his education he plans to stay at the school and teach other children. He is one of 84 "Internos" who board at the school because their home is too far away or in too inaccessible a part of the Amazon region. For 50 US dollars boarders receive accommodation and food for ten months. In addition they must buy their uniform, which consists of a T-shirt costing five US dollars and a pair of jeans costing ten dollars.

Fernando travels home to his parents only in the two-month-long school holidays. He takes with him plants from the ethnobotanical garden that have been forgotten in his home community. This is one of the school's fundamental principles and part of the teaching system. Fernando plants the seedlings he has brought with him in the fields – known as *ajás* – or in the community's medicinal garden and explains the plants' uses, effects and cultivation requirements to members of the community. When he returns to school he takes with him plants with which other communities may no longer be familiar.

■ Diversity increases food security

With the *ajás*, the Shuar have conserved their country's natural biodiversity for centuries. Up to 130 species of plant grow on these relatively small plots of land, apparently in wild confusion. Cultivated without fertilisers and pesticides, and harvested throughout the year, the *ajás* supply food crops, medicinal plants for home use, and wood that is used in building, carpentry and crafts. The huge diversity of plant species and varieties makes the *aja* system less susceptible to pests and diseases, as the ecosystem is intact. The steady fall of plant detritus maintains humus levels; this, combined with the great number of taller shrubs and shade trees, means that the soil is kept fertile.

The Shuar women, in particular, embrace this system energetically and expand it by sharing their knowledge with other indigenous smallholders.

This involves swapping traditional cooking recipes, but also exchanging plant seed. They experiment with species and varieties, refining them so as to match local conditions optimally. Ninety communities have now taken part in this exchange. The high point of the year is a market at which around 600 indigenous people display a huge variety of agricultural products and medicinal and spiritual plants; seed is exchanged and sometimes sold. For the Shuar this exchange of seed and dissemination of knowledge about the diverse uses of rainforest plants is extremely important. It enables them to remain independent of pharmaceutical products and conserves biodiversity, thereby ensuring that their food supply is varied and above all secure. And it helps to preserve their cultural identity.

Zusammenfassung

Auch wenn in Ecuador rund 20 Prozent der Landesfläche unter Schutz stehen, ist die Artenvielfalt vielerorts bedroht. Im Südosten des Landes versuchen indigene Shuar und Achuar mit Hilfe einer kleinen Internatsschule, ihre biodiverse Enklave zu erhalten: Die Schülerinnen und Schüler lernen, wie traditionelle Obst- und Gemüse-, Heil- und Gewürzpflanzen angebaut und verarbeitet werden. Ihr Wissen tragen sie in ihre Heimatgemeinden, die wiederum Saat- und Pflanzgut untereinander austauschen. So wird nicht nur die Nahrungsvielfalt erhalten, sondern auch ein Stück kulturelle Identität bewahrt.

Resumen

Si bien alrededor del 20 por ciento del territorio de Ecuador se encuentra bajo protección, la diversidad de especies está en peligro en muchos lugares. En el sureste del país, los indígenas shuar y achuar se valen de una pequeña escuela tipo internado para conservar su enclave biodiverso: las alumnas y los alumnos aprenden a cultivar y procesar las variedades tradicionales de frutas, verduras, plantas medicinales y especies. Luego llevan estos conocimientos a sus comunidades de origen, las cuales a su vez intercambian plantas y semillas. De esta manera no sólo se conserva la diversidad de los alimentos, sino también un trozo de la identidad cultural.



Photo: O. Höfcke

A wide range of plants is on offer at the biodiversity-day market.