

# Biocultural diversity background and monitoring in the biosphere reserve “Großes Walsertal”

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## What is Biocultural Diversity?

Biocultural diversity can be divided into three parts: biological diversity, cultural diversity, and the sum of the two, biocultural diversity.

According to the Convention on Biological Diversity (CBD), biological diversity can be defined as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they compose; this includes diversity within species, between species and of ecosystems. Biological resources include genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity” (CBD, cited in Persic and Martin, 2007, 7).

In order to understand cultural diversity, one must first understand what is meant by culture. The 2002 UNESCO Declaration on Cultural Diversity defines culture as “the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, that encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions, and beliefs” (UNESCO, 2002 cited in Persic and Martin, 2007, 7). Cultural diversity then considers “all communities in the world, each of them with their own identity determined by ethnicity, history, language, religion, and art” (UNESCO). Cultural diversity “widens the range of options open to everyone; it is one of the roots of development, understood not simply in terms of economic growth, but also a means to achieve a more satisfactory intellectual, emotional, moral and spiritual existence” (UNESCO).

“The myriad links between cultural and biological diversity are increasingly viewed as key elements in achieving sustainable development and the Millennium Development Goals” (Persic and Martin, 2007, 4).

## **United Nations’ Millennium Development Goals**

### **Goal 1: Eradicate extreme poverty and hunger**

Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than \$1 a day

Target 2: Achieve full and productive employment and decent work for all, including women and young people

Target 3: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

### **Goal 2: Achieve universal primary education**

Target 1: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

### **Goal 3: Promote gender equality and empower women**

Target 1: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015

### **Goal 4: Reduce child mortality**

Target 1: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate

### **Goal 5: Improve maternal health**

Target 1: Reduce by three quarters the maternal mortality ratio

Target 2: Achieve universal access to reproductive health

**Goal 6: Combat HIV/AIDS, malaria and other diseases**

Target 1: Have halted by 2015 and begun to reverse the spread of HIV/AIDS

Target 2: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it

Target 3: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

**Goal 7: Ensure environmental sustainability**

Target 1: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources

Target 2: Reverse biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

Target 3: Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation

**Goal 8: Develop a global partnership for development**

Target 1: Address the special needs of least developed countries, landlocked countries and small island developing states

Target 2: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system

Target 3: Deal comprehensively with developing countries' debt

Target 4: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries

Target 5: In cooperation with the private sector, make available benefits of new technologies, especially information and communications

<http://www.un.org/millenniumgoals/global.shtml>

## **How to Calculate Biodiversity**

In “A global index of biocultural diversity,” Loh and Harmon present an equation to measure biocultural diversity. This is called the index of biocultural diversity, or IBCD. By using five indicators such as number of languages, religions and ethnic groups living within a country, to represent the cultural diversity and number of bird and mammal species and number of plant species to represent biological diversity, the IBCD can quantitatively measure biological diversity on a global scale.

The IBCD is broken down into three components. The biocultural diversity richness component (BCD-RICH) is an unadjusted measurement of a country’s biological diversity using the five indicators. The second component is a biocultural diversity areal component (BCD-AREA) which makes adjustments for land area and measures the country’s biocultural diversity relative to size. The last component is a biocultural diversity population component (BCD-POP) which adjusts for population. This measures the biocultural diversity in a country by taking into account the human population.

The equation for IBCD is the average of its cultural diversity score (CD) and biological diversity score (BD). Therefore  $IBCD = (CD + BD) / 2$ .

Cultural diversity is calculated by taking the average of its linguistic diversity (LD), religious diversity (RD) and ethnic group diversity (ED). This equation reads as  $CD = (LD + RD + ED) / 3$ .

Biological diversity is calculated in a similar way by taking the average of the animals species diversity, which uses mammals and birds as a sample for all animal species, (MD) and plant species diversity (PD) to give the equation as  $BD = (MD + PD) / 2$ .

These equations give equal weight to each component but this can be adjusted if the analysis requires a component to be more or less important than the others.

To determine values for the five components of BCD-RICH, the country's values are compared to the global values. Language diversity for example is equated by dividing the logarithm of the languages spoken in a certain country divided by the logarithm of the number of languages spoken worldwide (currently estimated at 6800). This equation reads as follows:  $LD = \log L_i / \log L_{world}$ .

Because countries with a larger human population or greater area would naturally be more biologically and culturally diverse, BCD-AREA and BCD-POP are adjusted for these factors respectively. These analyses are done by calculating a theoretical IBCD for a country and comparing that with the actual researched IBCD.

### **Areas of interdependence between biological and cultural diversity:**

1. Languages and linguistic diversity
2. Material culture

- e.g. objects representing biodiversity and reflecting spiritual, religious beliefs

### 3. Knowledge and technology

- Technology and techniques: e.g. practice and processes relating to the use of natural materials
- Traditional and local knowledge: e.g. about places, resources; early warning systems; traditional medicine
- Transmission of knowledge and skills from one generation to the other: e.g. formal and informal education
- Mechanisms for the revitalization of traditional knowledge
- Mechanisms for the adaptation of new knowledge and technology, technology transfer

### 4. Modes of existence

- Natural resource, resource-based livelihoods and resource management: e.g. agriculture, industrial agriculture, horticulture, fishing, hunting, nomadic practices
- Land/sea use and management: e.g. indigenous landscape management using fire
- Plant/animal domestication and selective breeding: e.g. creation and maintenance of genetic diversity – plant/animal varieties
- Supplementing economic existence activities with significant economic and/or social contribution: e.g. hunting, berry and mushroom picking

### 5. Economic relations

- Partnership based on trading natural resources, often across ecological boundaries
- Management of common property resources

### 6. Social relation

- e.g. social roles relating to differential resource use

- Attachment to place: e.g. cultural identity inscribed in natural places (national parks, sacred sites)
- Gender specific environmental knowledge: e.g. “wild food” gathering, medicinal plants
- Political relations: e.g. control over differential resource access
- Legal institutions: e.g. customary law governing resources/land access

#### 7. Belief systems

- Rites and rituals: e.g. celebrating seasonal events
- Sacred sites: e.g. conservation of sacred forests
- Mythology, worldview, cosmology and spirituality: e.g. representations of human nature relationships
- Creating identity with/through the natural world: e.g. totemism, nagualism, tonalism

(UNESCO and UNEP, 2005 cited in Persic and Martin, 2007, 9)

## **Organizations involved in biocultural diversity**

### **Baca Institute of Ethnobotany**

The Baca Institute of Ethnobotany is a non-profit organization dedicated to preserving and researching the knowledge and cultural diversity of the indigenous communities in the south-western United States and Mexico. The Institute offers seminars and workshops open to anyone interested as well as graduate course work and internships.

There are also programs solely for Native American communities to partake in. The goal

is to combine western science and traditional knowledge to reintroduce the ancient conservation and philosophy of the indigenous people.

More information: <http://www.fortlewis.edu/anthro/ethnobotany/baca>

**Center for Environmental Research and Conservation (CERC) (at Columbia University)**

The CERC's mission is to help prevent the loss of biological diversity, achieve environmental sustainability and build leadership in the environment. The CERC works with other organizations such as the American Museum of Natural History, the Wildlife Conservation Society and the Wildlife Trust to accomplish their mission. The CERC is located at the Columbia University and is a part of the larger Earth Institute.

More information: <http://www.cerc.columbia.edu>

**Center for International Earth Science Information (CIESIN)**

The CIESIN is also a division within the Earth Institute at Columbia University. The goal of the CIESIN is to provide access to information about human interactions, indigenous knowledge and conduct workshops. Within the field of providing information on indigenous knowledge, this includes: Designing manuals on techniques for collecting indigenous knowledge systems and as well how to use these systems, how to conduct research on indigenous knowledge systems, and develop research methodologies for this research as well as acting as a global library for this information.

More information: <http://www.ciesin.org>

**Center for Indigenous Knowledge for Agriculture and Rural Development (CIKARD) (at Iowa State University)**



The CIKARD is a part of CIESIN headquartered at Iowa State University. Their focus is to preserve the knowledge of local farmers around the world. CIKARD collects indigenous knowledge in order to make this information accessible to scientists around the world. Their work includes developing manuals on how to record and conduct indigenous knowledge systems research, use these systems, publish monographs and bibliographies, and act as a leader to other indigenous knowledge resource centers.

More information: <http://www.ciesin.columbia.edu/IC/cikard/CIKARD.html>

### **Convention of Biological Diversity**

This convention was the first global agreement to include conservation, sustainable use, and fair sharing of benefits of biological diversity. The agreement covers programs such as agricultural, dry and sub-humid lands, forest, inland waters, island, marine and coastal, and mountain biodiversity. The agreement was signed by almost 200 countries across the globe and is updated regularly.

More information: <http://www.cbd.int>

### **Ethnobotanical Conservation Organization for South East Asia (ECO-SEA)**

ECO-SEA is a non-profit organization working to study and preserve native Southeastern Asian plants and cultures. The four key aspects ECO-SEA works toward are “biocultural diversity conservation, institutional capacity building through participatory education, poverty alleviation based on community empowerment, and community-based ecotourism in remote areas.”

More information: [www.ecosea.org](http://www.ecosea.org)

### **George Wright Society (GWS)**

The GWS is a non-profit association who work to protect the heritage and history of natural parks, public forests, wildlife refuges, and marine reserves as well as other nationally protected areas.

More information: <http://www.georgewright.org>

### **Global Diversity Foundation (GDF)**

The mission of GDF is to promote biological, cultural, and agricultural diversity through research training and social action in Asia, Africa, and Latin America. Their work focuses on building on local cultural and knowledge to make sure all the residents receive basic human rights such as proper healthcare, nutrition and education. The GDF focuses on three main aspects: “applied research on diverse aspects of biocultural diversity at selected field sites; training and education, from community workshops to university courses; and field projects that improve the health, education and rights of communities under threat from the globalized economy.”

More information: <http://www.globaldiversity.org.uk>

### **Health, Ecology, Biodiversity, and Ethnobiology (HEBE)**

HEBE is headquartered at the University of California Berkeley. Their goal is to better understand biodiversity, language diversity, medical ecology as well as other aspects of ethnobiological research.

More information: <http://ucjeps.berkeley.edu/hebe/>

### **Institute for Culture and Ecology (IFCAE)**

IFCAE is a non-profit organization whose goal is improving environmental and human conditions through education, research and community involvement. Their current projects include wild forest goods, urban foraging, Jepara forest conservancy, west

Eugene wetlands ethnobotany resource area, mapping socio-ecological meanings of Olympic peninsula landscapes, SeaAid and decision support system tool analysis.

More information: <http://www.ifcae.org>

### **Institute for Tropical Ecology and Conservation (ITEC)**

The ITEC works in education, research and conservation. The Bocas Del Toro Biological Station in Panama is operated by ITEC. Their goals are to offer courses to graduate and undergraduate students; provide research facilities for marine, freshwater, and terrestrial ecosystems; operate conservation programs for natural resources on the Caribbean coast of Panama; and hold educational programs and workshops for local communities on conservation, pollution and reforestation.

More information: <http://www.itec-edu.org>

### **International Society of Ethnobiology (ISE)**

ISE promotes the links and connections between cultural and biological diversity and the roles that indigenous knowledge plays in this connection. They focus on the relationship between people and their environment.

More information: <http://ise.arts.ubc.ca/>

### **International Union for Conservation of Nature (IUCN)**

IUCN works with researchers, the UN, field projects, governments and local communities to develop and implement laws and policies regarding the environment.

IUCN works with thousands of scientists in 160 countries worldwide. The core of IUCN's work is in biodiversity conservation by helping to fix climate change, energy, economics and livelihoods.

More information: [www.iucn.org](http://www.iucn.org)

## **Terralingua**

Terralingua works to protect biocultural diversity through research, education and in field projects. They are rooted in a fundamental set of beliefs:

“... that the diversity of life on earth is biological, cultural, and linguistic diversity (or "biocultural diversity");

... that biological, cultural, and linguistic diversity are co-evolved, interdependent, and mutually reinforcing;

...that there is a rapid, converging crisis of extinction of the biocultural diversity of life on earth, and that is imperative to stem this crisis for the survival of all life;

... that healthy environments, resilient cultures, and vibrant languages are a matter of social justice and basic human rights for human societies, including importantly indigenous peoples and local communities;

... that the challenge of protecting, maintaining, and restoring the diversity of life on earth is the challenge of supporting and promoting diversity in nature *and* culture.”

More information: <http://www.terralingua.org>

## **United Nation Educational Scientific and Cultural Organisation (UNESCO)**

UNESCO is a group of 193 member states working together to promote education, natural sciences, social and human sciences, culture, and communication and information throughout the world.

More information: <http://portal.unesco.org>

## **United Nation Permanent Forum on Indigenous Issues (UNPFII)**

The UNPFII is an advisory board to the UN for indigenous issues such as economic development, culture, education, environment, social development, health and human rights.

More information: <http://www.un.org/esa/socdev/unpfii>

### **World Wide Fund for Nature (WWF)**

WWF strives to conserve places of natural resources and change actions to protect nature. Their mission is to protection areas and wild populations of plants and animals; promote sustainable use of renewable resources; and promote efficient use of resources and reduce pollution.

More information: [www.worldwildlife.org](http://www.worldwildlife.org)

### **International Agreements, Conferences and Conventions**

- The Declaration of Belém adopted at the First International Congress of Ethnobiology (1988)
- Convention on Biological Diversity (1992)
- The World Heritage Convention – Cultural Landscape (1992)
- UN Declaration on the Rights of Indigenous Peoples (2007)
- The Seville Strategy for Biosphere Reserve (1995)
- Cultural and Spiritual Values of Biodiversity (1999)
- High Level Round Table on “Cultural Diversity and Biodiversity for Sustainable Development” convened by UNEP and UNESCO at the WSSD (2002)
- UNESCO Universal Declaration on Cultural Diversity (2001)

- Convention for the Safeguarding of the Intangible Cultural Heritage (2003)
- Ministerial Conference on the Protection of Forest in Europe (2003)
- UNDP The Human Development Report (2004)
- Millennium Ecosystem Assessment (2005)
- International Union of Forest Research Organization (2005)

(Lyard, 2007 cited in Persic and Martin, 47f)

## **Examples of links between cultural and biological diversity**

### **Tuscany, Italy:**

The Historical and Cultural Evaluation of Approach in Landscape Assessment (HCEA) is used to compare landscapes over time. This method has produced a lot of data in Tuscany, Italy dating back 180 years. More than 45% of landscape diversity and biodiversity has been lost since 1832. This may have been caused by a number of reasons such as abandonment of traditional farming, the advancement of a continuous forest, larger agricultural areas, loss of habitat from humans, disappearance of flora and fauna. Specific losses are chestnut orchards, shrub lands and pine forests. Terraces, wood pastures, tree rows and hedges that were common agriculture before the 1950's are now being cultivated into monocultures. Diversity is limited to differences in morphology such as mountains and valleys.

These changes have caused erosion and landslides as well as destroying the economic potential for the people who had a cultural connection to the past landscapes. New

conservation and sustainability approaches have had a negative impact because they focus on future sustainability rather than repairing the lost history of the landscapes.

(Agnoletti, cited in Persic and Martin, 2007, 12).

### **Eastern Cape, South Africa:**

Turmoil and civil disturbances have caused more than 3.5 million people in South Africa to abandon their homeland and move to other parts of the country. This causes difficulty in determining the biocultural diversity in an area since the people currently living there haven't necessarily grown up there nor had their ancestors lived there before them. Because they were forced to move, many do not depend on crops or agriculture of the area but instead on government and state pensions and grants. Not everyone was forced to move and therefore still live where their cultural roots are as well as those forced to relocate have brought their cultural practices with them. Many of these practices involve the environment and plants grown in the area.

Examples of this include a religious ritual in which an animal in a special livestock enclosure called an ubuhlanthi is sacrificed to appease the ancestors. The ubahlanthi is constructed out of only two types of plants: *Olea europaea* subspecies *Africana* (umnquma) and *Ptaeroxylon obliquum* (umthathi).

A second example is when the same plant *Ptaeroxylon obliquum* is used to build a temporary hut, called ibhoma, for young men to stay after the rite of passage ceremony of circumcision.

Ancient healing often makes use of plant species such as *Silene undulate* (unozitholana) which is used to induce dreams and used to communicate with deceased ancestors.

Beyond just plants that are used by local people, landscapes can be culturally important as well. The ritual of umlambo is when the people bring gifts of corn and tobacco to a deep river pool, thought of as a sacred place, for their ancestors.

(Cocks and Dold, cited in Persic and Martin, 2007, 13).

### **Northern Sweden:**

The Sami are an indigenous group living in the Norbotten region of Sweden. Traditionally they are reindeer hunters. The region was included on the UNESCO World Heritage List in 1996 which led to increased interest in the area. Different objectives for the area disagreed with the Sami's need to keep the area the same for reindeer pastoralism and hunting. Other suggestions for the area were hydroelectric power that could generate much of the energy for Sweden; introducing a mining community since the city is located near Kiruna, a city thriving in the steel industry; the timber industry cutting and planting pine forests (a direct change to the reindeer's current environment); and protection of the area by turning it into a national park which would increase tourism and winter sports in the area. All the suggestions were in direct opposition to the Sami's tradition way of living.

Unfortunately, in the winter of 2006, sudden increases and decreases in the temperature caused a layer of ice to form on pastures and the reindeer were unable to reach feed. The government came in and provided the reindeer with hay and other industrial products.

This has caused the Sami to need to accept some government interference and work on a compromise for the area that is beneficial to everyone.

(Roué cited in Persic and Martin, 2007, 17).



## **Our Research Project in Großes Walsertal**

### **The aims of this project are:**

To document in the Biosphere Reserve with state of the art interdisciplinary methods

- the diversity of plant species gathered by local people,
  - the diversity of traditional crops and their cultivars grown by local people,
  - the diversity of local uses, habits and preferences related to these elements of biodiversity.
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- To make visible the close link of biodiversity and local culture in the Biosphere Reserve.
  - To make visible the role of women as users und managers of biodiversity and their distinct forms of attitudes and traditional knowledge.
  - To show those factors that locally influence conservation of used elements of biodiversity.
  - To actively support various local initiatives in the Biosphere reserve in their efforts for sustainable conservation of biodiversity and the Biosphere Management in the sustainable management of Biosphere resources through
    - Involvement of the actors of these initiatives into the research process
    - Dissemination of results of the project to these initiatives
    - Jointly develop hands-on follow-up projects for the sustainable conservation of locally used elements of biodiversity.
  - To insert international results of similar research into the knowledge system of the Biosphere Reserve, and vice versa disseminate the results of this project in

relevant international media; incl. to the network of Biosphere reserves worldwide.

### Phase 1 Results:

During summer 2008, in the first phase 36 interviews were done in all of the 6 communities. The question was to list all plants that come to her mind which grow wildly in the valley and are collected:

*“Welche Pflanzen fallen dir ein, die hier im Tal wild wachsen und gesammelt werden?“*

#### Items mentioned over 6 times (n=36) listed by average rank (number 1-30)

Nr.	Item	Scientific name	Frequency	Avg Rank	Tea	Folk medicine
1	Silbermantel	<i>Alchemilla alpina</i>	30	8.233	✓	✓
2	Frauenmantel	<i>Alchemilla vulgaris</i>	30	8.800	✓	✓
3	Spitzwegerich	<i>Plantago lanceolata</i>	20	10.300	✓	✓
4	Arnika	<i>Arnica montana</i>	20	10.400		✓
5	Ringelblume	<i>Calendula officinalis</i>	29	10.621	✓	✓
6	Pfefferminze	<i>Mentha sp.</i>	21	10.762	✓	✓
7	Schafgarbe	<i>Achillea millefolium</i> agg.	28	10.821	✓	✓
8	Alpenrose	<i>Rhododendron sp.</i>	26	11.308	✓	
9	Brennnessel	<i>Urtica dioica</i>	23	11.348	✓	✓
10	Johanniskraut	<i>Hypericum perforatum</i>	28	11.893	✓	✓
11	Schlüsselblume	<i>Primula sp.</i>	20	12.050	✓	✓
12	Gänseblümchen	<i>Bellis perennis</i>	13	12.154	✓	
13	Löwenzahn	<i>Taraxacum officinale</i> agg.	16	12.438	✓	✓
14	Zitronen-Melisse	<i>Melissa officinalis</i>	15	12.533	✓	✓
15	Rotklee	<i>Trifolium pratense</i>	17	12.588	✓	✓
16	Wilder Thymian	<i>Thymus serpyllum</i> agg.	18	12.778	✓	✓
17	Huflattich	<i>Tussilago farfara</i>	14	12.929	✓	✓
18	Tanne	<i>Abies alba</i>	19	12.947		✓
19	Wilder Majoran	<i>Origanum vulgare</i>	8	13.125	✓	✓
20	Schwarze Johannisbeere	<i>Ribes nigrum</i>	11	13.545	✓	✓

21	Wacholder	Juniperus communis	14	13.786	✓	
22	Brombeere	Rubus fruticosus agg.	12	13.833	✓	✓
23	Schwarzer Holunder	Sambucus nigra	29	13.931	✓	✓
24	Meisterwurz	Peucedanum ostruthium	10	14.000		✓
25	Weißklee	Trifolium sp.	9	14.444	✓	✓
26	Salbei	Salvia officinalis	18	14.611	✓	✓
27	Rose	Rosa sp.	7	14.857	✓	
28	Wermut	Artemisa absinthium	10	15.100		✓
29	Himbeere	Rubus idaeus	22	15.227	✓	✓
30	Acker Schachtelhalm	Equisetum arvense	14	15.786	✓	✓

**Number of mentions of plant uses in different categories (n=36, in total 892 plants were free listed, 774 times the use was mentioned explicitly, for one and the same plant also several uses could have been mentioned).**

Category of use	Number of mentions	Examples
Drink	261	Tea (e.g. with leaves from <i>Melissa officinalis</i> ), syrup (e.g. with flowers from <i>Sambucus nigra</i> ), liqueur (e.g. with berries from <i>Vaccinium myrtillus</i> ), schnapps (e.g. with roots from <i>Gentiana lutea</i> ), ...
Food	112	“honey (e.g. with young sprouts from <i>Abies alba</i> ), spinach (e.g. with <i>Urtica dioica</i> ), salad ”(e.g. leaves from <i>Taraxacum officinalis</i> ), spices (e.g. <i>Thymus serpyllum</i> agg.), ...
Human Folk medicine	323	Tea (e.g. against cough with flowers from <i>Tussilago farfara</i> or <i>Primula veris</i> ), ointment (e.g. with flowers from <i>Calendula officinalis</i> ), oil (e.g. with <i>Hypericum perefuratum</i> ), schnapps (e.g. with flowers from <i>Arnica montanum</i> ) ...
Veterinary Folk medicine	32	Tea (e.g. against diarrhoea with flowers from <i>Chamomilla matricaria</i> ), ointment, oil, schnapps (e.g. with roots from <i>Ostrithium peucedanum</i> )...

Decoration	11	Bouquets (e.g. <i>Rhododendron sp.</i> ), flowers in salad (e.g. flowers from <i>Bellis perennis</i> ), for the colour in tea (e.g. <i>Rosa sp.</i> ), ...
Insecticides	9	against moths (e.g. <i>Lavandula angustifolia</i> ), louses...
Fertilizer	6	liquid manure (e.g. <i>Urtica dioica</i> ), green manure
Customs	3	„Alpabtrieb“ (e.g. <i>Rosmarinus officinalis</i> ), incense (e.g. <i>Juniperus communis</i> ), blessed herbs (e.g. <i>Salix sp.</i> at Easter)
Tools	1	“Pfannenfrusi” (from <i>Calluna vulgaris</i> )
others	16	bathing, hair washing ( <i>Urtica dioica</i> ), herb-cushions (e.g. with <i>Valeriana officinalis</i> ), “Krisimann” ( <i>Prunus avis</i> ), incense in the beehouse for disinfection ( <i>Tanacetum vulgare</i> ), ...

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#### Future Projects:

In Phase 1, Susanne Grasser, who led the workshops, went into classrooms with children ranging in age from six to 10 years old. A poster with the letters from A to Z was prepared. The pupils were asked which plants come to their mind that grow in the valley and can be used for anything. Grasser wrote down the children’s answers. After that the children were asked to imagine to be one special plant and to tell what he or she is used for. Therefore the children stood in a circle and throw a ball from one child to another as they were mentioning plants. In a next step, the pupils were asked to solve plant-puzzles of the 20 most frequently mentioned plants from the free list results from field research.

The pupils then presented the pictures to all classmates, telling what plant can be seen and what they know about it. Either dried or fresh plants as well as several products made out of these plants were shown to illustrate additional information. Pupils could try a balsam from *Calendula officinalis*, smell different herbs as *Mentha sp.*, or taste dried berries from *Vaccinium myrtillus*. The herbal plants, oil, ointment or dried berries were provided by local women. Finally a questionnaire was explained that the children had to fill out with their parents and grandparents at home to gain more information about the discussed plants and how they are used. The questionnaires were collected after one week.

The results from the children's in class project as well as the questionnaire are in the process of being analyzed.

(Data and aims of project used with permission from Monitoring of Biocultural Diversity in the Biosphere Reserve "Großes Walsertal" (Vorarlberg, Austria) Report from first year 07/2009 by Susanne Grasser)

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