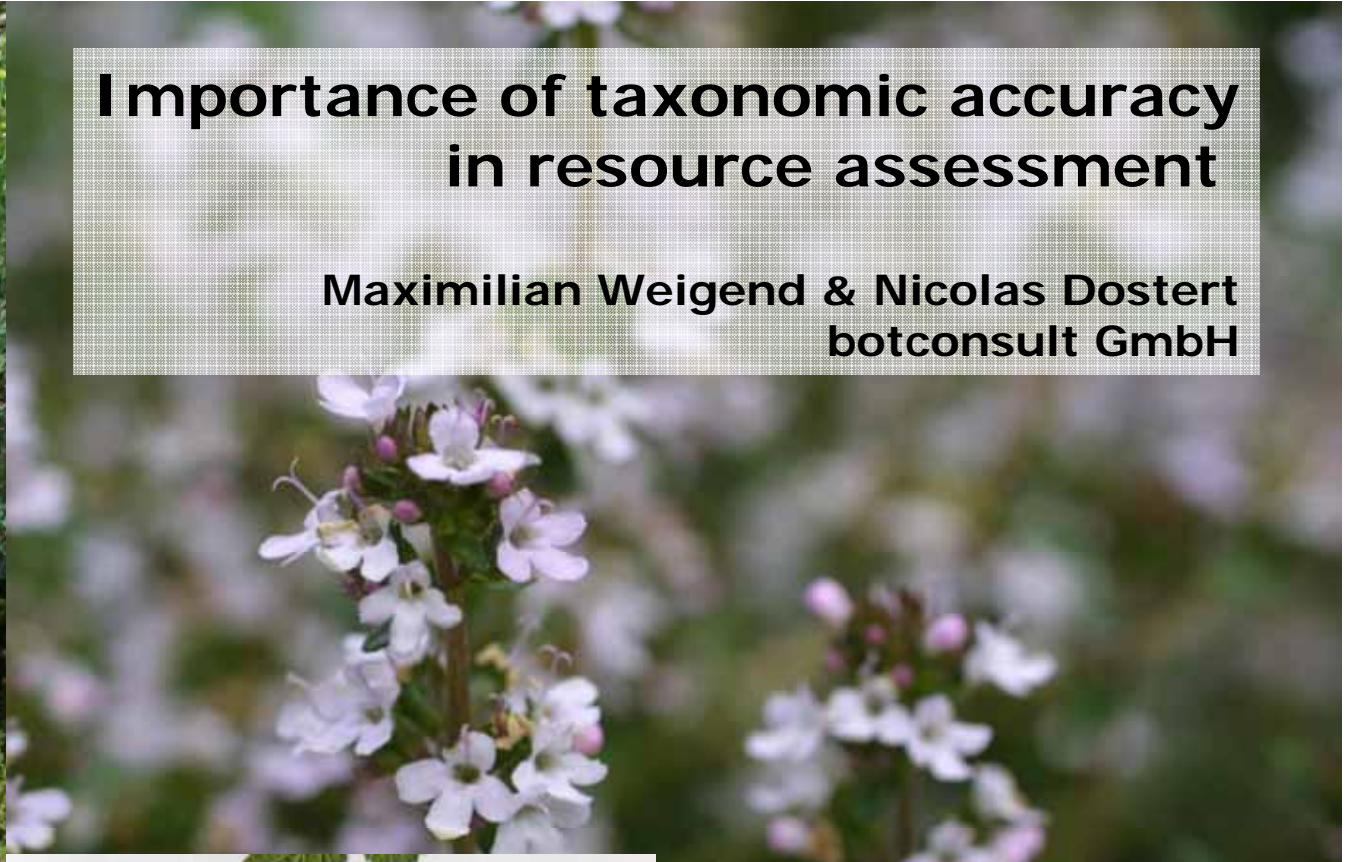


# Importance of taxonomic accuracy in resource assessment

Maximilian Weigend & Nicolas Dostert  
botconsult GmbH



# **Importance of taxonomic accuracy in resource assessment**

**Maximilian Weigend & Nicolas Dostert  
botconsult GmbH**

- 1. Is a lack of taxonomic accuracy common?**
- 2. Why is a lack of taxonomic accuracy problematic?**
- 3. Can taxonomic accuracy be achieved?**
- 4. Practical proposal and solutions**

# 1. Is a lack of taxonomic accuracy common?

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## TECHNICAL UPDATES

A BioTrade Initiative | UNCTAD

Issue 6 | October 2005

The species ... have been identified ...to initiate the implementation of this proposal"

Scientific name	Local name (English name)	Company
<b>Colombia</b>		
Genipa americana Quassia amara	Huito, Jagua (Bitterwood)	Ecoflora Labfarve
<b>Ecuador</b>		
Piper sp. (to be confirmed) Bursera graveolens Oreocallis grandiflora Equisetum bogotense Oenocarpus bataua	Guaviduca Palo santo Cucharillo Cola de caballo Uncurahua (Uncurahua palm)	Sisacuma Sisacuma CETCA CETCA Chankuao
<b>Peru</b>		
Geranium dielsianum Minthostachys mollis Valeriana sp. Desmodium molliculum Maytenus macrocarpa Croton lechlerii Gentianella alborosea Uncaria tomentosa Myrciaria dubia	Hercampuri Uña de gato (Cat's claw) Camu camu (Rumberry)	Agroindustrial Chanchamayo Agroindustrial Chanchamayo Agroindustrial Chanchamayo

***Geranium dielsianum* Knuth**  
***Minthostachys mollis* (Kunth) Griseb.**  
***Valeriana sp.***  
***Gentianella alborosea* (Gilg) Fabris**

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[http://www.biocomerciooperu.org/productos\\_fichatecnica.htm#](http://www.biocomerciooperu.org/productos_fichatecnica.htm#)

Nombre : **Muña**

Nombre Científico : **Minthostachys mollis ( Kunth ) Griseb.**

**Minthostachys setosa ( Briq ) Epl.**

Nombre Común : Muña

Parte de la Planta empleada : Hojas, flores y tallo.

Aplicación Terapéutica : Digestivo, Carminativo, Estomacal.

## DESCRIPCIÓN

Es una planta arbustiva de la Familia de las Labiadas, oriunda de la sierra peruana, que alcanza una altura de 0.80 mts., a 1.20 mts., y que se caracteriza por crecer entre los 2,500 a 3,500 m.s.n.m.

Este arbusto es frondoso en la parte superior; erecto y pubescente. Su tallo es ramificado desde la base y posee hojas pequeñas, aserradas. Sus flores son blancas y se encuentran reunidas en cortos racimos.

## COMPOSICIÓN Y ANÁLISIS QUÍMICO DE LA MUÑA SECA ...

Componentes Mayores ( grs ) ...

MINERALES ( mgs ) ...

VITAMINAS ( mgs ) ...

USOS ...

ESTADÍSTICAS DE EXPORTACION 2001, 2002 Y 2003 (Valor Fob US\$)...

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*Minthostachys mollis*  
and another 7 species  
in Peru,  
4 endemic to  
a single departamento  
including *M. setosa*!  
frequently confused  
with *Satureja* (26 spp.)  
= Muña!

*Minthostachys mollis*



*Satureja*

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and another 7 species  
in Peru,  
4 endemic to  
a single departamento  
including *M. setosa*!  
frequently confused  
with *Satureja* (26 spp.)  
= Muña!

At least the species of  
*Minthostachys* are not  
at present differentiated,  
different species, including  
rare endemics, are collected  
indiscriminately

In Europe the material is  
uniformly sold as "*M. mollis*"



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[http://www.biocomerciooperu.org/productos\\_fichatecnica.htm#](http://www.biocomerciooperu.org/productos_fichatecnica.htm#)

Nombre : **Pasuchaca**

Nombre Científico : **Geranium dielsianum Knuth**

Nombre Vulgar : Pasuchaca

### Descripción

**Planta perenne, de raíz típica o pivotante.** Hojas basales pubescentes, sostenidas por peciolos, de 21 mm de largo. Inflorescencia en umbela, pedunculo, floral de 10 mm de largo. Tiene fruto esquizocarpico.

Principio activo...

Especificaciones Técnicas...

Especificaciones Microbiológicas...

Usos...

ESTADISTICAS DE EXPORTACION 2001, 2002 Y 2003 (Valor Fob US\$)...

### **Brako & Zarucchi, 1993**

(Catalogue of the Flowering Plants and Gymnosperms of Peru):

***Geranium* 43 species, 27 endemic to 1 or 2 departamentos**

***Geranium dielsianum* only in Cajamarca (and possibly Junin)**

Inv. Nr. B. I. B3382

24.49652-954

# Das Pflanzenreich Regni vegetabilis conspectus

Im Auftrage der Königl. preuss. Akademie der Wissenschaften

herausgegeben von

A. Engler



IV. 120

nomen novum dedi.

47. *G. Dielsianum* R. Knuth in Engler's Bot. Jahrb. XXXVII. (1906) 563. — Herba alpina, humilis, acaulis, perennis, caespitosa caespitibus densis humillimis circ. 8—15 cm diam., tota indumento argenteo-lanuginoso-sericeo dense oblecta. Radix robusta, cylindrica, parte media 8 mm lata, circ. 10 cm et ultra longa, simplex, apice multiceps. Folia permulta, tantum basalia, petiolata petiolis crassiusculis, 2—3½ cm longis, quam laminae diam. 1½—2½-plo longioribus; lamina crassiuscula, ambitu reniformi vel paullo ultra reniformi, utrinque unidentata. Stipulae circ. 1 cm longae, partibus connatis. Sepala lanceolata sensim acuminatae, acutissimae. Pedunculi solitarii, basales, uniflori, ebracteati, breves, circ. 8 mm longi, vix crassiusculi, pilis patulis dense lanuginosi. Flores media magnitudine, folia altitudine aequantes, non superantes. Sepala oblongo-lanceolata, lanuginosa, acuminata, acuta, vix coriacea, 6—7 mm longa, 2½ mm lata. Petala alba, calyce circ. 1½-plo longiora, 8—10 mm longa, obovata, integra, basi unguiculata, ungue glabra. Fructus. . . — Fig. 14 F, G.

Peru: Dep. Cajamarca, am Passe Coymolache oberhalb Hualgayoc, auf Felsen bei 4000—4100 m (Wachsmuth, 1906).

Nota. Species habitu similis est *G. sessilifloro*, sed bene distincta indumento, foliis regulariter 7-lobatis, lobis 3 mediis regulariter usque ad ¼ tridentato-lobulatis.



**„similar in habit to *Geranium sessiliflorum*“  
- which is the most widespread species in Peru**



Fig. 14. A, B *Geranium sericeum* Willd. — C, D *G. muscoideum* R. Knuth. — E *G. eucalatum* H. B. K. var. *typicum* R. Knuth. — F, G *G. Dielsianum* R. Knuth. — H *G. nivale* R. Knuth.

[http://www.biocomercioperu.org/productos\\_fichatecnica.htm#](http://www.biocomercioperu.org/productos_fichatecnica.htm#)

**Nombre :** **Hercampuri**

**Nombre Científico :** **Gentianella alborosea** (Gilg) Fabris

**Nombre Vulgar :** Hircampuri, Hilcampure Te amargo, Te de Chavin

### Descripción

Planta oriunda del Perú que habita en Regiones Andinas entre los 3,500 a 4,300 msnm, en zonas de climas fríos y altas punas, **Puno, Cuzco, Cerro de Pasco, Ayacucho, Cajamarca.**

**Principio activo...**

**Especificaciones Técnicas...**

**Especificaciones Microbiológicas...**

**Usos...**

**Brako & Zarucchi, 1993**

(Catalogue of the Flowering Plants and Gymnosperms of Peru):

***Gentianella* 82 species, 71 endemic to 1 or 2 departamentos**

***Gentianella alborosea* endemic to Junin**

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### Botanicals imported from **Peru to Switzerland** – excerpt from a list

Name	Comment
<i>Cantua buxifolia</i>	Several rare and narrowly endemic species
<i>Gentianella alborosea</i>	Almost certainly other species, rarely if at all <i>G. alborosea</i> <b>(82 species, 71 restricted to 1 or 2 departamentos!)</b>
<i>Geranium dielsianum</i>	Almost certainly other species, likely <i>G. sessiliflorum</i> and others <b>(43 species, 27 endemic to 1 or 2 departamentos!)</b>
<i>Maytenus macrocarpa</i>	Numerous species, difficult to distinguish, other names on other websites
<i>Minthostachys mollis</i>	Certainly mixed with other species of <i>Minthostachys</i> , probably also with <i>Satureja</i>
<i>Smilax regelii</i>	<b>18 very similar species</b> , but <i>S. regelii</i> not known from Peru, possibly cultivated?
<i>Valeriana coarctata</i>	This could be anything! <b>(73 species, 47 restricted to 1 or 2 departamentos)</b>

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### Botanicals imported from the **Balkans to Switzerland** – excerpt from a List

Name	Comment
<i>Achillea millefolium</i>	numerous narrowly endemic species
<i>Crataegus monogyna</i>	numerous narrowly endemic species
<i>Rubus fruticosus</i>	numerous local endemics - <b>ca. 140 taxa recognized in Germany alone!</b>
<i>Fumaria officinalis</i>	numerous local endemics
<i>Taraxacum officinale</i>	numerous local endemics, <b>over 50 taxa recognized</b>
<i>Thymus serpyllum</i>	Certainly one or several different species, <b><i>T. serpyllum</i> only native to Central and northern Europe</b>
<i>Tilia argenta</i>	<b>Invented name</b>
<i>Tilia officinalis</i>	<b>Invented name</b>
<i>Urtica dioica</i>	numerous local endemics
<i>Urtica officinalis</i>	<b>Invented name</b>

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**TRAFFIC**

WWF Deutschland  
Pressestelle  
Rebstöcker Straße 55  
60326 Frankfurt a. M.

Tel.: 0 69/7 91 4  
Direkt: -214  
Fax: 0 69/61 72  
glaser@wwf.de  
www.wwf.de

*Arctostaphylos uva-ursi*

Echte Bärentraube



**Is a lack of taxonomic accuracy common?**

# 1. Is a lack of taxonomic accuracy common?

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*Arctostaphylos uva-ursi*

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Is a lack of taxonomic accuracy common?

The species illustrated is:

- a) *Rhododendron*
- b) A garden hybrid
- c) ecologically very different from *Arctostaphylos*

## Is a lack of taxonomic accuracy common?

- A considerable proportion of the botanicals traded worldwide, especially those collected in the wild, is incorrectly identified
- Names are used indiscriminately, without any effort towards accuracy or traceability
- Even invented names („*Urtica officinalis*“) are employed
- Botanicals are arbitrarily mixed and/or re-labeled with commercially acceptable names

**too many secrets, too much ignorance, too much irresponsibility**

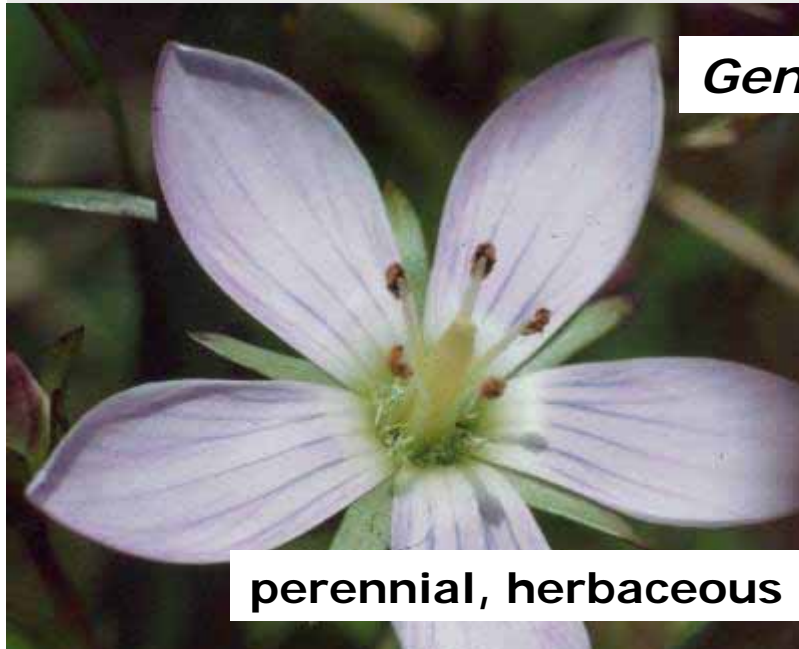
## Why is a lack of taxonomic accuracy problematic?

- The raw material is not identified and has **no predictable medicinal or aromatic properties**
- **Rare and likely endangered locally endemic species are indiscriminately collected**
- Management plans are based on **taxon-(species-)specific data**, which, **differ between species**

Example: *Gentianella* in Peru

## 2. Why is a lack of taxonomic accuracy problematic?

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*Gentianella* in Peru

perennial, herbaceous



annual, herbaceous



perennial, shrubby



biennial, herbaceous

## **Can taxonomic accuracy be achieved?**

**For most parts of the world recent and complete Floras exist (Africa, Asia, Europe, North America)**

**For other parts of the World at least checklists with a full bibliography exist (e.g., Argentina, Peru, Ecuador) or are in preparation (e.g., Bolivia, Chile)**

**However:**

**Unequivocal determinations are sometimes difficult**

## **Can taxonomic accuracy be achieved?**

### **Problems:**

**Identifications have to be based on herbarium material**

**Determinations have to be carried out by a botanist  
(ideally a specialist for the plant group and/or region concerned!)**

**Identifications usually require access to specialist  
literature and reference material**

**Taxonomy (i.e., the valid name) of a species can  
change**

## Proposal - Procedure

1. The taxonomic identity of the MAP-resource is always documented by herbarium specimens (vouchers)
2. Herbarium vouchers are prepared from a representative set of populations in the collection area and labelled according to the standard procedure (collector, date, precise locality)
3. The area management plan refers to the taxon vouchered, irrespective of possible taxonomic changes
4. The vouchers are named by a botanist (preferably with a reasonable track record in the floristics of the region concerned)
5. The vouchers for the management plan are permanently deposited in at least one public herbarium (e.g., National History Museum of the country concerned)

## Proposal - **Area Management Plan**

includes the following informations:

1. **Scientific name of the MAP-species** (incl. Author!)
2. **Voucher data** of the herbarium material deposited (collector, date, locality, **where deposited**)
3. **Name of the scientist** who identified the plant
4. **Literature/reference material** used for determination
5. Information on other, **readily confused species** in the collection area (*if any*) and differential characters

## Proposal - **Area Management Plan**

this information can be used to elaborate **field identification aids** with

- photographs
- diagnostic drawings
- *simple* explanations of crucial characters
- diagnostic differences to similar species in the area

## Advantages of vouchering the MAP-species:

**Cost involved is minimal**

Taxonomic identity of the MAP-species can be verified at any moment in time **(by anybody!!!)**

All **biological, phytochemical and pharmacological data** are simultaneously vouchered and **verifiable**

If new collection areas are prospected, the identity of the MAP-species with the material collected previously and elsewhere can be **immediately investigated**

**No Voucher – No Data – No Area Management Plan**



You want to work with botanicals,  
but are not interested in botany?  
Three options:

a) Don't

b) Cheat

c) Get a botanist

