TRAFFIC

REPORT

WILD AT HOME

Exploring the global harvest, trade and use of wild plant ingredients

JUNE 2018

Martin Jenkins, Anastasiya Timoshyna and Marcus Cornthwaite

TRAFFIC REPORT

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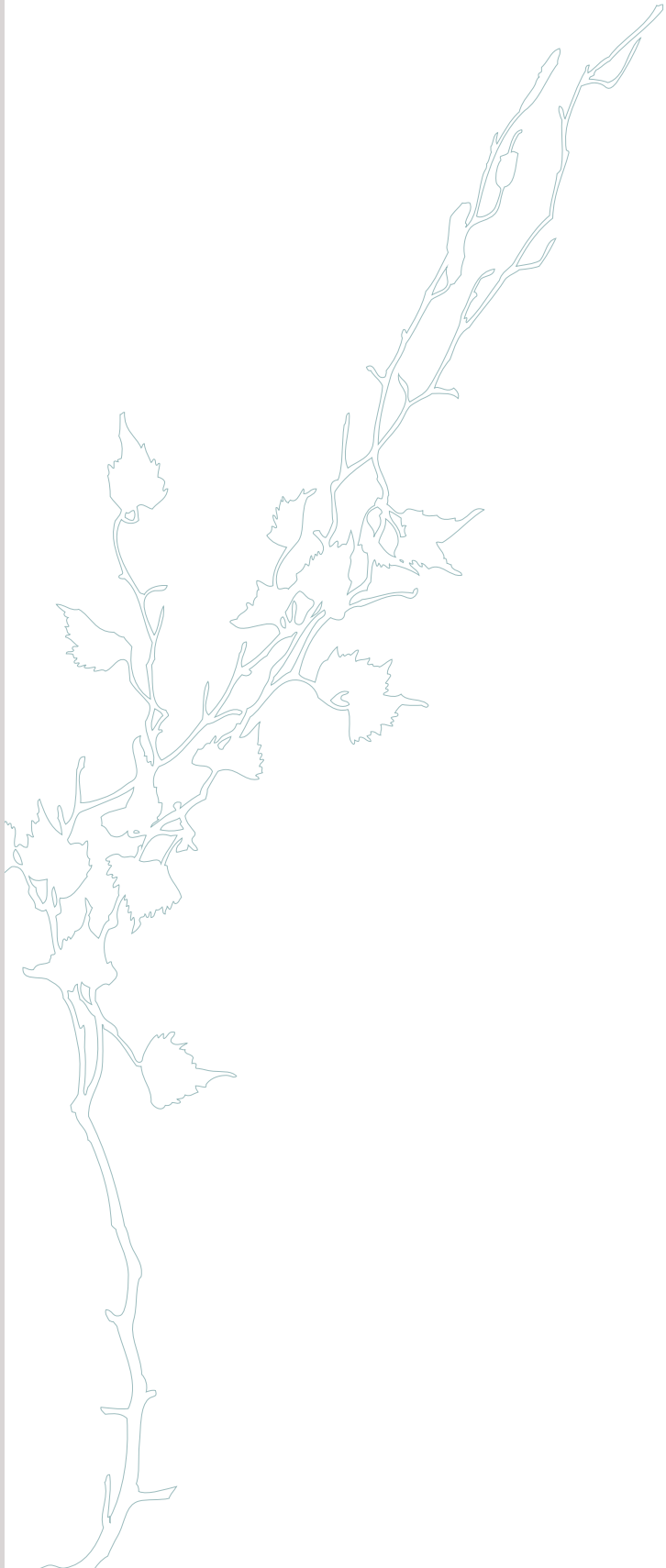

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TRAFFIC
the wildlife trade monitoring network

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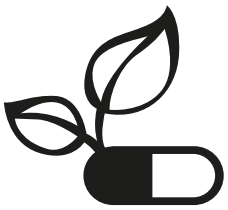
CONTENTS

PLANT TRADE AT A GLANCE

The trade in wild plant ingredients affects us all. Here is a snapshot of an enormous trade that largely goes unmentioned, unrecognised and under-researched.

300k–400k

the estimated number of plant species around the world



~30,000

plant species with well documented medicinal or aromatic uses

60–90%

of medicinal and aromatic plants in trade are

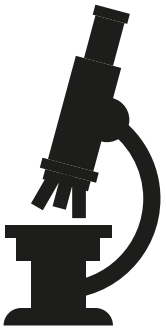
WILD COLLECTED

threefold

Increase in trade in medicinal and aromatic plants since 1999

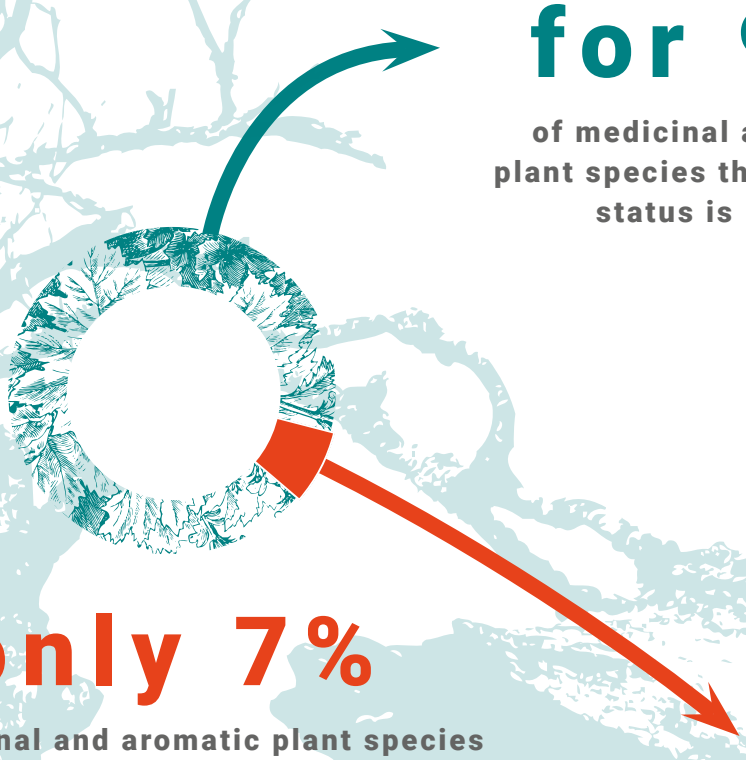
US$14–15 billion

estimated value of trade in essential oils by 2025



for 93%

of medicinal and aromatic plant species the conservation status is unknown



only 7%

of medicinal and aromatic plant species have been assessed against extinction threat criteria

1 in 5

of these are threatened with extinction in the wild

CHINA

1.3 billion kg

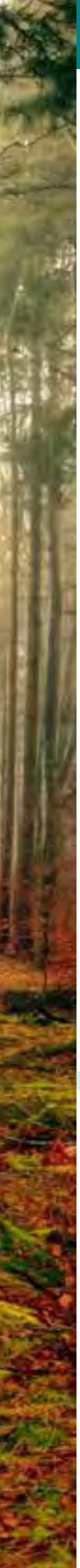
of botanical ingredients were exported by China in 2013 alone

GERMANY

US$250 million

value of medicinal and aromatic plants were imported by Germany in 2015

WILD PLANTS IN CONTEXT



WILD PLANTS TRADE: **WHAT'S THE DEAL**?

Wild plants are often "hidden" ingredients in everyday products

The past few decades have witnessed extraordinary change in the world. The human population is larger than it has ever been, and is consuming more than ever before, with unprecedented impacts on the environment. As a result, many indicators paint an increasingly bleak picture of the future at least as far as nature is concerned.

At the same time, consumers – and that means all of us – are becoming increasingly aware of the impacts that our decisions have, not just in our immediate surroundings but across the globe. Any of us wishing to act responsibly in exercising our choices is faced with a potentially overwhelming range of issues: carbon footprints, loss of natural habitats, generation of plastic waste and use of polluting chemicals, not to mention the wellbeing of those producing the things we consume. It is often difficult in all this to know how to act for the best. **One area where there are clear ways forward, with entirely practical solutions at hand, is the use of wild plants, something which is remarkably widespread but very often overlooked**.

This report highlights the vital role that plants play in all our lives, the often surprising places in which wild plant products can be found and the economic importance of the global trade in these products. It shows that where successfully managed, this trade can provide a hugely important source of income for poor and disadvantaged people in rural communities across the world while at the same time delivering significant environmental benefits. It also underscores the risks involved where the trade is not well managed. It outlines the various mechanisms already in place, including the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and certification systems such as FairWild, that try to ensure that harvest and trade of wild plants is sustainable.

Most importantly, it provides clear guidance as to what you, the reader, can do to help, whether it is in exercising your choice as a responsible consumer of goods containing wild plant products or ensuring that, as an importer, manufacturer or retailer of such goods, your supplies come from legal, sustainable sources.

Za'atar harvester in Lebanon

GETTING AROUND THIS REPORT

find out about exactly what you need to know

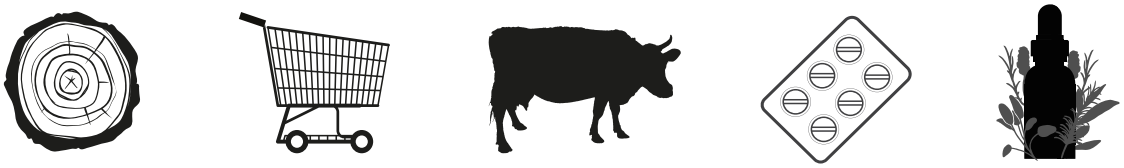
The harvesting, trade and use of wild plant ingredients is a complicated world.

As a consumer, you might want to explore the general background before anything else. **Page iv** offers a general overview of how many plant species are in use, how many of these are wild collected and estimates as to the number which are currently threatened. **Pages 4–6** give you some examples of their everyday use, and how you may be consuming wild plant ingredients without actually knowing it! **Page 13** tells you more about why wild plants are harvested in the first place, and gives you an insight to the people involved in this trade. Find out **WHAT YOU CAN DO** as a consumer on **Page 38**!

As a business, you may be interested in exploring the latest trade volumes involved on **page 7**. **Page 17** provides an insight into the journey towards sustainability in wild plants trade, offering an overview of the problems the industry faces and the available solutions. **Page 25** explores sustainability frameworks and certification standards such as FairWild, demonstrating the holistic benefits they can have within an economic, social and conservation context. For **WHAT YOU CAN DO** as a business, jump to **Page 38**.

2 PLANTS AND **PEOPLE**

we humans are utterly dependant on plants for our survival



At the most fundamental level they produce the oxygen without which we could not breathe. They feed us and our livestock, provide clothing, building materials, fuel, medicines, and a host of other products that we use on a daily basis.

With the singular exception of timber, globally the most important of these commodities come from cultivated plants, grown under more or less agricultural conditions. We don't know and probably will never know for certain exactly when humans first started this practice, but we do know that it was over 12,000 years ago. Its large-scale adoption was perhaps the most important turning point in human history.

The reasons for cultivating plants are obvious – by controlling the conditions under which plants grow yields can be increased, often dramatically, leading to a surplus over and above the immediate needs of the cultivators. This in turn opens up a whole range of possibilities, including large-scale permanent settlement, the accumulation of property and organised trade. It also creates powerful incentives to own land and control labour. It is scarcely surprising, then, that the large-scale cultivation of plants has transformed human society and the planet on which we live.

For all this we have not yet entirely lost the connection with the wild. Around the world there are still people who rely almost entirely on wild plants and animals to meet their needs. A far larger number, particularly people living in rural areas in developing countries, make use of wild plants for particular purposes. Wild plants provide nutritionally important foods, serve as a source of medicines, construction material, and fuelwood, make invaluable contributions to the income of people living in and around them, and sustain resilience (being often consumed more frequently in times of food scarcity, providing livelihood safety nets) (Powell *et al.* 2013). Wild relatives of major crops such as maize, wheat, rice and coffee, are valuable as repositories of genetic diversity (FAO 2018a). And it hits even closer to home – a surprising number of products that contain wild plants as ingredients still enter globalised market-based economies:

PHARMACEUTICALS

WILLOW TREE, CINCHONA TREE

25% of all pharmaceuticals come from plants. Common plant-inspired drugs include aspirin (originally derived from the willow tree) and quinine (from the cinchona tree).

HEALTH SUPPLEMENTS

HOODIA, GOLDENSEAL

There are multitudes of wild plant ingredients used in health, medicinal and herbal products. These include ginseng, liquorice, St John's wort, Icelandic moss, pygeum (*Prunus africana* bark extract), *Rhodiola rosea*, and goldenseal

COSMETICS AND WELLBEING

ARGAN OIL, SHEA BUTTER, FRANKINCENSE

Wild plant ingredients in cosmetic products used for skincare, aromatherapy and make-up include: shea butter, frankincense oil, argan oil, aloe, baobab oil, candelilla

HOMEWARES

RATTAN, BAMBOO

Wild plants in homeware goods include raffia, rattans and bamboos found in furniture, placemats, clothes and other general household items

FOOD, SPICES AND DRINK

JUNIPER, LICORICE, GUM ARABIC

Wild plant ingredients in food and drink include: nuts (pine nuts, Brazil nuts), wild berries, but also occasionally wild cocoa, coffee and tea, Acai berries (part wild), baobab fruit; juniper berries, gum Arabic in drinks; oregano, laurel leaves, thyme, za'atar used as spices

That box of chocolate-covered Brazil nuts you got for your birthday – the **brazil nuts** themselves came from wild trees in a South American rainforest and the chocolate probably contained **shea butter**, from nuts harvested from a West African savannah tree, maybe in Burkina Faso, one of the world's poorest countries for whom it is a nationally important export crop. The designer hat that you treated yourself to may have been woven from **raffia** collected from wild palms by a women's co-operative in northern Madagascar, and the **rattan** chair you sat on while eating your chocolates was made from other wild palms, these probably harvested in South-East Asian rainforests.

If you had a mushroom risotto for supper last night, the **ceps** that gave it most of its flavour would have been collected in woodlands somewhere in Europe, perhaps in Hungary, or the Dolomites, and the soothing cup of herbal tea you drank afterwards contained **nettles, hawthorn and elder**, all harvested from the wild. If you are of a musical disposition and play a woodwind instrument, then your clarinet, or oboe, was almost certainly made from **African blackwood**, harvested from a slow-growing and increasingly scarce tree in Mozambique or Tanzania.

All these products and more – a multitude of flavourings, foodstuffs and herbal remedies – are harvested from the wild, a fact that most of us – consumers, retailers, wholesalers and sometimes even manufacturers are often completely oblivious of. And if we don't even know that this is their origin, then how can we tell what impact, good or bad, we are having, on the plants that provide these products, on the wider environment and on the livelihoods of the people involved?

PRODUCT PROFILE: BRAZIL NUTS

A popular foodstuff, particularly in confectionary.

SPECIES: Brazil nuts come from a tree (*Bertholletia excelsa*) that grows wild in South American rainforests.

WHERE: Most production for export originates in Bolivia, Brazil and Peru.

THREATS? Wild collection is largely undocumented and sustainability frameworks all but non-existent.

| Wild *Hypericum perforatum* drying

3 WHAT'S THE **SCALE OF TRADE?**

trade in wild plant ingredients runs into the **billions of US$**

TIMBER

In terms of volume, value and environmental impact, timber is by far the most important wild plant commodity in trade. The Food and Agriculture Organization (FAO) of the United Nations estimates the annual global value of the timber trade as a whole at over US$200 billion (FAO 2018b).

Although a large amount of timber, particularly softwoods (conifers), originates in plantations, a high proportion of that in trade comes from natural, essentially uncultivated, sources. This applies particularly to tropical hardwoods, of which some 300 million cubic metres of roundwood is harvested annually – equivalent to perhaps 100 million trees. Forestry for timber production and the timber trade operate in a world very different from that of non-timber products and therefore are not dealt with further in this report.

US$200 billion

UN FAO estimate of annual timber trade

| Logging depot on the highway outside Douala, Cameroon

ESTIMATING VOLUMES AND VALUES

A tricky trade to pin down . . .

It is frustratingly difficult to produce any accurate or reliable figures regarding the current importance of wild plants to humans at a global – or even regional or national – level.

There are several reasons for this: much of the use is local and informal and goes essentially unrecorded; for products in formal trade there is often no requirement for those from different plants to be recorded separately. If there are trade or production statistics for products from particular plants, these often do not differentiate those of wild origin from those that are cultivated. As a result, many of the figures that are quoted are at best approximations, but they can give some idea of the scale of the issue:

1 OVERVIEW

300k–400k
the estimated number of plant species around the world

60–90%
of medicinal and aromatic plants in trade are collected from the wild

A wide range of wild-harvested plants, fungi and lichen are used and traded, domestically and internationally. Nearly **30,000 plant species** have well documented medicinal or aromatic uses (out of a global total estimated at 300,000–400,000).

Those plants with a use documented in traditional systems and national pharmacopoeias are included in the Global Checklist of Medicinal Plants (MAPROW 2018). Around 3,000 are in international trade as medicinal or aromatic plants (Schippmann *et al.* 2006), the majority of which are likely to come largely or primarily from wild sources – according to some estimates, between 60% and 90% of the trade by volume in medicinal and aromatic plants is in wild-collected material (as exemplified by Mulliken & Inskipp 2006 estimates).

| Wild-collected licorice root for sale

2 GLOBAL NWFP TRADE

US$20 billion
UN FAO estimated value of non-wood forest products (NWFP) in trade

UNderestimate
the true value is likely to be significantly higher

According to the Food and Agriculture Organization of the United Nations (FAO) in 2015, the global value of non-wood forest products (NWFP) of plant and animal origin was estimated as **US$20.6 billion in 2010**. This is likely a substantial underestimate as NWFPs are rarely captured in national statistics (Shackleton & Pandey, 2014).

3 CHINA TRADE SUMMARY

70% of plant
species in trade in China are collected from the wild

US$1.8 billion
worth of botanical ingredients were exported by China in 2013

Estimates of the scale of trade are dependent on customs codes, which can be challenging to include comprehensively given the variety of species involved and variations in how they are captured in national reporting. Nevertheless, it is clear that China is by far the largest producer, and consumer, of plant-based herbal medicines.

It is estimated that in China over **70% of the species involved, and 30% of the material by volume**, comes from wild plants. In 2013, China exported over 1.3 billion kg of such material, with a reported customs value of over US$5 billion, to which wild-collected material may have contributed as much as US$1.8 billion (International Trade Centre 2016).

4 EUROPEAN UNION SUMMARY

Germany
is the largest trader of plants within the EU

US$250 million
value of plant imports in 2015

Within the European Union, **Germany is by far the largest trader of medicinal and aromatic plants**. According to customs data, imports of these in 2015 were valued at US$250 million, although this is likely to be a significant underestimate as the customs code from which the figure is derived (HS1211) does not cover all relevant plants (United Nations 2018).

In a 2016 study, **one in three** of those who responded to a survey in the European Union, Serbia, Turkey and parts of Russia reported that they collected wild forest products of some kind, a remarkably high proportion given that most of the population in this region is now urban (StarTree 2016).

5 GLOBAL TRADE

US$3 billion
global reported value of imports of medicinal and aromatic plants in 2015

threefold
growth in trade since 1999

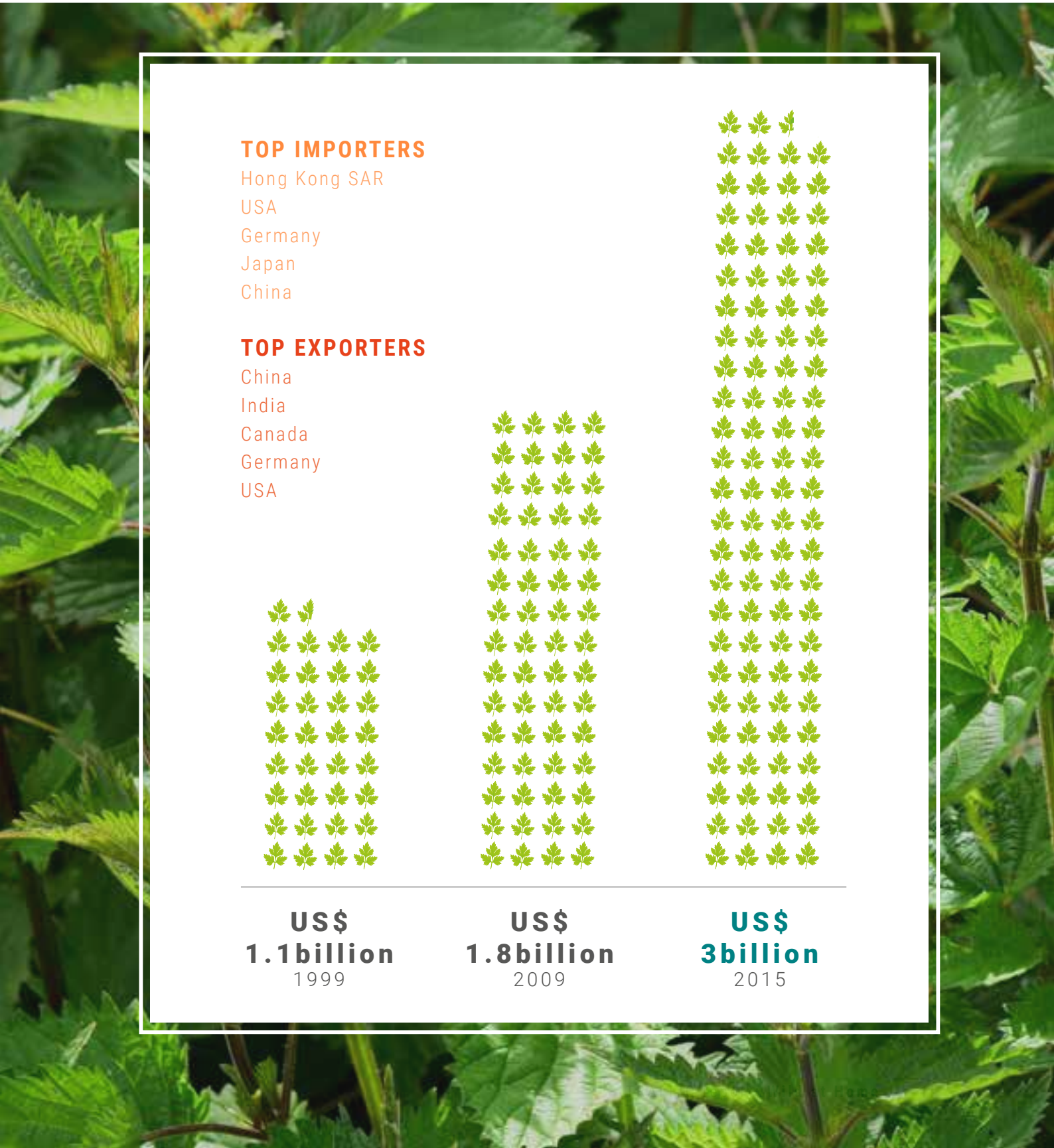
The global reported trade in plants for medicinal purposes alone (customs code HS1211) was valued at over US$3 billion, a threefold growth as measured by values of imports or exports between 1999 and 2015.

It is of course difficult to **predict future trends**, but most indicators point to rapid continued growth in the market. For example, the demand for **essential oils** (CBI 2018) is expected to grow by around 10% annually until 2025 when it will reach US$14–15 billion. Europe accounts for 45% of global demand. In 2016 the **natural fragrance ingredients** market was worth over US$1 billion in Europe alone. Sales of **herbal supplements** increased by 7.7% in 2016 in the US, with consumers spending US$7.5 billion on these products (Smith *et al.* 2017).

Ingredients derived from wild plants are important components of many products, including those sold as medicines, cosmetics, food and drink. **Companies often have marketing strategies that emphasise the "natural" and "wild" properties of these ingredients and yet pay little attention to determining whether the sourcing of them is ecologically and socially sustainable**. With many plants facing pressures as never before, there is a risk of valuable species disappearing essentially unnoticed.

INCREASING ACROSS THE BOARD

These figures offer a snapshot into the level of increase in the trade in medicinal and aromatic plants. This is likely to be a significant underestimate as the customs code from which the figure is derived (HS1211) does not cover all relevant plants traded. The top importers/exporters refer to data reported in 2015 by value in US$ (United Nations 2018).



TOP IMPORTERS

Hong Kong SAR
USA
Germany
Japan
China

TOP EXPORTERS

China
India
Canada
Germany
USA

US$ 1.1billion
1999

US$ 1.8billion
2009

US$ 3billion
2015

4 **WHAT COUNTS** AS WILD COLLECTION?

distinctions can be less clear than you think . . .

At first sight it might be thought straightforward to determine whether any particular crop, or individual plant even, is cultivated or wild-collected. In the case of the large-scale production of the vast majority of foods and fibres such as cotton this is undoubtedly true: the whole production cycle is quite obviously subject to more or less intensive human control.

At the margins, however, and with forestry in particular, the distinction between wild and cultivated is often much less clear. Plants and their habitats may appear essentially uncultivated but may in fact be subject to a considerable amount of intervention through, for example, seasonal burning, deliberate flooding, enrichment planting, clearance of competing plants and control of herbivores.

Furthermore, even if the plants that are being harvested are not subject to a great deal of active management, the chances are that the landscape in which they grow will be to some extent at least the product of human activities: people have been altering the planet's ecosystems for so long that there are remarkably few places left, if any, which are truly untouched. For useful plants it may often be the case that their very presence somewhere is the result of past human action, in deliberately or accidentally introducing them there. This means that for plants "wild" and "native" may often not mean the same thing at all. Whether this is important or not depends very much on individual perspectives and goals.

| Wild shea nuts

*PRODUCT PROFILE: **SHEA BUTTER***

Used locally as a cooking oil and more widely in foodstuffs (e.g. chocolate) and also as a component of a range of beauty products

SPECIES: Extracted from the nut of the shea tree *Vitellaria paradoxa*.

WHERE: Semi-arid Sahel region of Africa south of the Sahara.

THREATS? An estimated 600,000 tonnes are harvested each year, with just half of that quantity exported, 90% of which is used in foodstuffs and the remainder in cosmetics. It is a major component in the export economies of Burkina Faso and Ghana.

5 **WHY** ARE PLANTS WILD COLLECTED?

our connection to the wild, whilst severely eroded, still endures

Given how long-established and how successful the cultivation of plants has been, it is perhaps surprising that any commercially important plants are collected from the wild at all.

The reasons that they are vary, but are often a combination of economics, the biology of the species concerned and prevailing social conditions. At base, the practice continues because it makes economic sense.

This may be because the plant (or fungus) in question grows slowly and has low productivity, may only thrive at low densities or may simply be difficult to grow in cultivation, for example due to its ecologic requirements and conditions which are almost impossible to replicate in cultivation. This includes species such as Brazil nuts, frankincense, argan and matsutake.

Alternatively, a plant may be easily cultivated, but its products may be of such low value that it is not worth cultivating as it will generate less income than other crops. Examples in Europe are nettles (leaves and roots), wild garlic (aerial parts), and blackberries (leaves and fruits).

However, it is hard to generalise even about one species: it may be worthwhile cultivating a particular plant in some circumstances and not in another, because economic and environmental circumstances vary so much from place to place.

In some cases, particularly with plants whose products are used medicinally or in flavourings, a premium may be attached to wild-collected plants because of a real or perceived difference in quality. As an example, the principal active ingredient in liquorice roots, glycyrrhizin, normally occurs at concentrations roughly three times higher in wild than in cultivated roots. More generally in traditional Chinese medicine, and other traditional systems of medicine, considerable importance is attached to provenance, with wild-collected plants usually preferred. It may also be a matter of choice and a particular flavour by consumers, of wild plants over cultivated ones. Similarly, among a (small number) of hobbyists who have a collection of orchids and cacti, prestige may be attached to owning plants of known wild origin.

Wild plant harvester in Viet Nam

6 A SHOUT OUT TO **WILD COLLECTORS**

an ancient trade on which millions directly and indirectly rely

Wild plants are harvested for commercial purposes all over the world under a wide range of different conditions. Nevertheless, certain commonalities emerge. People engaged in the harvest are generally rural and marginalised – often children or elderly, and mostly women. Typically they have few other opportunities to earn income. In many cases they come from ethnic minorities or indigenous peoples groups. Often, the art of wild-harvest is linked to traditional knowledge of what parts can be collected, when, and how much and how often.

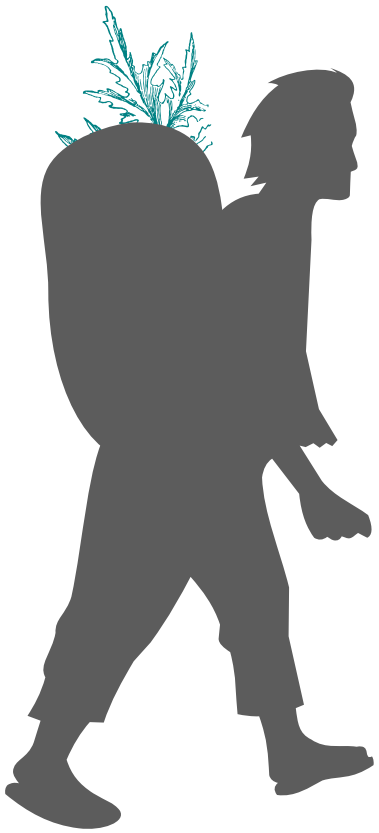
In some places the income generated through this activity is of considerable importance to livelihoods: e.g. harvest of Devil's claw *Harpagophytum* spp. (used to treat arthritis and rheumatoid arthritis) in Namibia, which supplies around 90% of the world's market, is believed to supply a major part of, in some cases the sole, income for some 3,000–5,000 harvesters (National Botanical Research Institute 2018), while a study in one area of Nepal (the Gorkha district) in the 1990s found that collection of medicinal and aromatic plants accounted for 15–35% of total income in villages there (IUCN 2006).

Worldwide, wild plants are collected from an enormous range of different habitats. However, the places from which they are collected are not necessarily themselves at all wild: fields cultivated for other crops, hedgerows and timber plantations are all important sources of wild produce of various kinds.

The legal status of the land where plants are collected and the rights, or otherwise, of those doing the collecting are similarly variable. Land may be community or privately-owned, state-owned (at various governmental levels), under some kind of common-property regime or customary tenure. Ownership may be unclear or contested. The land may be under open access or restricted access that is or is not enforced.

millions of

people are believed to rely on wild plant collection for their livelihood

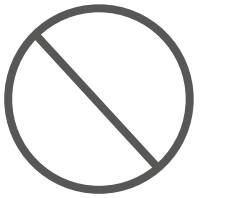


when and on what land can you wild collect?

Under many legal systems anything growing on private land is automatically the property of the landowner, but this is not always the case — others may have some rights to these resources (known as usufruct rights).

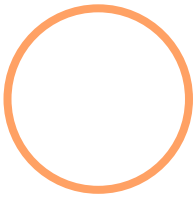
Sometimes national legislation, for example that protecting threatened species, overrides these property rights. State-owned lands and the resources they contain may also come under a whole range of management and protection regimes, ranging from strict nature reserves with no public access to unrestricted access lands whose plants are treated essentially as common property. As well as formal legal systems, customary restrictions and regulations may apply to the exploitation of some plants.

Given all this, it is risky to generalise. However, aside from the case of landowners collecting plants on their own property, it is undoubtedly true that many people who collect wild plants, whether for subsistence or commercial use, do so under conditions of uncertain or insecure access. They may also be wittingly or unwittingly contravening laws or regulations, both formal and informal. Where people are heavily dependent on such collection for their livelihoods, this can put them in a very vulnerable position.



PRIVATE LAND

MANAGEMENT REGIMES, NATURE RESERVES, PUBLIC LANDS WITH CUSTOMARY RESTRICTIONS ETC



PUBLIC LAND

Wild juniper *Juniperus communis* berries

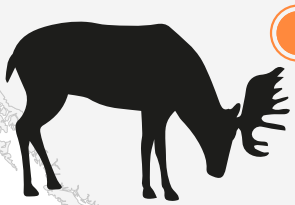
THE JOURNEY TOWARDS
SUSTAINABILITY

7 **OPPORTUNITIES** . . .

serving communities, consumers and conservation

Harvest of wild plants can provide vital resources for poor and marginalised people and, where the resulting products are commercialised, much-needed income. It can also provide an incentive to manage the harvest of plants sustainably and to maintain their habitat to the benefit of other species and whole ecosystems.

These are examples of wild plants sharing landscapes with other threatened species. Sustainable wild harvesting and trade in plant ingredients could provide holistic management for other species and ecosystems at large.



CANADA
caribou + lichens

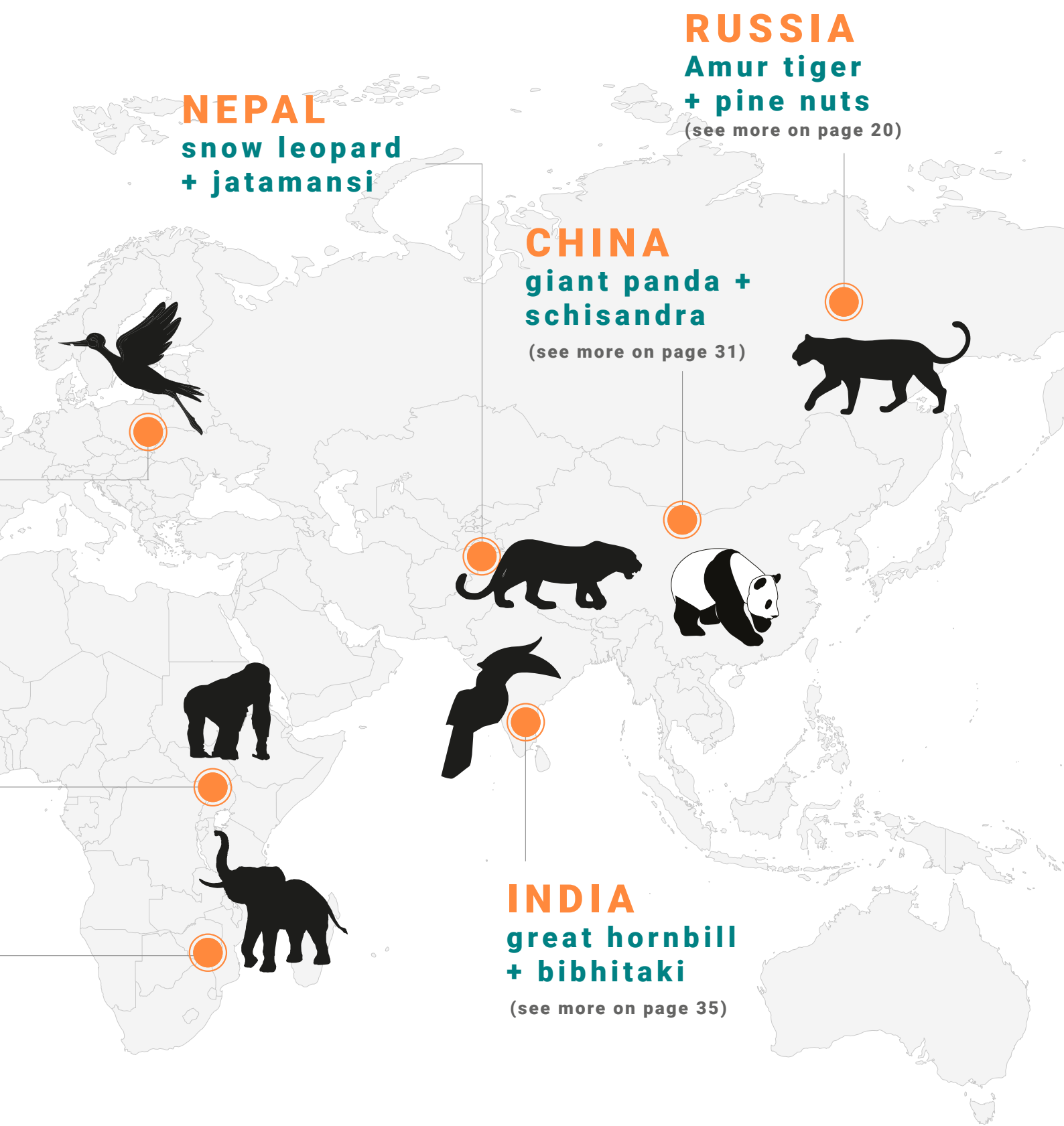
EUROPE
white stork +
meadowsweet, raspberry

CONGO BASIN
mountain gorilla
+ grains of paradise

UNITED STATES
wood thrush +
American ginseng

PERU
jaguar + cat's claw

EAST/SOUTHERN AFRICA
African elephant
+ baobab


RUSSIA
Amur tiger
+ pine nuts
(see more on page 20)
NEPAL
snow leopard
+ jatamansi
CHINA
giant panda +
schisandra
(see more on page 31)
INDIA
great hornbill
+ bibhitaki
(see more on page 35)

| Tiger *Panthera tigris*

what do tigers and pine nuts have in common?

The Russian Far East is home to a small but globally significant population of tigers *Panthera tigris* whose habitat is at risk from illegal logging of Korean pine *Pinus koraiensis* and other timber trees. The pines produce pines nuts, which as well as being food for wild boars, themselves important tiger prey, are a highly valuable commodity.

WWF and its partners, in co-operation with indigenous Udege and other communities, have supported the long-term (50-year) leasing of areas of forest land referred to as Nut-Harvesting Zones, in which the leasing communities can sustainably harvest the nuts and other forest products. This provides a powerful incentive to preserve the forests and has increased the engagement of the communities in active management, for example in anti-poaching and fire-prevention measures, contributing to the conservation of a highly endangered species.

PRODUCT PROFILE: PYGEUM

Widely used as a herbal remedy for prostate problems.

SPECIES: Pygeum comes from the bark of the African cherry *Prunus africana* collected primarily from the wild.

WHERE: Wild trees growing in central and western Africa and Madagascar.

THREATS? Where not properly managed, bark collection can kill the trees. Between 2006–2016 over 8,000 tonnes of **wild pygeum** were reported as imported (chiefly by Europe, the USA and Japan). Cameroon has been the major exporter.

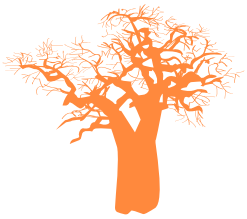
| African cherry *Prunus africana* tree

8 . . . AND **THREATS**

overharvesting and a lack of reliable data are serious concerns

10,000–12,000

plant species are estimated to be threatened
(Royal Botanic Gardens Kew 2017)



The most immediate risk in the collection of wild plants is overharvest, where unsustainable harvesting leads to the local depletion or extirpation of the species in question and in extreme cases, where overharvesting extends across the range, threatening its overall survival.

This has happened to a number of plants such as Asian ginseng *Panax ginseng*, collected primarily for medicinal use, as well as horticultural plants, particularly orchids such as the South-East Asian and South American slipper orchids (*Paphiopedilum* and *Phragmipedium*), some cacti and cycads, notably southern African *Encephalartos*, which have also often been collected for medicinal purposes. In these cases, it is sometimes the very rarity of the plant that has been the incentive to collect it in the first place.

how threatened are plants?

Given that there is no agreement as to how many species of plants there are in total, it is not surprising that we do not know for certain how many are currently threatened with extinction.

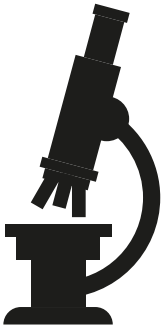
Answering that question accurately would require assessing the status of each of the world's plant species individually – an enormous undertaking. To date only around 7% of ~28,000 species that have well-documented uses as medicinal or aromatic plants have been assessed against the extinction threat criteria of the IUCN Red List of Threatened Species™ (and nearly 20% of those are believed to be in urgent need of re-assessment).

Based on these assessments, **one in five of the world's medicinal and aromatic plant species is threatened**, that is assessed as Critically Endangered, Endangered or Vulnerable under the IUCN threatened species criteria (Leaman D. J. & Schippmann U. *in litt* 2018).

only 7%

of medicinal and aromatic plants have been assessed against the IUCN Red List™ extinction threat criteria

The proportion of threatened plants, though, will vary considerably from region to region. An assessment of some 400 species of medicinal plants in Europe found that only a small proportion (2.5%) of them was threatened with extinction but nearly one-third were declining in numbers across Europe, usually as a result of overcollection (Allen *et al.* 2014).



for 93%

of medicinal and aromatic plant species the conservation status is unknown

1 in 5

of the 7% assessed are threatened with extinction in the wild

Harvesting may also have wider environmental impacts for example on other species that might depend on the plant being harvested, or if damaging harvesting techniques are used. A notable example of this is the harvest of **agarwood**.

Agarwood case study

Agarwood – also known as aloeswood, eaglewood and gaharu – is the common name for the dark aromatic deposits of resin produced in the heartwood of *Aquilaria* and some species of *Gyrinops* trees (large evergreens native to several countries from north-eastern India eastwards through South-East Asia and southern China to the south-eastern most limits on the Island of New Guinea and some smaller nearby islands), in response to wounding or penetration of the tree and infection by a mould.

Whole trees are normally felled to find the valuable resin deposits, but with just 10% of trees naturally infected this is a very destructive and inefficient process (TRAFFIC 2011).

Wild agarwood and stripping bark for resin

Even local depletion can, of course, have a serious impact on people who depend on the harvest for their livelihoods. Unfortunately, the characteristics of wild harvest are often the very ones that lend themselves to unsustainable practices. One important reason for this is embodied in the classic "Tragedy of the Commons" formulation. Where the resources are open-access, that is where essentially a free-for-all prevails, it is in the interests of any individual person to harvest as much as they can as quickly as possible before someone else does. This applies particularly where the supply of the resource is limited.

Even where access to the resource is limited there may still be powerful incentives to exploit it as intensively as possible. On land that can be converted to other uses that bring a higher rate of financial return: as noted, plants whose products are commercially harvested from the wild are often those with low productivity or profitability. Elsewhere it may be because those doing the harvesting live in conditions of more or less permanent insecurity. They are typically landless and poor and, given the opportunity, prefer to maximise their present income (or indeed may have no choice in the matter) rather than defer any of it to an uncertain future.

The growing and changing demand, and the entry into the market of non-traditional harvesters, in some cases mean that traditional sustainable harvesting practices are being replaced by more intensive and destructive practices. Examples of this include za'atar *Origanum syriacum* harvesting in Lebanon, the use of heavy machinery for the harvesting of wild liquorice root *Glycyrrhiza spp.*, and the destructive harvesting of American ginseng *Panax quinquefolius* in the Appalachians.

Often populations of exploited wild plants are affected by factors other than just harvest, such as habitat loss and fragmentation. This may mean that harvest volumes and practices that have been sustainable in the past are no longer so. Such a situation has arisen in recent years for wild-harvested goldenseal *Hydrastis canadensis* in North America (TRAFFIC, 2017).

Of course, there are exceptions to this – **some wild-harvested resources are notably resistant to overexploitation**. There are some plants such as nettles and dandelions that grow so widely and so abundantly that they are unlikely ever to be overharvested. In other cases – fungi in particular – there is little evidence that harvest, which is of fruiting bodies in the case of fungi, has any significant impact on wild populations (Egli 2006) (interestingly, in one of the few cases where concern has been expressed – that of the harvest of the "caterpillar" fungus *Ophiocordiceps* in Nepal for medicinal purposes, the fungus is dependent on a caterpillar, at a crucial stage of an animal's life-cycle (Qui 2013)). There are also wild plants that have been sustainably managed by communities or as private resources over long periods without the need for external intervention or regulation, for example bamboos in India (Nath *et al.* 2009) and palms in Yucatan, Mexico (Martínez-Ballesté *et al.* 2002).

Often, though, sustainable management of wild plant resources that are of any commercial importance needs some kind of input – either in the form of positive incentives or regulation, or a combination of the two. These interventions do not always work, but if they do the benefits can be significant.

Wild harvestijng in India

9 HOW CAN WE **IMPROVE THE SITUATION?**

sustainability frameworks can provide a holistic approach

Users of products coming from wild plants – that is consumers, retailers and producers of processed end-products – are often far removed from the harvesters, both geographically and in terms of steps along a supply chain. This in itself presents a challenge to them in trying to influence harvest and production for the better, but this challenge is by no means insurmountable.

In the first instance, though, it is important for anyone to decide what their goals are: are they primarily environmental or are they societal? Of course, everyone is looking for the famous "win-win" situations. These certainly exist, but not everywhere, and they are often quite challenging to bring about. Moreover, even actions with one aim principally in mind may have unintended consequences.

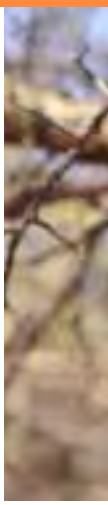
For example, from a societal point of view expanding the market or increasing the value of a wild resource might seem an unalloyed good, in that it would be expected to boost the income of those doing the harvesting, who are often very poor, from ethnic minorities and disenfranchised. In fact, it may have perverse consequences, through encouraging faster depletion of the resource, to the future detriment of the collectors, and appropriation of collection and even privatisation of the resource by those with more power. Or it may encourage the domestication of the plant, which may have a positive or at least neutral environmental impact but deprive the original collectors of a livelihood.

conservation benefits

social benefits

economic benefits

TRACEABILITY



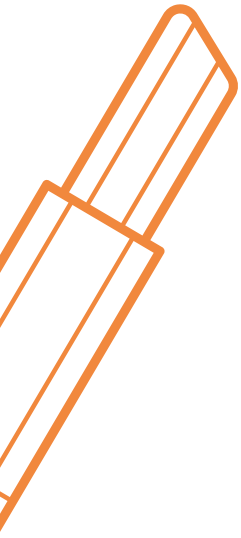
For anyone who wants to ensure that their use of wild plants is at the very least responsible, in terms of ecological and social sustainability, their first task should be to inform themselves as well as they can about the origin and supply chain of the products they are using.

That is very likely to entail asking questions of their immediate supplier who, if they cannot answer them, should be encouraged themselves to ask questions further down the chain, ultimately to source. Anyone along the chain should then be able to use this information to make their own decision as to whether they are satisfied or not that the supply meets their own particular standards and aims. As a minimum standard (although one still all too rarely exercised by consumers in general) they should satisfy themselves that their involvement does, by their own lights, no harm.

LEADING BRAND LIP BALM

INGREDIENTS

OCTYLDODECANOL - C10-18 TRIGLYCERIDES - **BUTYROSPERMUM PARKII (SHEA) BUTTER**** - HYDROGENATED CASTOR OIL** - **EUPHORBIA CERIFERA (CANDELILLA) WAX**** - HYDROGENATED COCO-GLYCERIDES - CERA ALBA/BEESWAX - C18-36 ACID GLYCOL ESTER - C18-36 ACID TRIGLYCERIDE - SIMMONDSIA CHINENSIS (JOJOBA) SEED OIL** - SUCROSE TETRASTEARATE TRIACETATE** - TOCOPHERYL ACETATE - PARFUM/FRAGRANCE - BENZYL BENZOATE - ALPHA-ISOMETHYL IONONE



LEADING BRAND CHEWING GUM

INGREDIENTS

SWEETENERS XYLITOL, SORBITOL, MANNITOL, ASPARTAME, SALT OF ASPARTAME - ACESULFAME, ACESULFAME K, GUM BASE, **E414 (THICKENER GUM ARABIC)**, FLAVOURING, HUMECTANT GLYCEROL, EMULSIFIER SOYBEAN LECITHIN, COLOUR E171, GLAZING AGENT CARNAUBA WAX, ANTIOXIDANT BHA

Wild harvesting of frankincense in Kenya

Traceability is easy to decide on in theory but of course much harder to put into practice, particularly when supply chains are long, and also when final products contain a large number of ingredients, as is the case with many cosmetics and traditional medicines. In such cases the fall back position is often to focus on the principal or named ingredient while overlooking others that may potentially be more problematic (the widespread use of shea butter in cosmetics is a case in point).

While a large number of products on the market claim to be "natural" or "wild" there is often **no basis to substantiate such claims, even more so in the case of wild-harvested plant ingredients**, where industry players are under no regulatory or other pressure to disclose the conditions under which the ingredients were harvested and traded. Even in cases where the plant product is certified "organic" against the respective EU Council Regulation on Organic Production (834/2007), there are **no detailed harvesting standards required within the EU's directive to substantiate what the sustainability of "organic" harvesting from the wild implies and requires**.

Full traceability approaches allow addressing such issues, and help increase the confidence of consumers, and reduce the potential supply chain risks of companies.

COMPLIANCE

In general, one important aspect of doing no harm is ensuring that products have been obtained in compliance with existing regulations. It is true of course that sometimes these regulations may be perceived as inappropriate, outdated or unjust, perhaps even demonstrably generating perverse outcomes. In such cases some people may argue that the better course is to evade or ignore the rules. This is difficult ethical ground. Certainly, where consumption is concerned there is a risk that something that is essentially self-serving becomes presented as adhering to some higher good. It can be argued that the better, though harder approach is to try to change the rules for the better.

For users of products that originate abroad there are particular difficulties involved in ensuring that harvest has been in accordance with local regulations. A variety of international frameworks exist to facilitate this, including under the Nagoya Protocol of the Convention for Biological Diversity (CBD). The major international tool for helping in the issues of the international trade in plant species – although its scope is limited to particular species of wild plants – is **CITES.**

| Baobab *Adansonia digitata* trees are harvested for their "superfruits"

CITES

the most important international agreement on wildlife trade

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is the main agreement that controls international trade in wild animals and plants. It does this by regulating trade in those species included in its appendices, of which the most important are I and II. The Convention is very widely applied — almost all the world's trading nations are members.

Unfortunately, it is also widely misunderstood, undoubtedly in large part because of its name. It is often believed that all CITES-listed species are endangered and that international trade in them is commercially banned. While this is the case for just a relatively limited number of species included in Appendix I, this is not true at all for those included in Appendix II, which includes the vast majority of plant species listed under CITES. Under CITES, commercial international trade in wild-collected plants of these species is allowed under permit provided that certain conditions are met.

The most important of these conditions is the so-called non-detriment finding: for a CITES import or export permit to be issued for plants included in Appendix II, governments should be satisfied that plants have been collected legally and in a way that does not threaten the survival of the species – that is, essentially, that they should have been sustainably harvested.

It is of course rather more complicated than that in practice. Countries (including the EU, which is a CITES Party in its own right) may sometimes impose stricter import or export controls than are required under the Convention. For example, some countries may not allow the export of wild-collected plants of species listed in Appendix II. Where there is concern that non-detriment findings have not been made properly for a species by an exporting country, imports from that country may be suspended until the situation is resolved. This has happened in recent years, for example, with African cherry exports from a number of countries, including Cameroon, Equatorial Guinea and Madagascar.

It may often be quite difficult to work out in practice exactly what products from CITES-listed plants are covered by the Convention, that is need CITES permits in order to be exported or imported. Often processed products that are packaged for retail are exempt from these requirements. However, enforcement officials themselves may not always fully understand the regulations. Importers and exporters may err on the side of caution, by obtaining CITES permits where these are not strictly needed, in order to avoid problems and delays.

Costs for CITES permits vary from country to country and may sometimes be fairly high. Combined with the inevitable bureaucracy, those involved in the commercial production and sale of products that use CITES-listed species may prefer to rely on plants that are produced in cultivation within their own country: CITES does not regulate domestic use or trade in species included in its appendices (although countries may have their own national regulations restricting domestic trade in, for example, Appendix I-listed species). However, any export or re-export trade in resulting products may then be subject to CITES controls.

Because of the various issues that can arise when trading in CITES-listed species, some people prefer to avoid using them entirely. This is unfortunate: an Appendix II permit for wild-collected plants, if properly obtained, acts as a kind of certification system in itself. It may well be preferable to use certificated stock of this kind, rather than using species that are not listed under CITES, where there may be no or much weaker controls on collection for trade.

what has CITES got to do with me?

Candelilla wax for lipstick | *Aloe ferox* for skincare | Pygeum for medicines

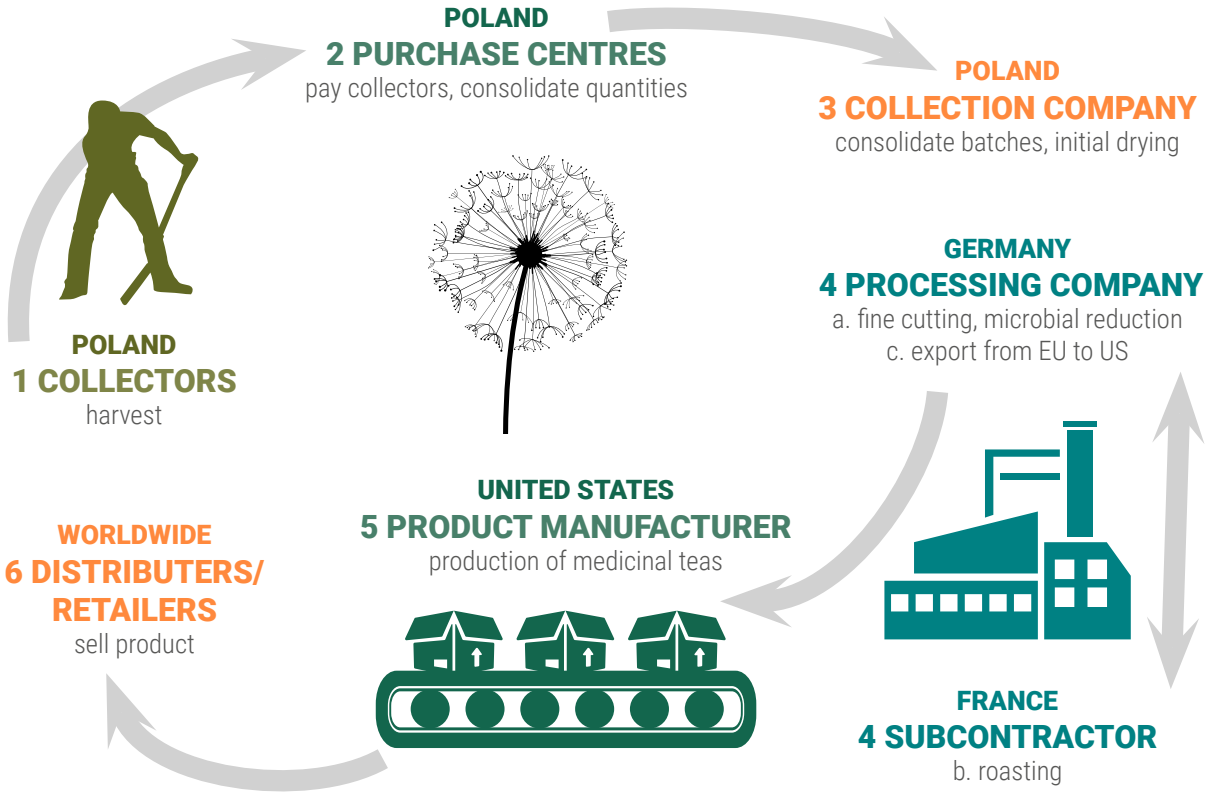
The candelilla wax found in lipsticks, Brazilian rosewood oil used in perfumery, cacti and snowdrops from garden centres, orchids from supermarkets, scented jatamansi, the herbal remedies ginseng, pygeum and goldenseal, all of these and many other plants are included in the CITES appendices. In the vast majority of cases trade in them is perfectly legal – in the case of cacti, orchids and snowdrops over 99% of it is in cultivated plants that have never been near the wild. Where plants are wild-collected, adherence to CITES regulations is in itself a reliable indicator of sustainability.

Very large quantities of CITES-listed plants are recorded in trade each year by importing and exporting countries. The majority of this trade, in terms of number of plants, is in artificially propagated orchids and cacti for the horticultural trade. Timber from various trees, including bigleaf mahogany *Swietenia macrophylla* and African teak *Pericopsis elata* accounts for a substantial part of the trade by volume and

weight. Other products in trade are dwarfed by these but can nevertheless be important in terms of the conservation of species concerned and the sustainable livelihoods of those involved in harvest for trade.

Among CITES-listed medicinal and aromatic plants collected from the wild, international trade in the past ten years has been dominated by two: candellila, harvested from the spurge *Euphorbia antisyphilitica* in Mexico, and pygeum, harvested from the African cherry, chiefly in Cameroon, but also in a number of other sub-Saharan African countries. Between 2006 and 2016 nearly 10,000 tonnes of candellila and over 8,000 tonnes of pygeum were reported as imported, chiefly by Europe, the USA and Japan (trade.cites.org). Other notable CITES-listed plants traded for medicinal or aromatic purposes include wild aloes from South Africa, especially *Aloe ferox*, used instead of the widely cultivated *Aloe vera*, agarwood derived from tropical *Aquilaria* or *Gyrinops* trees and various orchids, particularly *Dendrobium* orchids harvested in South-East Asia for use in traditional Asian medicine.

increasing value to producers



A simplified example of a trade chain for dandelion root *Taraxacum officinalis*, sourced in Poland.
The majority of trade supply chains are far more complex, making knowing what comes from where very difficult

One very common characteristic of supply chains originating in wild plants (and animals) is high multiplication in value, or cost, along the chain. There may be one or two orders of magnitude difference between the amount a collector has been paid and the amount a consumer pays for the final product at retail (as examples, a study in Mexico found that collectors of medicinal plants received around 6% of the retail price (Schippmann *et al.* 2006), while collectors of wild asparagus species in China received

less than one-hundredth of the retail price in Germany (TRAFFIC Factsheet 2015); similar estimates apply for the proportion of the value of Devil's claw products that harvesters receive in Namibia (National Botanical Research Institute 2018). Of course, several factors play a part in this, notably transportation, storage and processing costs, wastage, taxes, duties, licence fees and sometimes less formal payments. Nevertheless, profit margins can be high, sometimes very high, for intermediaries, particularly exporters. Shifting these margins further down the supply chain – especially to the harvesters themselves – is very widely agreed to be a desirable aim. There is though, understandably, often considerable resistance to this from those who do well under existing conditions. They may well try to thwart such attempts by shifting the source of their supply if they can, or abandoning that particular branch of their business entirely, as companies are unlikely to deal with just one commodity, or even one commodity type.

If solutions to these problems are to be found, it is likely to be through trading co-operatives and networks (for example that for southern schisandra *Schisandra sphenanthera* berries in China) and the use of certification systems.

SCHISANDRA AND GIANT PANDAS

The Upper Yangzte region of China is an important biodiversity area and one of the most important sites for giant pandas *Ailuropoda melanoleuca*.

Surveys in villages in the region found that the sale of medicinal plants contributed **30–60%** of the region's household cash income, mostly from wild-collected plants. A project to improve sustainability of harvesting of southern schisandra *Schisandra sphenanthera* berries led to the establishment of a co-operative to sell certified organic berries.

The co-operative entered into a fair trade agreement with companies in Shanghai and a US company (Traditional Medicines Inc.). The latter made significant investments, facilitating training of collectors and providing processing equipment to ensure the berries were of high standard. The partnership resulted in improved income, **generating prices 30% higher than normal and opened the way for further "panda-friendly" initiatives** (Brinckmann and Morgan 2012).

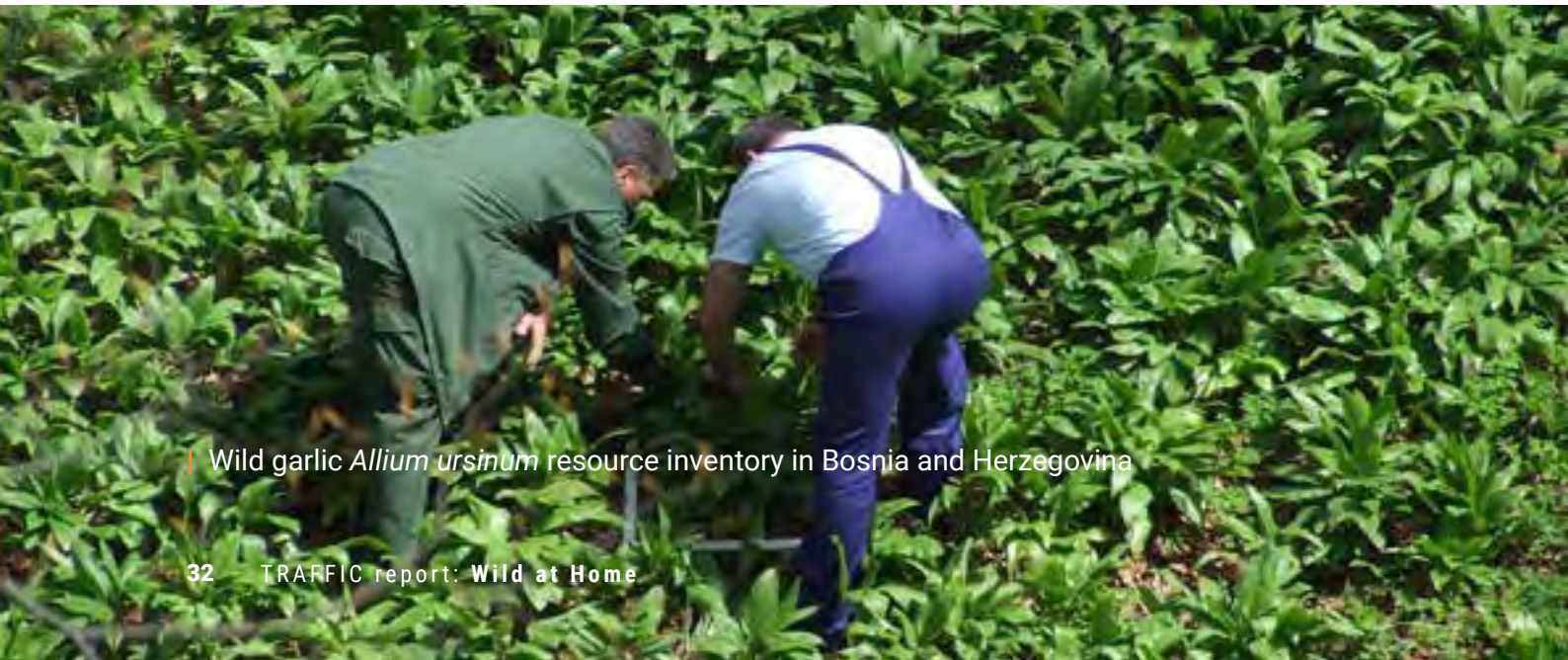
| Wild schisandra berries

Certification systems
the FairWild approach

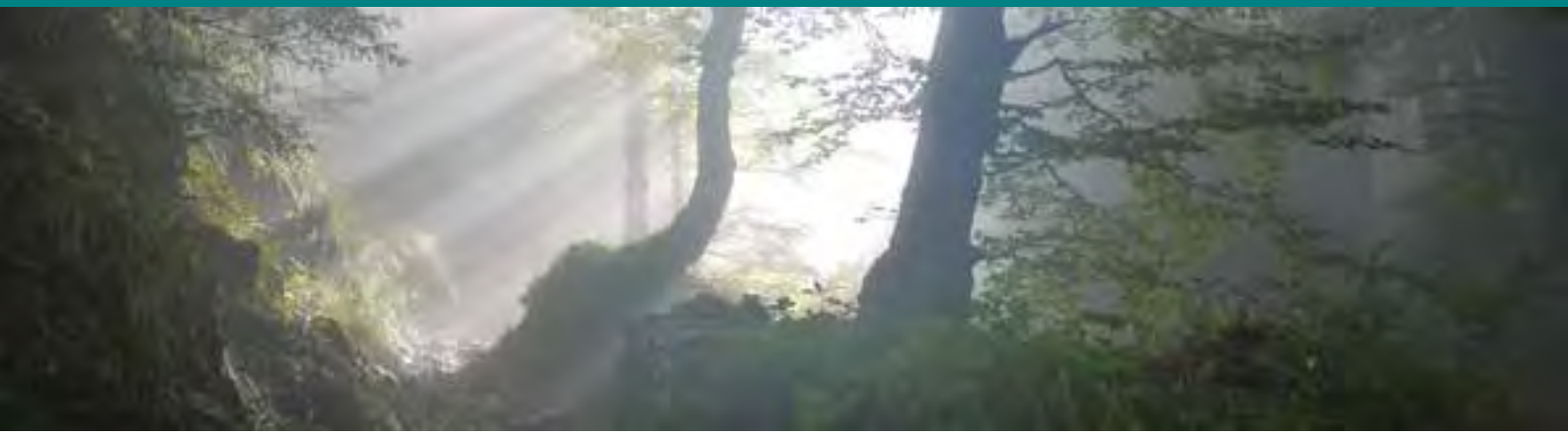
Certification systems are a powerful way by which consumers can influence production systems, though exercising choices based on ethical as well as material considerations (such as price, quality or appearance).

Such systems exist in various forms. Various fair trade systems focus on delivering economic and social goods; others, for example the various organic certification systems, are directed at the inputs used in agricultural production. Yet others, such as fisheries certification systems, aim to ensure sustainable management of fisheries; and there are those, such as many timber certification systems, that aim to combine social and environmental benefits.

In the context of **wild-sourced plants (excluding timber), fungi and lichens, the most comprehensive and thorough-going system currently in use is the FairWild Standard**, established in 2008 (FairWild 2018). Its purpose is to ensure the continued use and long-term survival of wild species and populations in their habitats, while respecting the traditions and cultures, and supporting the livelihoods of all stakeholders, in particular collectors and workers. The FairWild Standard sets out key criteria and principles for companies and producers to meet; compliance is assured through third-party auditing.



Wild garlic *Allium ursinum* resource inventory in Bosnia and Herzegovina



The FairWild Standard

eleven principles covering four core areas

wild collection + conservation

regulatory compliance

fair trade + social responsibility

management + traceability

The FairWild Standard requires producers to implement robust resource management plans, adhere to sustainable harvesting practices, including restrictions on volume where appropriate, and to pay fair prices – **the FairWild Price** – to wild-collection enterprises. The FairWild Price is based on cost calculations, but it is always higher than the standard market price for the same wild crop collected conventionally in the region. Additionally, buyers are required to pay a **FairWild Premium** to be paid into a fund managed by harvesters. It is usually paid out by the final buyer, normally the finished-product manufacturer, to the wild-collection enterprise and is intended to be used to deliver additional social benefits.

FairWild certified products are marketed at a higher than normal price to cover the costs of using sustainable practices, ensuring fair prices are paid to collectors and the costs of compliance and certification. FairWild seeks to ensure that benefits are equitable, but also tries to maximise those benefits. FairWild certification processes attempt to engage as wide a group of stakeholders as possible, as a means of encouraging wide community participation, building capacity, ensuring a more equitable distribution of benefits and providing an education tool for developing understanding of sustainable resource use.

For consumers, certification not only demonstrates that money spent is doing some tangible good, it also serves as a de facto guarantee that the product they are using is a high-quality genuinely wild-sourced good, with all the benefits that that entails.

The success of the system to date has been largely due to the engagement and commitment of pioneer companies who have adopted the FairWild Standard and taken an active role in developing the scheme.

FairWild certification in practice

The first FairWild certified ingredients became available in 2007 with the first finished products entering the market in 2009. Currently there are over 20 different plant species certified, sourced from wild collection operations in ten different countries.

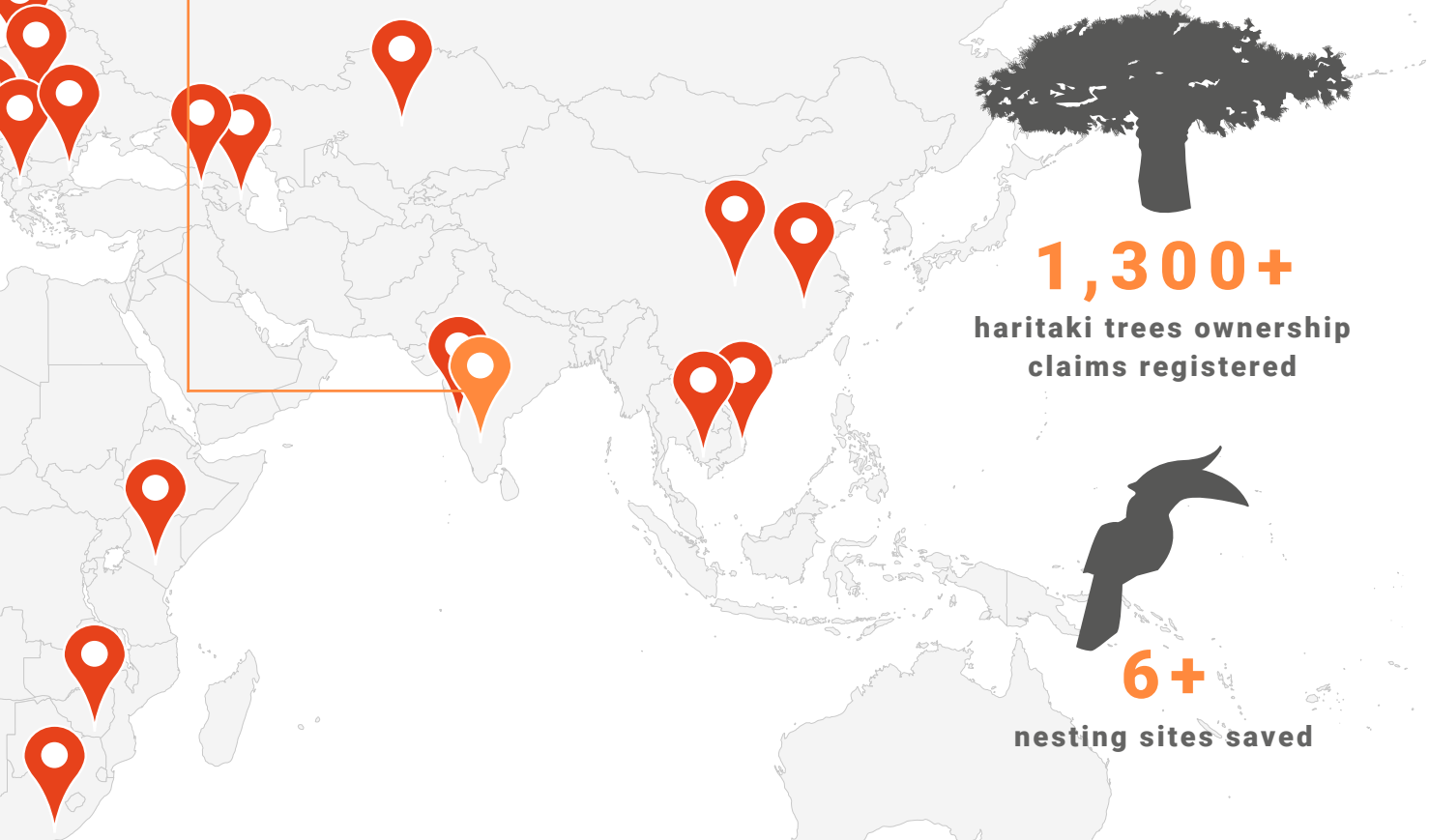
Over 100 companies have been engaged in implementation and four certification bodies have now been accredited (Antosch and Morgan 2017). Among the plants certified are some common European species such as elderflower *Sambucus nigra* and dog rose *Rosa canina*, two species of liquorice (*Glycyrrhiza glabra* and *G. uralensis*), African baobab *Adansonia digitata* and two fruit-producing trees (myrobalan *Terminalia chebula* and bastard myrobalan *T. bellirica*). It is estimated that over 1,000 collectors benefit from increased income as a result of certification.

Great Hornbill *Buceros bicornis*

FAIRWILD, BIBHITAKI AND HARITAKI TREES, AND THE GREAT HORNBILL

A FairWild project in the Western Ghats in India is applying the FairWild Standard to the harvesting of Haritaki – fruits of the myrobalan *Terminalia chebula* – and Bibhitaki – those of the bastard myrobalan *T. bellirica* – both used in Ayurvedic medicine.

This has not only benefitted local people, but also populations of two of the region's most spectacular birds, the Great Hornbill *Buceros bicornis* and Malabar Pied Hornbill *Anthracoceros coronatus*. The hornbills nest in the *Terminalia* trees, which are often cut down for firewood. The FairWild project encouraged local communities, including the Mahadev Koli tribal people, to harvest and sell the fruits instead of felling the trees. The fruit became the first FairWild certified plant ingredient in South Asia. At one project site two-thirds of hornbill nests were found to be in *Terminalia* trees that might otherwise have been felled. In addition, Mahadev Koli people have been encouraged to work through legal processes to clarify land records and claim ownership of Haritaki trees. Claims for over 1,300 trees have now been registered (Bride *et al.* 2015).

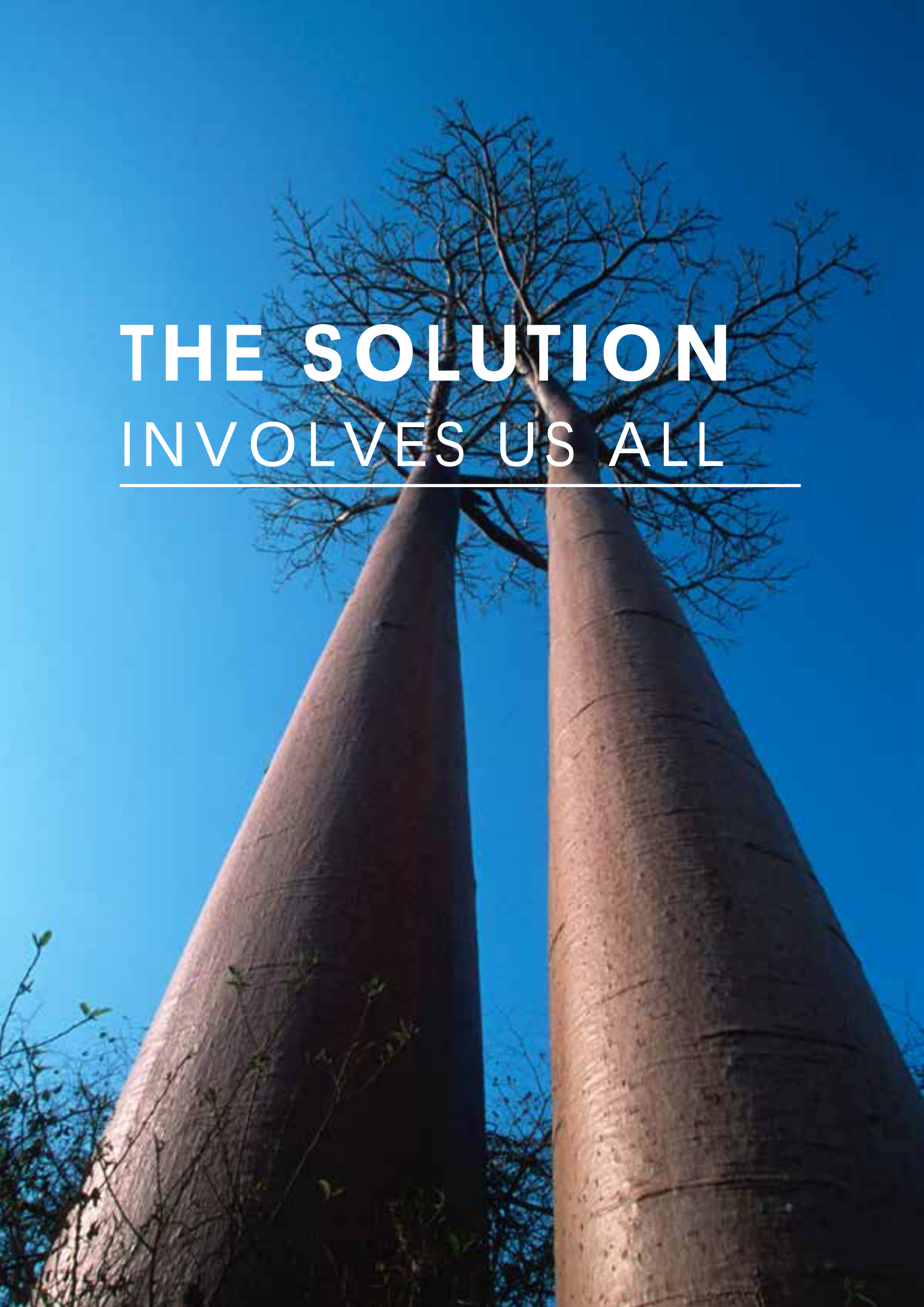


1,300+

haritaki trees ownership claims registered

6+

nesting sites saved



THE SOLUTION
INVOLVES US ALL

11 LOOKING TO **THE FUTURE**

certification systems are a powerful step forward

A certification system such as FairWild clearly offers great potential for ensuring the socially beneficial and sustainable use of wild plant products.

However, it is notable that the formal participation and uptake of the scheme has been slower to date than might have been hoped. The major obstacle appears to be a general lack of awareness amongst consumers and, often, manufacturers of the presence of wild-collected ingredients in the products they use. This will only change if responsible consumers and manufacturers increase their efforts to find out where the products they make use of originally come from and use this information to influence their purchasing decisions. An integral part of this will be the adoption of clearer labelling systems, particularly at point of sale.

Integral to all this is the willingness of consumers to pay a premium for goods that are produced according to specific standards. There is evidence that this willingness exists, although in general such goods at present only take up a very small, although growing, proportion of any given market. This is illustrated by consumption of food and drink certified as organic (which for some consumers at least is in part driven by essentially self-interested health concerns rather than wholly ethical considerations). This takes up only around 1.5% of market share in the UK for example, although as a sector is growing considerably faster than the overall food and drink markets (Soil Association 2018).

Similarly, in the UK sale of Fairtrade products in 2016 accounted for less than 1% of the estimated retail value of the market (some GB£1.6 billion (Statista 2018) out of around GB£192 billion (IGD2017), despite the value having grown sevenfold since 2005. The precise figures will vary from country to country, but are fairly typical of mature consumer economies. They illustrate what a limited impact this kind of trade still has on consumers and markets as a whole, but also what a major opportunity this presents for the future.

12 WHAT **YOU CAN DO!**

be part of the solution

AS A CONSUMER!

- **Look for the logo** and buy FairWild when you can, visit **fairwild.org** and follow **@fairwild**;
- Encourage your retailers to stock **FairWild certified products**;
- **Ask the brands you buy from** if they know where the wild plant products they source come from and if their harvest, trade and production is **fair and sustainable**;
- **Ask your government** whether and how they can ensure that plant products sourced from the wild have been harvested and traded fairly and sustainably;
- **Check your home** – your larder, your spice-rack, your bathroom cabinets – pretty much anywhere. If you find anything that you think comes from the wild, take a picture, post it on #ifoundwild #fairwildweek
- Not sure where to start? Check the **Wild Dozen** on the next page

AS A BUSINESS!

- **Review what supply chains** across your brand rely on wild plant ingredients;
- **Assess the ecological sustainability and equitable trade practices** involved in sourcing wild plants against independent criteria such as FairWild (visit **fairwild.org** for more) and make this information public knowledge;
- Demonstrate commitment to moving all your wild plant supplies to **fully verifiable sustainability**.
- Expand your commitment to **making all your supply chains sustainable**, not just those that involve wild plants.
- Not sure where to start? Check the **Wild Dozen** on the next page

NOT SURE WHERE TO START?

the **Wild Dozen** – key plants to look out for in your products

This section provides examples of species important in trade, wild-harvested, susceptible to harvesting pressure (e.g. overcollected, vulnerable to unsustainable trade), and/or that are in supply chains problematic for social inequality of trading practices.

1. **Frankincense:** an aromatic resin used widely in the cosmetics industry, collected from wild trees in the genus *Boswellia*, mostly in the Horn of Africa.
2. **Shea butter:** extracted from nuts of *Vitellaria paradoxa* trees in the Sahel region of Africa and exported in large amounts for the food (chocolate) and cosmetics industries.
3. **Jatamansi/spikenard:** an essential oil extracted from the rhizomes of *Nardostachys jatamansi* a herbaceous plant that grows wild at high altitudes in the Himalayas. Used in aromatherapy and cosmetics, mostly in India, but also Europe and North America.
4. **Gum arabic:** the resin of *Acacia spp.* trees used as a stabiliser in food products (E number E414), primarily collected from wild trees in the Sahel region of Africa, often in conflict or post-conflict regions.
5. **Goldenseal:** an herbal medicine extracted from the roots of *Hydrastis canadensis*, an herbaceous plant that grows wild in south-eastern Canada and the eastern USA. Used domestically in large quantities and exported.
6. **Candelilla:** a wax harvested from wild *Euphorbia antisyphilitica* in Mexico for use primarily in cosmetic products; the species is included in Appendix II of CITES.
7. **Pygeum:** widely used as an herbal remedy for prostate problems, extracted from the bark of African cherry *Prunus africana* trees growing in moist forests in sub-Saharan Africa and Madagascar; the species is included in Appendix II of CITES.
8. **Argan oil:** a highly valued oil used in cosmetics and cooking extracted from the nuts of the Argan tree *Argania spinosa* which grows in the wild only in Morocco.
9. **Baobab fruit:** harvested from the African baobab *Adansonia digitata* a widespread savannah tree; marketed as a super-food and cosmetic ingredient.
10. **Devil's claw:** a herbal remedy used as an anti-inflammatory extracted from the roots of *Harpagophytum procumbens* a slow-growing plant from arid regions of southern Africa.
11. **Liquorice:** large-scale trade in wild-harvested roots of *Glycyrrhiza* spp., threatened in parts of their range, are used for herbal products, traditional medicines, cosmetics, and food.
12. **Juniper:** it exemplifies wild-harvest and trade in popular medicinal and aromatic plants in Europe (although Juniper also occurs in Asia and North America). Commercial wild collection in Europe is declining as people become increasingly urbanised but it is still an important source of income for some communities locally, particularly ethnic minorities such as the Roma. A lack of equitable trade practices means that collectors are often disadvantaged. Other species in Europe to look out for, are wild garlic, thyme, sage and oregano, as well as rosehips, Leopard's Bane *Arnica montana*, elderberries, blueberries, lime flowers, and even dandelions and nettles!

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a little help from like-minded colleagues

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IMAGE CREDITS

INTERESTED IN FAIRWILD?

get in touch with the team

For more information about sustainable trade in wild plants or how your business can participate in the FairWild Initiative, get in touch with our team to start the conversation.

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