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Horizontal integration of multiple institutions: solution for Yarsagumba related conflicts in the Himalayan Region of Nepal?

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Abstract: The incidence of conflicts among communities over the collection of Yarsagumba, the high value caterpillar fungus, has increased after the Government of Nepal has lifted a ban on its collection and trade in 2001. In most cases, conflicts over Yarsagumba harvesting persist either between locals and outsiders, or between collectors within a local community. In the Api Nampa Conservation Area in Darchula District, Nepal, conflicts are primarily caused by the competi-

tion for control over resources. The rights of the indigenous Shauka community (migratory herders), the Api Nampa Conservation Authority, and the non-Shauka communities of lower villages are at odds due to a lack of clarity, and the absence of coordination regarding the access to resources in the landscape. The Shauka community has restricted the Yarsagumba collection by 'outsiders' to specific and limited areas of their community forest and traditional grazing land. The lowland, non-Shauka community who are dissatisfied with the restrictions have excluded the Shauka people from the utilization of their winter pasture for animal grazing possible through the introduction of a community forestry programme. In this conflict, both communities suffer as the migratory lifestyle of the Shauka has been adversely affected, and earnings of the lowland community from Yarsagumba collection have been reduced. This is a no-win situation. Our study suggests that the Government of Nepal should prepare a national Yarsagumba management policy and local Yarsagumba management guidelines to address conflicts by clearly defining the roles, responsibilities and rights of local institutions and actors, while ensuring the provision of particular services in the community forestry programme to distant and seasonal users.

Keywords: Common pool resources, community forest, inter-community conflicts, Nepal, Yarsagumba collection

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1. Introduction

Nepal has undergone several policy reforms in the natural resource management sector realizing that people's participation in the management, utilization and conservation of common pool resources is important. Community forestry (CF), a forest management model in which patches of government forest are handed over to the local community for management and utilization, has been a way of changing a *de facto* open access resource to *de jure* common property since the enactment of the Forest Act in 1993 (HMGN 1993). This has been widely recognized as a policy breakthrough to provide rights and responsibilities to local people in

order to manage their forest resources (Kanel and Kandel 2004; Shrestha et al. 2010). The policy change has been successful in escaping the ‘tragedy of the commons’ and in attaining sustainable resource management through the establishment of local institutions equipped with socially accepted norms and values (Ostrom 1990; Chhetri and Pandey 1992). Community forestry thereby manages external pressure and community heterogeneity by identifying traditional forest users and providing membership to new entrants who move into the area, under locally established conditions (Adhikari 2001).

Despite the noticeable success, there are some lacunae in the CF model, which is otherwise considered a successful practice in the mid-hills of Nepal. One issue concerns the widespread control of local elites over the community forest user group which challenges the development of a proper CF model (Thoms 2008). Another issue that has been overlooked in CF is the dependence on forest resources and the rights of distant and seasonal users to use these resources (Kanel and Kandel 2004), such as the Shauka community in our case study. In practice, CF arrangements usually determine that households in the proximity of a particular forest patch exercise their usufruct recognised by the state and, in return, take over the protection and management of that forest patch. This arrangement does not leave any room for the rights and responsibilities of users that are distantly located (Singh 2005; Ebregt et al. 2007), and may be exercising their rights seasonally such as migratory herders. Considering this issue fact, the Government of Nepal has initiated the supplementary model of community-based forest management called Collaborative forest management in 2000 in order to involve distant users in forest management (HMGN 2000; Rai 2007). However, in the existing CF model, seasonal users have to pay additional fees to be able to practice their traditional user rights (Kanel and Kandel 2004).

Despite adequate forest management policies and programmes in the mid-hills and the Terai, the critical problems of the CF model particularly regarding the management of common property forest resources in high mountains, remain unresolved (Dhakal 2014). It has neglected the concerns of neighbouring communities and nomadic herders in the high mountains (Skutch 2000). Migratory herders who have been using natural resources including forests and rangelands for livestock rearing during their seasonal movement (transhumance) are facing problems in exercising their traditional rights over forest resources along their migration routes, particularly in low altitude areas where the management of forest patches has been handed over to local users. Under the current practice of community forestry, forest users are identified and memberships are granted based on their proximity and availability to participate in forest management activities.

The present study focuses on conflicts over the access to collection sites of Yarsagumba (*Ophiocordyceps sinensis*), a medicinal herb that is emerging as one of the biggest contributors to the cash economy in high mountain areas of Nepal (Shrestha and Bawa 2013). Yarsagumba, an endo-parasitic complex of a fungus (*Ophiocordyceps sinensis*), is found in alpine and sub-alpine pastures of the Tibetan plateau and the Himalayas within an altitudinal range of 3500–5000 m

(Shrestha and Bawa 2013, 2014). The literal meaning of 'Yartsa-gun-bu' in the Tibetan language ('Yarshagumba' in Nepal) is 'summer grass and winter worm' (Holliday and Cleaver 2008). Nevertheless, it is a parasitic complex consisting of the fruiting body of a parasitic fungus (*Ophiocordyceps sinensis*) and its host caterpillar, the alpine ghost moth of the genus *Thitarodes* (Winkler 2011). This fungus-caterpillar complex is formed through a long process, most of which is still not well known. The host moth lays eggs that later develop into larvae or caterpillars. Before the larvae pupate, they are attacked and infected by the propagules released by the stromata of the parasitic fungus (Cannon et al. 2009). The fungus spreads its mycelium inside the body of the host caterpillar and ultimately kills it. The body of the caterpillar mummifies giving the stroma the opportunity to emerge from the head of the mummified caterpillar. The stroma that is attached to the subterranean mummified caterpillar is harvested by the Yarsagumba collectors. The stroma that is not collected remains in the landscape helping with Yarsagumba reproduction by releasing spores or propagules.

The collection of Yarsagumba provides high economic returns to mountain communities living in subsistence economies with increasing demand (Shrestha and Bawa 2013; Thapa et al. 2014). Since the prices of Yarsagumba have been increasing, a large number of people from lowland areas have been attracted to high mountain pastures for the collection of this species in hopes of making relatively quick income. However, people from high mountain areas do not want others, so called 'outsiders', to encourage competition and to decrease their share of potential income from this high-value product. They base their claim on sole collection and utilization of Yarsagumba on their proximity to the resource. On other hand, people coming from outside of the area to collect Yarsagumba argue that the mountain pastures, where Yarsagumba can be found, do not belong to anyone and cannot be categorized as common property (with clear user rights given to a specific community).

Since Yarsagumba has a well-defined collection season (May to July), thousands of people move to the high Himalayan pastures to collect the so called 'Himalayan Gold' every year. This has increased congestion in collection areas and triggered conflicts among collectors. In addition, there is competition among collectors and local traders to gain control over Yarsagumba habitats. Since the presence of government authorities is limited in these remote areas, most natural resources are managed by nearby local communities that create their own rules and regulations. This has created conflicts between locals and outsiders. Incidents have been frequently reported in recent years, with some conflicts resulting in physical assault, accidental death, and reported murder (Winkler 2010; Shrestha and Bawa 2014). In this paper, we argue that the lack of clear property rights is a source of conflict among different parties involved in the Yarsagumba collection and trade.

1.1. Conflicts over common pool resources

Conflicts over natural resources arise due to scarcity and the multifunctional nature of resources (Upreti 2004). Conflicts over common pool resources and the lack

of adequate conflict management strategies threaten the governance and sustainability of natural resources (Ostrom et al. 1999). Conflicts are inherent in forest-based livelihoods due to policy and legislative failures, institutional deficiencies as well as perceived goal-incompatibility among conflicting parties (Derkyi et al. 2014). This is a common issue, because a large number of people has to compete over limited resources. Ignoring the possibility of conflicts may increase the likelihood of conflict (Ostrom 2008). Additionally, the possibility of interfering with the attainment of one another's goals and natural resource scarcity increase the chances for local conflicts (Derkyi et al. 2014). The difference between users can lead to disagreement in interests and appropriation of the resources that ultimately leads to conflict. In order to deal with a conflict over common pool resources effectively, an in-depth understanding of the conflict and its causes are required (Adams et al. 2003). The Yarsagumba collection conflict and related disputes in the Api Nampa Conservation Area (ANCA) are typical examples of conflicts arising out of the absence of property rights. Although, legally the land belongs to the government, there is no effective monitoring or regulatory compliance in place. Therefore, it is *de facto* an open access resource. However, taking advantage of the participatory management approach of the government, communities living closer to the Yarsagumba collection areas are claiming the resource as common property and not as a common pool resource. This paper aims to provide measures to deal with the existing conflicts in the management of Yarsagumba, including the assessment of socioeconomic dimensions and the evaluation of other dimensions of the conflicts.

2. Theoretical context

Common-pool resources are man-made or natural systems that generate finite quantities of resource units so that one person's use affects the quantity of resources available to another person. The majority of the resource systems that have been appropriated by traditional communities are considered as common property resources by various scholars (Hardin 1968; Ostrom 2002). Hardin (1968) brought greater attention to the 'tragedy of the commons' by demonstrating how overgrazing could lead to resource degradation as individuals try to maximize their personal benefits (Hardin 1968). Hardin further emphasized that the tragedy of the commons is more likely to occur in the case of highly valued, open access commons where either the members of the commons, external authorities, or both do not establish an effective governance regime (Hardin 1968). To overcome this, Hardin recommended that open access commons either should be controlled by a central authority, such as a government agency, or should be privatized by defining the rights of private enterprises to manage the commons (DeYoung 1999).

Beyond the two options offered by Hardin, several scholars have documented cases in which local communities, rather than the government or private actors, have successfully managed resources that are in their proximity and are used to support the provision of several ecosystem services. It is now convincingly recorded that through age-old resource appropriation strategies, implemented

using well-defined rules and locally evolved institutions, several local communities have changed the state of a resource from common pool to common property (Varughese and Ostrom 2001). These community management practices have provided substantial empirical evidence to prove that many of the common pool resources are self-governed with age-old norms and rules, so that human interaction, mutual learning and collective action help managing conflicts (Upreti 2004). It is now a well-accepted fact that it is possible to manage common pool resources through local management systems and to maximize the benefits from the optimum use of resources at the same time (Ostrom 1990; Bardhan 1993; Baland and Platteau 1996). Furthermore, some studies have proposed that some appropriators have designed institutions that cope effectively with heterogeneity, and even conflicting claims and uses, provided that they communicate easily and have a good bargaining capacity (Ostrom et al. 1999; Ostrom 2002). It has also been documented that the allocation of collection areas to communities based on their traditional land use strategies and the control of resource users from outside, cause the self-policing of the resource through the local population (Weckerle et al. 2010; Childs and Choedup 2014). This conflict resolution strategy that has been adopted at local level in Tibetan regions and some parts of Nepal (Weckerle et al. 2010; Childs and Choedup 2014).

In general, common property resources can fulfil appropriators' desires in homogenous settings where communities have similar socio-cultural backgrounds, interests, and endowments (Keohane and Ostrom 1995). Problems of the commons arise in situations where the value of a particular commodity increases abruptly, such as in the case of Yarsagumba which attracts increased interest of neighbouring and/or distant communities. Each appropriator tries to maximize the per unit benefit, ignoring the per unit cost imposed on others. Appropriators start fulfilling their short-term interests, which results in outcomes that are not in anyone's long-term interest (Ostrom et al. 1999). This situation creates conflict between insiders and outsiders.

3. Study area

The Darchula District is the second largest supplier of Yarsagumba after Dolpa District in Nepal (GON 2013). In Darchula, the total supply of Yarsagumba is obtained from six Village Development Committees (VDCs) namely Byas, Rapla, Ghusa, Khandeswori, Gulzar, and Situla. These VDCs comprise settlements of the Shauka community, an indigenous community, living in the upper Mahakali valley in the border area of Nepal and India. In the past, forest patches in these VDCs were managed by local communities as community forests. In 2010, the Government of Nepal established the Api Nampa Conservation Area (ANCA) in the northern part of Darchula District, including the six VDCs named above.

ANCA encompasses an area of 1903 km² comprising the high Himalayan mountain regions between the Mahakali River and the Chamilya Valley. It is bordered by the Tibet Autonomous Region (TAR) of China at the North and

Uttarakhand State of India at the West. The protected area is regulated by the Conservation Area Management Rule 1996 that promotes a community-based management approach (GON 1996). However, local community forests user groups (CFUGs), the institution formed under the community forestry model, are still functional and able to manage forest resources in this area.

Out of the six VDCs in ANCA, the field survey was carried out in three alpine pastures with an elevation range between 3615 m and 4400 m, namely Api, Kuntison, and Budi of Byas VDCs (Figure 1). The survey is based on information from key informants of Yarsagumba collection sites and management regimes. The entire area is a part of the Changru Community Forest managed by the local Shauka community (Figure 2). The whole area is susceptible to conflict as the local Nepali Shauka community shares access to natural resources, including Yarsagumba, with the Indian Shauka community, but does not permit non-Shauka people from lowland villages of Nepal to collect Yarsagumba in Api and Kuntison (here after referred as Api-Kuntison). Instead, they allow collectors from the lowland to use the 'open' pasture in the Budi area. Besides Yarsagumba availability, religious beliefs and customary rights influenced the Shauka community's decision on which sites to consider access for outsiders (Pant et al. 2014).

Lowland villagers claim Yarsagumba as an open access resource considering it is not a regular forest product collected for daily household purposes. Competing claims on open access resources are common when resources are

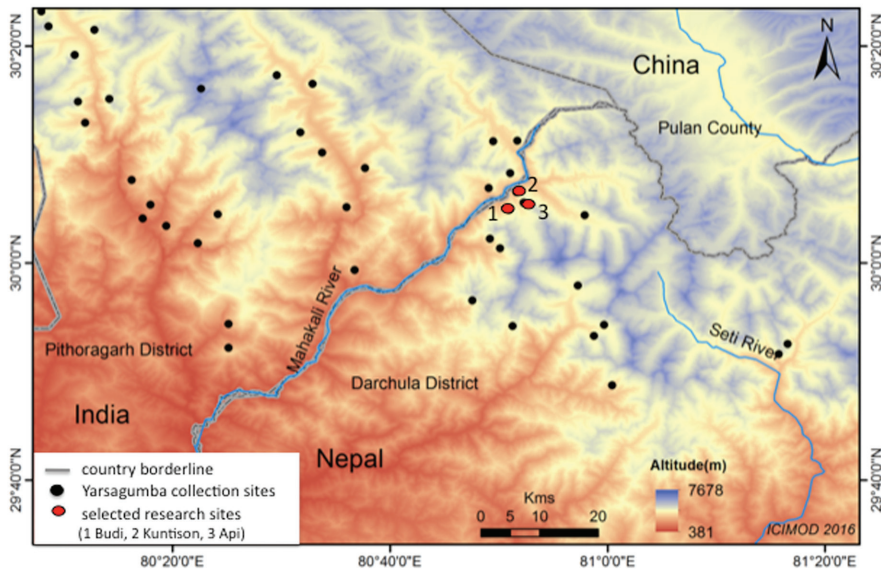


Figure 1: Map of Yarsagumba collection sites in the border area of Uttarakhand State of India and far western Nepal.

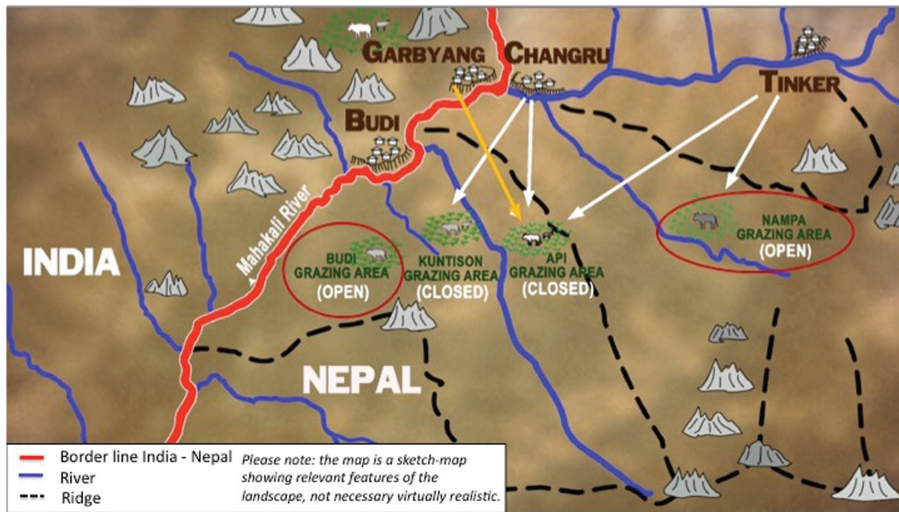


Figure 2: Sketch-map of Byas VDC, with grazing areas and Yarsagumba collection sites.

limited and have a high value (Derkyi et al. 2014; Thapa et al. 2014). This has created conflicts resulting in seven deaths related to Yarsagumba collection reported from different Yarsagumba kuntison collection sites in Darchula between 2013 and 2014 (ANCA 2014).

4. Data collection

This study used both quantitative and qualitative approaches to collect data. Data was collected between March and July 2014 using a questionnaire survey, focus group discussions, and key informant interviews. Ninety-two randomly selected collectors, 51 from Budi (all non-Shauka) and 41 from Api-Kuntison (all Shauka), were interviewed about the collection sites using a semi-structured questionnaire. The questions were related to socioeconomic and environmental issues, institutional arrangements of Yarsagumba collection, trade and quantity collected as well as demographic characteristics of the respondents. Out of 51 respondents from Budi, 37% were male and 63% were female, whereas, of 41 respondents from Api-Kuntison, 56% were male and 44% were female. In addition, four focus group discussions, two in Budi and two in Api-Kuntison, were carried out with Yarsagumba collectors. Each focus group discussion composed of around 15–20 participants including all genders, ages and social status'. The discussion lasted for 45 minutes in average. Focus was placed on existing customary practices, challenges in Yarsagumba collection as well as on the collection of suggestions for improving the management of the resource. In addition, 21 local traders, and 16 tea shop owners were interviewed.

In order to better understand existing issues and to triangulate information from the field, key informant interviews and group discussions were carried out in Khalanga, headquarters of Darchula District, with officials from ANCA, District Forest Office and District Development Committee, as well as district security personnel, representatives of the Shauka community, political party members, and local leaders.

5. Results

5.1. Stakeholders of the conflict

The main stakeholders in the conflict over Yarsagumba collection in ANCA can be categorized into three groups: (i) the Shauka community, (ii) outsiders/ non-Shauka collectors from lower lying VDCs, and (iii) the Api Nampa Conservation Area and other government authorities (Figure 3).

5.1.1. Shauka (Nepalese and Indian)

The Shauka community is an indigenous community of migratory herders of the upper Mahakali valley, the border area of Western Nepal and India, belonging to the same ethno-linguistic group. They historically dominated the trans-Himalayan trade route between the Indian plains to the Tibetan Plateau through the Mahakali valley for centuries. Since the Mahakali river marks the border of India and Nepal, the Shauka community is situated in two countries. In Nepal, the Shauka community consists of 174 households, most of them live in Byas VDC (CBS 2011). The major income sources of the Shauka community nowadays are animal husbandry, subsistence agriculture, and trans-Himalayan trade. The Shauka community has traditionally practiced a system of transhumance between summer and winter pastures. During the summer months (May to October), they stay in the mountain villages of Byas VDC to cultivate crops such as cereals, potatoes, and beans and graze their livestock in the high alpine pastures. During the winter

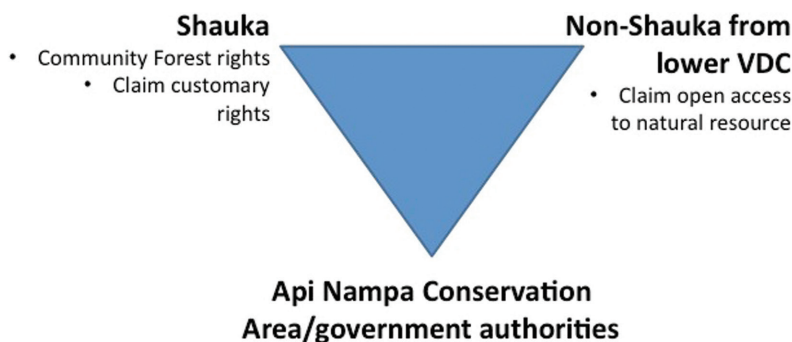


Figure 3: Stakeholders and their issues in the conflict (own source).

months (November to April), they move down the Mahakali valley to Khalanga. This periodic movement is called 'kuncha' in Byasi language. During the summer, male members of the households are either involved in the trans-Himalayan trade to the Tibet Autonomous Region, China, or move to summer alpine pastures to graze their livestock. Crop production plays a minor role in the household economy due to the low availability and productivity of agricultural land.

Nowadays, a major shift in the livelihood strategies of the Shauka people has been observed. Most of the households now keep a smaller number of animals for the transportation of goods as well as for milk and meat production. The decrease in livestock population can also be explained by the diversification of livelihood options by working as seasonal laborers in India and by the desire to be increasingly involved in Yarsagumba collection and trade.

The Indian Shauka community located in Garbyang and Budi villages on the Indian side of the Mahakali river share a common culture with the Shauka community in Nepal (see Figure 1). The social ties between the Shauka communities are, as it seems, relatively independent of the political boundaries between the two countries. One interview respondent said: "We have a 'food-and-daughter' relationship with the Indian Shauka, and share our joys and sorrows with them. We generally leave our animals in the Garbyang area for grazing during the winter. In return, Indian Shauka can access some summer alpine pastures in Nepal for livestock grazing and recently for Yarsagumba collection." Although the statutory rules are different in the two countries, the Shauka communities of the two countries claim to follow customary rules to regulate the sustainable use of their pastures. This system has been *de facto* used to resolve disputes arising due to the use of resources.

5.1.2. Non-Shauka from lower VDCs in Darchula (Nepal part)

Most of the Non-Shauka households living in the VDCs at low altitudes belong to different castes. They practice subsistence farming as well as growing crops on steep terraces. They have few animals and collect Non-Timber Forest Products (NTFPs) for their own consumption and sale. Over the years, more and more men have left the villages to work as wage laborers either in the urban centers of Nepal or abroad. Women are solely responsible for the cultivation of crops, the management of household activities, and the care of family members including children.

Given this situation, it is not surprising that the discovery of Yarsagumba in high alpine areas is considered a lucrative income source by these people. Consequently, over the last few years, most of the men who migrate for employment opportunities return home during the Yarsagumba collection season while the whole family often accompanies them to the Yarsagumba collection sites during that time. Due to the overall deprivation and limited sources of income, these households are ready to take any risks to collect Yarsagumba.

The Shauka only allow non-Shauka people to collect Yarsagumba in the Budi area. Limited access to Yarsagumba habitats has created dissatisfaction and annoyance among non-Shauka communities. They hold that they too have the

right to access community forests in Nepal as they are legal citizens. The situation is aggravated since the local Shauka community allows Indian Shaukas, who are perceived as ‘foreigners’, to collect Yarsagumba in Nepal. Furthermore, they consider Yarsagumba not as a regular forest product such as fuelwood and fodder, which are used for sustenance. Therefore, Shauka people do not have usufruct and cannot restrict the access of non-Shauka people to the Yarsagumba collection sites in the name of the property rights of the local Changru community forest user group.

5.1.3. Api Nampa Conservation Area (ANCA) and other government authorities

Twenty-one of the 41 VDCs of Darchula District fall within the territory of ANCA and are managed by the government authority of ANCA. ANCA follows a community-based management approach with the aims of conserving natural resources and improving the livelihoods of people living within the conservation area. The management structure encompasses two bodies: the government authority, assigned by the Department of National Parks and Wildlife Conservation, and the community structure with representatives from each VDC forming the district-level ANCA Management Council. As ANCA was only established in 2010, community members are still skeptical of the recently formed conservation area authority. Presently, the ANCA government authority collects royalties from Yarsagumba collection and issues permits to the traders, functions that were previously carried out by the District Forest Office, the government authority that operates the community forestry program outside of protected areas. In the year 2014, ANCA collected royalties of NPR 8,630,000 (NPR 1 = USD \$ 0.01) from 863 kg of Yarsagumba collected and traded in the region (ANCA 2014). Besides the issuing of permits and the collection of tax, ANCA is the rightful institution responsible for law and order in the ANCA protected area. In addition, it plays a role as facilitator in the area monitoring the situation and bringing the different district authorities and community committees together in order to mitigate conflicts.

5.2. Underlying causes of conflict related to Yarsagumba collection

There are several proximate causes that have contributed to conflicts related to Yarsagumba collection including the socioeconomic condition of different social groups, political complexities, the environmental situation in the area as well as existing formal and informal institutional arrangements. These multifaceted and intertwined issues have hindered the process of conflict resolution further.

The main reason for conflict is the demand for access to alpine pastures where Yarsagumba is found from different social groups. These conflicts have, at time, escalated into physical violence between the Shauka and non-Shauka communities. There are also other underlying causes that ignite and influence the conflict at the local level: degradation of natural resources, conflicting policies on the

regulation of the extraction of non-timber forest products including Yarsagumba, and diverse institutional arrangements on the ground.

5.2.1. Conflicting policies and regulations related to Yarsagumba

Inconsistencies in the policies and practices related to Yarsagumba collection were discussed during a national workshop on the conservation and management of Yarsagumba in the Kailash Sacred Landscape of Nepal in Kathmandu in April 2014 (DPR 2014). Various overlapping policies, regulations, guidelines, and acts, as well as diverse agencies implementing those policies, were found to be related to the regulation of access to Yarsagumba collection sites in Darchula and other parts of Nepal (see Table 1). Conflicts in legislation have resulted in confusion among local government agencies and community organizations regarding their rights, roles, and responsibilities. According to the Herbs and Non-Timber Forest Products Development Policy, the Government of Nepal encourages the harvesting and processing of NTFPs including Yarsagumba by local communities as an additional source of household income in mountain areas (HNCC 2004). Although the policy aims to promote the conservation and preservation of high-value NTFPs, particularly medicinal plants, sustainable harvesting practices for most NTFPs, including Yarsagumba have not been observed, causing a rapid decline of the natural resource base (Banjade and Paudel 2008; Shrestha and Bawa 2013).

The Forest Act 1993 and Forest Regulations 1995 consider CFUGs as an autonomous body responsible for the management, conservation, and utilization of forest products (GON 1993; GON 1995). Nevertheless, in practice, CFUGs in the ANCA area have been issuing permits for the collection of Yarsagumba in their community forests without any legal basis. It is not clearly stated in the laws and regulations of forest management whether Yarsagumba is included in the list of forest products that local communities have control over. Table 1 gives an overview of the existing policies, acts and regulations related to Yarsagumba management. However, local communities do claim that it is their right to control Yarsagumba collection based on customary practices, and the fact that the caterpillar fungus is available in their community forest area. Furthermore, a lack of transparency in practices as well as ambiguity in the case of regulatory action have led to mistrust between communities and government authorities.

5.2.2. Community forest, customary rights and distant users

Traditionally, the Shauka community practices vertical transhumance with summer pastures in their own traditional homeland in Byas VDC and winter pastures around the town of Khalanga. After the Government of Nepal introduced the community forestry programme in mid 1970s, the management of forested areas which were mostly used as winter pastures by the Shauka community, was handed over to people residing in nearby villages. The community forest constitution drawn by the CFUG restricts access to forests and pastures for resource extraction and use by those who were not members of the community forest user groups, which included the Shauka.

Table 1: Relevant policies and regulations related to Yarsagumba management in Darchula District.

Policies and regulations	Major focus	Line agencies under Ministry of Forest and Soil Conservation
Herbs and Non-Timber Forest Products (NTFP) Development Policy 2004 (HNCC 2004)	<ul style="list-style-type: none"> • Calls for private sector participation in NTFPs development • Emphasizes local processing • Stresses conservation and preservation of high value herbs and NTFPs and as well as regulations on the amount to be harvested each season 	Department of Plant Resources
Government of Nepal Gazette 2016 (GON 2016)	<ul style="list-style-type: none"> • Allows users to collect Yarsagumba by paying NRP 25,000/kg 	Ministry of Forest and Soil Conservation
Conservation Area Management Rules 1996 (GON 1996)	<ul style="list-style-type: none"> • Calls for the management of conservation areas through a community-based approach • Provides communities the right to manage the area through the development of village management plans 	Department of National Parks and Wildlife Conservation
Community Forestry Directive 1995 and Community Forestry Programme Guidelines 2008 (DOF 1995; DOF 2008)	<ul style="list-style-type: none"> • Government retains ownership of forest • CFUG holds the right to use and make management decisions • CFUG develops 5-year operational plan and annual plan, which need approval of government authority • Government approves any sale outside the group, CFUG members are allowed to harvest, process, and sell timber and NTFPs 	Department of Forests
Forest Act 1993, Forest Regulations 1995, Forest Sector Policy 2000 (GON 1993; GON 1995; GON 2000)	<ul style="list-style-type: none"> • Provides legal document about property rights and user rights • Regulates extraction and usage of forest products 	Department of Forests

The introduction of the CF programme in this area has jeopardized the nomadic lifestyle of the Shauka community by excluding them from the resources they have been using for decades, and which are essential during their seasonal movement between Byas VDC and Khalanga (Figure 4). They now have to get permission from the respective CFUGs to travel through community forests and to extract fuelwood and fodder for cooking and feeding their livestock. One Shauka respondent said, “We require fuelwood in the winter. If non-Shauka people provide us with access to collect forest resources from their CF during the winter, we would also provide them access to the restricted areas of our CF to collect Yarsagumba.” Similar conflicts were observed in other parts of the country after handing over



Figure 4: Sketch-map of Api Nampa Conservation Area with the migratory route of the Shauka (own source).

community forests to local people, where traditional users, who reside far from the resources are excluded from resource utilization (Upriety 2006).

The Yarsagumba collection sites in our study lie within the boundary of the Changgru Community Forest in Byas VDC which is managed by the Shauka community. Their approved five-year community forest operational plan which is the major document outlining how the CFUGs will manage their forest, expired in 2012. However, users have continued forest management practices that include a provision to protect their area from natural calamities and external influences. Since the area falls into the territory of the ANCA authority after its designation as conservation area, the forest patches are regulated by the recently approved ANCA management plan. However, the CFUG operational plan still needs further approval.

Based on the expired operation plan, the Shauka community restricts access to their community forest and usage of its natural resources including the extraction of Yarsagumba. The Shauka community has made the provision that Yarsagumba collectors from non-Shauka communities can pay an entrance fee to enter the Budi area for Yarsagumba collection. The entrance fee is not uniform and depends on

the origin of collectors, but ranges mostly between NPR 200 and 500 per person. It is not clear how the collected fees have been utilized, and fee payers suspect that the collected amount has been embezzled. Therefore, they do not want to pay the entrance fee. This too has prompted inter-community conflicts.

5.2.3. Degradation and management of natural resources at Yarsagumba collection sites

The Yarsagumba habitat in the 'open' Budi area is unsuitable to accommodate a large number of collectors. Due to rising number of collectors, the likelihood of a decent harvest in the Budi area is now considerably lower, as can be seen in Table 2. Therefore, some of the non-Shauka collectors prefer to enter the restricted, 'closed' sites of the Api-Kuntison area, where the prospect to collect a more Yarsagumba is substantially higher.

The total number of Yarsagumba collected per family in Budi has decreased over the last 5 years, from an average of 475 pieces per family in 2010 to an average of 186 pieces per family in 2014. However, this trend cannot be observed in the Api-Kuntison area (see Table 2). More than 85% of the total respondents in the Budi area stated various reasons for the decrease in per capita Yarsagumba collection. The most common perceived reason for this decline is over-exploitation due to the increased number of collectors. In Api-Kuntison, the per capita number of Yarsagumba collection has increased slightly from 249 pieces per family to 283 pieces per family on average over the last 5 years. This development might be caused by a smaller number of collectors at Yarsagumba collection sites in recent years after the community established strict regulations for collecting the caterpillar fungus. Moreover, the community has improved camp site conditions in the Yarsagumba collection area by managing waste disposal, allocating fixed areas for defecation, and regulating fuelwood collection to reduce deforestation and forest degradation. However, it is unclear, whether these improvements or other factors have contributed to higher Yarsagumba yields.

In 2010, the average income of collector families at the closed site in Api-Kuntison was 15% higher than the income at the open site in Budi; this number rose to 60% in 2014. The duration for Yarsagumba collection increased from 49 to 55 days in Api-Kuntison, which might have contributed to the increase in per capita income. Although there was a slight increase in the collection season's duration from 50 to 53 days in the Budi area, the income per family did not increase at the same rate as in Api-Kuntison.

5.2.4. High contribution of Yarsagumba to household income

The competition for Yarsagumba is not surprising. Its possible share in the annual household income outweighs other traditional income sources, including agriculture and livestock (Winkler 2009). Studies carried out in other parts of Nepal also show that Yarsagumba collection's contribution to household income is highly significant, working out to almost 72% of household income in Dolpa, Nepal (Shrestha and Bawa 2014). These earnings, which originate from only 2 months of engage-

Table 2. Average number of Yarsagumba specimens collected per family and income from Yarsagumba in Budi and Api-Kuntison over the last 5 years (standard deviation in parentheses).

Collection site	Particulars	Year				
		2010	2011	2012	2013	2014
Budi (open to outsiders)	Collection (average number)	475 (404)	297 (217)	230 (169)	198(174)	186 (126)
	Average income (NPR)	36,000 (26,643)	36,600 (32,272)	40,500 (39,700)	51,700 (51,841)	58,500 (51,841)
	Duration of stay	50 (11)	52 (12)	51(13)	51 (14)	53 (19)
	Daily income (NPR)	722	709	798	1014	1105
	Price/ piece	76	123	176	261	315
Api-Kuntison (closed to outsiders)	Collection (average number)	249 (157)	231 (132)	223 (152)	281 (155)	283 (177)
	Average income (NPR)	41,500 (61,867)	32,500 (22,802)	42,100 (36,051)	62,800 (39,252)	94,000 (72,692)
	Duration of stay	49 (18)	50 (18)	51 (19)	51 (18)	55(31)
	Daily income (NPR)	843	655	820	1228	1721
	Price/piece	166	141	189	223	332

ment, can support a family for an entire year. This suggests that the opportunity costs of not participating in Yarsagumba collection are very high for collectors, which prompts them to even risk their lives. Approximately 96% of the respondents in Budi and 73% in Api-Kuntison stated that Yarsagumba collection is their primary source of income, followed by subsistence agriculture and seasonal labor.

The Yarsagumba collection contributes to new cultural developments in the mountain regions of Nepal. More than two-thirds of the respondents (68%) reported that Yarsagumba collection is highly profitable. Because of this, other activities such as farming have become secondary, although most of the Yarsagumba collectors are traditionally farmers (Negi 2007). During the collection season, virtually all socioeconomic activities come to a halt: schools close, government offices in the district headquarters of these mountainous districts become less functional, and social life is severely affected (Shrestha and Bawa 2014).

Conflicts related to Yarsagumba collection are deeply rooted, with physical confrontation only as a superficial expression of deeper issues. They are related to unclear land use rights and changes in the land management regime without consideration of the traditional, customary rights of specific social groups. Current policies are unable to address new issues emerging with the rising importance of Yarsagumba collection. While drafting the policy documents, no one foresaw the increase in demand for the caterpillar fungus in international markets, hence no provisions were made. Policy change and alterations in related legislation have not been flexible enough, which has allowed this serious conflict to continue. While advocating for local control over natural resources, existing policy are lacking a holistic view not addressing the rights and needs of all stakeholders, including those distantly located and those who hold access rights only for a certain period in a year.

Table 3 summarizes the underlying causes for conflicts in ANCA. They have been differentiated between causes directly related to Yarsagumba collection and trade as well as indirect causes that have stimulated the conflict.

6. Conclusion – opportunities to deal with the conflict

In the mountain areas of Nepal, customary systems based on local institutions exist in order to regulate access to, and use of, natural resources, which not managed well are often causes for conflict between different groups (Upreti 2004; Aryal et al. 2013). However, sudden changes in the local context caused by the rising importance of economically high value goods such as Yarsagumba, can disturb the existing management and governance systems as well as hinder effective conflict mitigation and resolution. Considering this situation, the national government may need to interfere in order to manage the conflict, to clarify rights, roles and responsibilities as well as to build institutions that are able to resolve future disputes. So far, the Government of Nepal has not found a definitive way to deal with the increasing conflicts in an integrative manner, neither at the national level nor at the local level. At the local level in ANCA, efforts were made to elaborate and implement local Yarsagumba management guidelines. These include the

Table 3: Underlying causes for conflicts within ANCA.

	Causes of conflict	
	Directly related to Yarsagumba collection	Indirectly related to Yarsagumba collection
Socioeconomic	High return of investment on Yarsagumba	High poverty rate in the district forces the communities to look for alternative income sources
Policies	Lack of specific policy concerning Yarsagumba in Nepal (it is regulated under the Non Timber Forest Products policy of 2004, which lists Yarsagumba as an open access natural resource) The amount to be paid to the government authority for trade changed from NPR 10,000/kg in 2007 (GoN Gazette 2007) to NPR 25,000/kg in 2016	Participation of distant users and nomads in community forest management
Government authorities	Limited presence of government authorities in collection sites during the collection period to ensure property rights are obeyed	Various overlapping legal institutions in ANCA without coordination stimulate mistrust between communities and government authorities
Institution – Community Forest	<ul style="list-style-type: none"> – Community forest regulations enable the Shauka community to make decisions on access to collection sites – Social ties of Nepali Shauka are closer to Indian Shauka than to non-Shauka communities of Nepal – The Shauka established Yarsagumba management committees for open sites such as the Budi gazing area 	<ul style="list-style-type: none"> – Community forest regulations and formation changed access for Shauka communities to forest areas during transhumance movements – Customary rights were not considered while creating the community forests and within the 5 year operational plans
Institution – ANCA	VDC-level ANCA Conservation Committees are not yet established or functional	ANCA structures are not yet fully established, functional, or accepted by the local communities
Environment	<ul style="list-style-type: none"> – Collection period lasts only for 2 months per year – Decreasing availability of Yarsagumba due to apparent overharvesting 	Productivity of agricultural land is decreasing which reduces household income and forces population to look for alternative income sources

clarification of roles and responsibilities in ANCA, the management of camp sites as well as collection of fees and the issuing of permits for Yarsagumba collection. However, in order to create a sustainable solution integrating user rights of distant communities, all stakeholders have to be involved in the process to clarify and agree up on responsibilities, roles and activities. As one crucial precondition for successful dispute mitigation and resolution is trust between all stakeholders, obvious and underlying tensions have to be made transparent. Only this way, an atmosphere of open discussions and negotiations is guaranteed.

The present study suggests two strategies to minimize conflicts: one at the local level and another at the national level. At the local level, a give-and-take

approach may help resolve the conflict. In order to get access to the closed sites for Yarsagumba collection, the non-Shauka community has to allow the Shauka community to use their traditional winter pasture without any hindrance. Alternatively, it would be also possible to open up the entire area that falls into the territory of ANCA to all residents living inside the conservation area ignoring the site specific forest user group approach. At the national level, the Government of Nepal has to prepare a clear policy and define the role of local institutions and actors in Yarsagumba collection and management. In addition, the Community forestry program must focus on the involvement of distant and seasonal users in the management systems of the landscape. The contribution of these groups in Community forestry management may not be feasible in terms of labor, but may be relevant in monetary terms. Other findings include:

- Policies need to be flexible enough to address changing needs of people.
- Multiple institutions are not necessarily a limiting factor, and in the majority of cases, are necessary. However, if there is no horizontal integration and coordination, these institutions are likely to work at suboptimal due to conflicts of interests.
- Clarity of rights and reliability of legislative provisions are crucial factors.

It is important to note that each location has its specific dynamics, customs, situations, and social groups that local governmental authorities have to consider and include in their decision making. Only then can conflicts be minimized, and natural resource management strategies be accepted by all social groups.

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