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LIVING WITH BEES: A LOOK INTO THE RELATIONSHIPS BETWEEN
PEOPLE AND NATIVE BEES IN WESTERN NEPAL

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Social Change, SIT Study Abroad

Abstract

Nepal is home to four native species of bees and as many methods to produce and gather their honey. In recent decades, several domestic and international organizations and governments have researched bee populations and provided financial and technical support through subsidies, trainings, and materials in efforts to conserve biodiversity and develop beekeeping in Nepal. However, little attention has been given to human-bee connections, the factors that shape them, and how they can provide a lens for understanding human-environmental relationships. Thereby, this study aims to exploring a selection of people's experience with beekeeping and perspective of bees in order to illuminate geographically specific human-environmental relationships. Three case studies each focused on a different form of honey production/collection, namely box-hive beekeeping, log-hive beekeeping, and honey hunting were conducted in three locations of Western Nepal. Implications manifest in the data posit that what connects humans and bees in Western Nepal varies between unique environmental settings, from which and in which social and cultural values both emerge and are enacted. Factors such as knowledge, care and control of bees, viability of honey production, and value of and reliance on honey and bees shape human-bee relationships. Connections between people and bees reflect the geographic specificity and dynamic fluidity of human-environment relationships that in turn demonstrate pushes and pulls of changing cultural tides in Western Nepal.

Keywords: Beekeeping, honey hunting, human ecology

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I am grateful for my Kathamndu homestay family, who truly did create a home away from home for me. Similarly, I feel so fortunate to my Khibang homestay family, especially my didi who accompanied me every step of the way through village life. And to all my research participants, thank you for opening your arms and hives to me. At the end of the day, this project only exists because those people so willingly shared their culture, experiences, and themselves with me. This nurturing network of people has made my experience of Nepal what it is—messily real and magical—thank you.

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Introduction

I grew up spooning wildflower honey gathered by my neighbor Bud's bees who lived down our dirt road. Each season you could taste the assortment of plants in bloom—rhubarb, mint, raspberry. But it was not until I came to Nepal that I learn the extent to which we humans *need* bees, and not just for indulgence in their sweet honey. And it was in Nepal that I too discovered honeybees live in more than just boxes. In fact, news to me, they make homes in hollow logs and reside on cliff sides. I picked up a book from SIT Nepal's library about honey hunting, the perilous harvesting of wild-bee-honey from cliffs in the Himalaya, and immediately became fascinated. From here, my journey to meet Nepali bees and their keepers began.

This study explores the interconnection of Nepali beekeepers and honey hunters to native bee species, the factors that shape these relationships, and how they vary between method of honey production/collection. It aims to provide a lens for analyzing present day relationships between people and nature, especially in the context of a poor, developing country facing the challenges of climate change and manifold inequities. Through interviewing beekeepers and one honey hunter in the Kaski and Mygadi districts of Western Nepal this study investigated the topography of beekeeping practices and honey hunting traditions with *Apis cerana* and *Apis laboriosa* in the Annapurna region.

I posit that what connects humans and bees in Western Nepal varies between unique environmental settings, from which and in which social and cultural values both emerge and are enacted. Factors such as knowledge, care and

control of bees, viability of honey production, and value of and reliance on honey and bees shape human-bee relationships. Connections between people and bees reflect the geographic specificity and dynamic fluidity of human-environment relationships that in turn demonstrate pushes and pulls of changing cultural tides in Western Nepal.

Literature Review

The relationship between bees and humans has a deep history. Earliest evidence of humans hunting for honey dates back to 13,000 BC (Dewey 2018). The cultural significance of honey likely has equally extensive roots, as proven by folklore and tradition involving bees in indigenous communities of Tanzania and the Brazilian Amazon (Athayde, Stepp and Ballester 2016) (Morse 2006). Mesolithic rock paintings found in central India signify the beginnings of honey hunting in Asia around a similar time (Kristky 2017). However, beekeeping in which humans create an artificial cavity for bees to did not spread through Asia until around 300 BCE (Kristky 2017). Presumably since then, log-hive beekeeping has been a tradition across Nepal (Thapa, Aryal. and Jung 2018). It was not until 1990 that westerners introduced box-hive beekeeping along with the European hive bee, *Apis mellifera*, for the purpose of commercial honey production (Gurung, Ahmad and Joshi 2002).

Nepal is home to four native species of honeybee: *Apis cerana*, *Apis dorsata*, *Apis laboriosa*, and *Apis florea* (Ahmad and Partap 2008). *A. cerana*, or Asian hive bees, inhabit the Mid Hills region and are traditionally kept in log hives though are also suitable to box hives. *A. dorsata*, colloquially known as

jungle bees, build hives in tropical and subtropical forests. *A. laboriosa*, the world's largest honey bee, known as the "Black Himalayan Giant" live high on cliff sides in the mountains. *A. florea*, or dwarf bees, inhabit the plains of southern Nepal (Joshi n.d.) (R. Thapa n.d.). Additionally, the European hive bee, *Apis mellifera*, introduced about thirty years ago is best suited to the plains region, or Terai area (Gurung, Ahmad and Joshi 2002).

Though box-hive beekeeping, which Nepalis call *adhunik ghaar*, "modern hive" beekeeping, has increased especially with European hive bees in the Terai, people in still practice ancient forms of honey hunting from cliffs and in forests, and keep log hives (R. Thapa n.d.). In fact, for the Gurung people of Kaski district (the ethnicity and home region of participant 8) honey hunting is essential to their culture, "a glue for social cohesiveness and unity" (Ahmad, Joshi and Gurung 2003).

In addition to the importance of honey harvesting traditions, honey itself and the bees who make hold significant value in Nepali life, culture and society for social, medicinal, spiritual, religious, ecological, and economical reasons (Partap 2019). In Hindu traditions, people refer to bees as Laxmi, the goddess of wealth. Given this sanctity, a beekeeper may refuse to allow outsiders and, in the past, women to touch their bees (Partap 2019). In fact, as one Nepali proverb goes, "killing one bee equals the sin of killing seven cows" (Pudasaini 2018 pp.72). Honey holds equal weight; in fact it is a key ingredient in the Hindu drink of immortality, Panchamrit (Joshi n.d.). Upon birth into a Hindu family a baby is customarily fed a spoonful of honey before tasting anything else (Partap 2019).

Moreover, honey is often exchanged as a gift between families and community members (Partap 2019).

Honey's significance does not stop at sacrament. In Nepali households, people regularly take a spoon of honey for nutrition, to boost immunity, and treat illness (Joshi n.d.). It is also applied topically to treat infections and wounds (Joshi n.d.). Honey's medicinal properties, knowledge of which is common and generations old, are especially important in remote parts of Nepal where access to health services is limited (M. B. Gurung 2006). Beyond providing medicine, bees play a crucial role in maintaining biodiversity and pollinating agricultural crops (Partap, Gurung and Manandhar 2013). Finally, both of growing importance today and throughout history, especially where rural mountain farmers could not grow rice, honey and other bee-products provided a means for bartering and now a valuable source of income (M. B. Gurung 2006). While small-scale log-hive beekeeping can generate additional income with minimal investments (M. B. Gurung 2006), where greater access to markets exists, box-hive beekeeping can even provide a full time job (Sivaram n.d.).

According to MB Gurung, F. Ahmad, and SR Joshi of the International Center for Integrated Mountain Development (ICIMOD) these remote places have a "rich tradition of beekeeping," and the people possess "a wealth of indigenous knowledge in sustainable management of [bees]" (Gurung, Ahmad and Joshi 2002). Such "traditional ecological knowledge" has increasingly garnered recognition by academics and policy makers as crucial to adapting to heightened environmental change (Athayde, Stepp and Ballester 2016).

However, economic reliability of beekeeping could face challenges as the stability of Nepali bee populations encounter threats. Media representations from sources such as The Kathmandu Post and The Nepali Times paint an alarming picture for the health the Asian hive bee and the “Black Himalayan Giant” honeybee because of climate change, pesticide use, monoculture, habitat destruction, and disease (Heaton 2019) (Awale 2017). The European hive bee created habitat competition for native species and introduced foreign diseases and parasites native bees did not have previous immunity to (Ahmad and Partap 2008). Deforestation and changing land use have similarly impacted bee habitat and pollination patterns (Gurung, Ahmad and Joshi 2002). Furthermore, increased use of agricultural pesticides poisons native bees; if a bee pollinates a plant recently treated with chemicals it dies immediately (Gurung, Ahmad and Joshi 2002). The effects have already manifested in declining native populations of Asian hive bees and cliff bees (Ahmad and Partap 2008).

Both in response to aforementioned species conservation concern and in order to facilitate diversified income generation, especially for disadvantaged rural populations, numerous domestic and international organizations and governments have extensively researched native Nepali bees and invested in the development of improved apiculture (Partap, Gurung and Manandhar 2013). For example, in the late 1990s ICIMOD launched the Indigenous Honey Bee Project with support from the Austrian Government, which continued through 2012, to achieve aforementioned objectives (Ahmad and Partap 2008). Similarly, German development agency, GIZ, the FAO, US State Department, and other institutions

have provided financial and technical support through subsidies, trainings, and materials (Partap, Gurung and Manandhar 2013) (Thapa, Aryal. and Jung 2018). Though development programs have met success, apiculture experts Ratna Thapa, Sunil Aryal, and Chuleui Jung insist that further training, research, and conservation efforts are needed both to maintain bee populations and meet Nepal's potential for honey and other bee-product production (Thapa, Aryal. and Jung 2018).

It is important to consider such rhetoric of conservation within theory of human-environmental relationships. In his ethnographic works studying rural mountain communities in Nepal, Ben Campbell argues against dichotomous perspectives that construct nature either a means for development or an isolated entity in need of protection (Campbell 2005). He posits rather that the environment is simultaneously resource, adversary, divinity and culture (Campbell 2005). In turn, relationships to nature are shaped by continual, fluid, changing interactions with the environment and are thereby complex, historical, and contested (Campbell 2013). In his study of Tamang communities in Rasuwa district he makes specific arguments about human-livestock relationships that connect to human-bee relationships. He quotes Ingold, who posits “that animals are, like human beings, endowed with powers of sentience and autonomous action, which have either to be respected, as in hunting, or overcome through superior force, as in pastoralism” (Campbell 2013 pp.201). Though Campbell criticizes Ingold's analysis for overlooking human-animal relationships' specificity to place and culture, he articulates an important

understanding of animal independence (Campbell 2013). This independence however, does not negate that the livelihood of humans and animals are inextricably linked and a natural product of human predispositions to provide care. In studying various interactions of bees and people it is useful to consider the autonomy of animals and the entanglement of human and animal well-being within and as a part of varying relationships to geographically specific environments.

Literature specific to beekeeping in Nepal stresses economic capacity building and biodiversity conservation, but does not detail whether or not these same factors shape the relationships between bees and the people who keep them and hunt their honey. Nor does it interpret culturally mediated interactions of indigenous knowledge and modern technology and how new trainings impact villagers' perspective of bees. Similarly, information regarding various methods of beekeeping and honey hunting fails to interrogate how methods of honey production influence the way people *value* bees and their honey. Thereby, this study builds on existing literature to explore the interconnection of Nepali beekeepers and honey hunters to native bees and the factors shape these relationships. In turn, it provides a lens to analyze contemporary relationships between people and their environments, especially in the context of a poor, developing country facing the challenges of climate change and manifold inequities. Finally, it analyzes themes of development and social change that manifest through human-bee relationships and considers the lessons all people can

take away from Nepali bees and their keepers about how to relate with the natural environment which they are a part?

Methods

Study Design

My research concerns two indigenous bees species *A. cerana* and *A. laboriosa*, and three methods of honey production/collection, log-hive, box-hive, and cliff-hive hunting in the Midd Hills region of Western Nepal between 1200m and 3000m. Through investigating a scope of apiculture practices in the Annapurna, I aim to illuminate how the life of bees and their keepers entwine. To do this, I conducted three separate but connected case studies each focused on one of three different form of honey production. Using a series of case studies allowed for a wide breadth of participants and the integration of observational data.

Though I utilized case study to explore and connect various forms of beekeeping, I also took a phenomenological approach to investigate individuals' experiences, perspectives, and construction of value. Using phenomenology also enables probing into contextual meanings, patterns, and themes manifest in the data that relate to larger social and development patterns in present day Nepal as well as theories of human ecology. I grounded my research in a constructivist epistemology, adopting the view that individuals construct meaning, and rejecting the view that a singular, objective truth exists (Gray 2014). Though I began with a broad theoretical perspective and lose hypothesis that the method of honey production will shape the human-bee relationship, my methods tended towards an

inductive exploration, which allowed meaning to arise from the data, while also enabling the correlation of variables and discernment of causal relationships.

Over the course of two weeks I conducted 8 interviews in three locations of Western Nepal. I also conversed informally with peripheral participants. I made continual field observations to document physical and social settings, hives and honey production methods, and participant characteristics and body language. Contextual information came from a combination of these observation and literature review, and though incredibly important, is likely imperfect (see limitations section below).

For the first case I interviewed two apiculturists in Pokhara who keep *A. cerana* bees in modern hive boxes. Secondly, in Khibang I interviewed five men who keep log hives, one of which also has two box hives, and had informal conversations with other villagers. Finally, in Lower Sinuwa, I stayed for 4 days at a trekking lodge owned by a honey hunter, where I interviewed him twice and conversed with his relatives.

Asides from one interview with a fluent English speaker, I conducted interviews in Nepali without the assistance of a formal translator and, when authorized by the participant, audio-recorded interviews for later transcription by my language teachers. All interviews took place in or outside participants' homes.

I often started interviews by asking to see participant's hives. This allowed interviewees to show me rather than tell me about their bees. As a result, I interacted with bees as well as their keepers and was able to observe interactions between them. I looked inside many hives, felt bees crawl on my skin, witnessed

the harvesting of comb from a log, taste various types of fresh honey, and watched bees build hives on a cliff-side. Interview questions were prepared ahead of time and began by inquiring about quantitative information such as the location and number of beehives and gradually moved towards more cognitive questions about people's reliance on bees and the importance of honey in society. Though questions were prepped before interviews, the order, wording, and type of questions varied with each interview. Structure depended on the flow of conversation, type of beekeeper, case study location, and knowledge and interests of the participant. Additionally, before interviews I sometimes reviewed relevant literature to generate questions specific to the participant's form of beekeeping. Throughout the research period I combined multiple methods and triangulated between literature, interviews, and observations to assess findings, connect cases, and revise research questions and methods between interviews.

Participant selection

Participant criteria hinged on experience in wild honey harvesting and/or beekeeping as well as their availability and willingness to participate. I used references from apiculture experts, namely scientists at the ICIMOD, to select box-hive beekeepers and honey hunters. Of those contacts, whom I interviewed depended on who answered the phone and invited me to visit. In Khibang, my homestay sister, with whom I had previously established a relationship during SIT Spring 2019 program's major excursion, acted as my key-informant to recruit villagers with log hives. While staying in Khibang, she accompanied me around the village, asking neighbors for references, and requesting interviews on my

behalf. Though I focused exclusively on people who keep bees and/or hunt honey, I also interacted with participants' family members, other villagers, trekking guides and trekkers. To obtain equal gender representation I intended to interview both men and women who keep bees. However, with the exception of one reference, key-informants connected me with exclusively male contacts.

Site Selection

Site selection followed participant recruitment; I went to the homes of the contacts I made. I chose the Kaski district, including two towns within Pokhara and one village in the Annapurna, because ICIMOD's focused on this area during their Indigenous Beekeeping Project. Secondly, because of existing connections and prior observations I selected Khibang village in the nearby Myagdi district as my case study on log hive beekeeping.

Pokhara is the second largest city in Nepal and headquarters of the Kaski District located in the valley 15 to 35 miles south of the Annapurna Conservation Area (contributors 2019). Lower Sinuwa is a Gurung village south of Annapurna South and southwest of Machhapuchhare located in the Ghandruk Village Development Committee (VDC) along the trek to Annapurna Base Camp (ABC). The region has a long history of honey hunting (Farooq Ahmad 2003) and today contains numerous hotels to accommodate the flow of trekkers going to and coming from ABC. Khibang is a small agricultural village in the Myagdi district west of Kaski. The population is primarily Magar and most villagers spend their days farming and caring for livestock. After noticing several log-hives during our major excursion I decided to return for ISP research.

In addition to using social networks and research interests to determine study location, personal dislike of heat partly influenced my decision to conduct research in mountain regions as opposed to the plains where commercial beekeepers produce honey with *A. mellifera*. I also selected Western Nepal as opposed to Mid or Far Western or Eastern Nepal because I had previous travel experience in the area and because these other regions require longer, more expensive travel.

Ethics

Because qualitative research involves human participants, ethics must be thoroughly considered and carefully followed. To begin with, all participation was voluntary in nature. Prefacing all interviews I described my background, research project, and how I plan to use the data. I then explained that they had zero obligations to answer questions, continue an interview, or have their interview data published. Finally, I asked for either oral or written consent to be interviewed and in some cases audio recorded. All interviewees gave consent, responded to all questions (excluding questions improperly posed and/or misunderstood), and agreed to the full use of their data.

I ensured participant comfort was the top priority by conducting interviews in or outside participants' homes. During interviews I never intentionally asked questions that could arise trauma and so participation inflicted no known harm to interviewees. Even so, topics such as harms to bee population, resulting loss in biodiversity and agricultural productivity, lack of access to modern resources for beekeeping, and possibilities of cultural loss may have

arisen challenging emotions during interviews. Additionally, I avoided exacerbating any social conflicts or preying for disruptive information. To my greatest ability I employed a compassionate point of view, offering full attention and understanding regardless of personal beliefs and values.

To this end I also attempted to establish an equal presence in the community before and during interviews. I interacted with locals, participated in daily chores and lifestyle, followed local customs, and openly shared information about myself. Though participating in local community made me less of an outsider, my temporary integration into participant families and homes made my departure emotionally challenging for both my host families and myself. Thereby considerations of reciprocity and participant benefit are of utmost importance. By sharing my curiosity, connecting with people, showing interest in their experience, listening deeply, and offering gratitude, I attempted to contribute a positive presence in the communities where I conducted research that would outweigh any aforementioned emotional challenges. Though I do not foresee my research directly benefitting participants, I aim to inspire curiosity around the individuals who keep bees and hunt for honey. By sharing their knowledge, experience, and perspective, both through this paper and through conversation, I hope that others may understand the complexity of human's connection to bees and consider their place in this relationship.

Limitations

All individuals possess inherent bias, both known and unknown to them. Consequently, value-free research is impossible (Pant 2019). Every step of

research from participant selection and interview questions to data interpretation and nature of observations reflects bias. However understanding personal beliefs, one's identity, and how these factors shape both perception of reality and relationship with others *is* possible. So let us make a few of my personal biases clear. Upon beginning this research I believed (and may still believe) over exploiting natural resources and mistreating other species to be wrong. In a similar vein, I believed that non-human species often possess lessons relevant to human life. I judged traditional knowledge to hold significant value that modernizing society must preserve and learn from. I believed women possess capabilities equal to men and thereby should not only be allowed but also encouraged to keep bees. These stances on environmental ethics and gender may have hindered my openness to contrary viewpoints and certain cultural customs, and positioned me to ask potentially leading questions. Thereby, I continually worked to bracket personal bias, understand context, ask open ended or yes/no questions, and maintain a curious, compassionate viewpoint.

Qualitative research demands the researcher not only bracket personal beliefs, but also must contemplate their origins and practice reflexivity of positionality. My position as a young, educated, white American woman, and in this case the producer of knowledge, unavoidably created an unequal power relationships. Consequently participants may have responded with caution and/or censored their answers. To illustrate, one participant appeared noticeably nervous during the interview. As another example, because I am a woman and a foreigner and interviewed primarily men, participants spoke carefully to avoid offense

when questioned about women's involvement in and capability for beekeeping or impacts of foreign researchers. Though I could not have changed my identity, I did practice awareness of how my biases and positionality impacted research design, relationship with participants, and participant responses and worked to seeing multiple viewpoints rather than judging right and wrong.

The potential limitations of bias and positionality must be accounted for, but the advantages of personal values and identities can also be considered. Arguably, my experiences of the world shaped this research project and thereby a different individual could not have produced and executed the exact same research. My personal interests, passions, and values motivated my study topic, questions, and methods. Similarly, as an outsider I was able to move between social groups and observe the messiness of culture without social restrictions or personal investment. Qualitative research permits acknowledgement of both the limitations and advantages of bias, individuality, and even emotion. As Suman Pant put it, qualitative research is simultaneously scholarship and human experience, and so the humanness and imperfection of this project are welcomed (Pant 2019).

Results

A glimpse inside the hives, a glance up at the cliff

Pokhara

Framed certificates and posters of a shirtless man cloaked in a suit of bees line the walls of his office—a dimly lit concrete room with a patch of green turf carpet and teetering stacks of partially constructed beehives lining the walls. The

desk set in front of a bookcase with a chair facing outward towards the door was the only indication this room could be referred to as an office. Hives were scattered like weeds (Pokhara, participant 1's office).

* * *

Each hive has its own space, a circumference of three feet at least, in order to adjust to its new home before inviting neighbors. The boxes stand on four iron legs set in small bowls of oil. Each hive is its own expression, together, a hillside inhabited by an array of pastel boxes, as much sculpture as beehive. She grabbed a clipboard, spreadsheet, two net hats, and gloves. She scanned the spreadsheet to identify a hive unchecked in the past fifteen days. If you inspect too often, you irritate the bees, she explained. We came to a blue hive with a little house painted on it; she slipped on her gloves and ever so slowly lifted the lid. A small cluster of three or so bees tangled in one corner. They're fighting, she pointed out, likely a bee from another hive. That is part of the reason the hives need to be spaced at least three feet apart. The honey chamber, the shallow plywood box we were looking at was empty, this hive, like all of her hives, was not fully grown, home to only about 8,000 bees of the potential 20,000 in a strong hive. She lifted the next piece of plywood and revealed the buzzing factory, the brood chamber. Not until this had ten frames full of comb could she add frames to the honey chamber, and you only take from the honey chamber so enough food is left for the bees. Each hive starts with just five frames to allow the colony space to grow, you gradually add up to five more frames, and when the hive is full you can transfer bees to a

new hive to grow the number of colonies. She plans to harvest honey for the first time after five months.

Khibang

He removed the casing from one side of the hive, revealing curtains of combs swooping from the logs roof. He lit a braided rag until it smoldered and slowly waved circles inside the opened end of the log. Bees swarmed chaotically both leaving and arriving to the hive. Then he sawed the comb from the roof of the log using a whittled stick and carefully removed the saturated, golden repository of thick nectar sweeping away sweep remaining bees with a stiff, hand held broom. We sat on the ground and ate the honey right there, sucking it from the chambers and spitting out the comb for the chickens to peck at. All of this took place over about five or so minutes, in which time I saw one bee sting his forearm. But when I asked, he told me with a shrug that none had.

Lower Sinuwa

Five honey cliffs surround the Lower Sinuwa ranging from thirty to three-hundred meters in height. Participant 8 and his community of honey hunters collect from one to three of these cliffs once or twice a year. Sometimes, depending on the size of the cliff and the number of combs growing there, a single harvest requires fifty men and two to four days to execute. This is the case of the largest cliff in the area, Chomrong cliff, which can house forty-five to fifty hives.

He explained that before the harvest, timing and weather must be just right. According to age-old cultural customs villagers must follow a series of religious codes for the harvest to be viable. Firstly, women in the honey hunter's

family must not be on their period, or as participant 8 described, women must be clean. The honey hunter himself must also be clean and so showers at five o'clock the morning of the harvest. He spends the entire day before harvesting performing puja with elder women of the village. The men bring a sheep or chicken to the base of the cliff, which they sacrifice to the cliff god 'Abakarbhū' and then look inside to predict the safety and lucrativeness of the harvest. They must ask permission from all the gods in order attend to the harvest. Without performing these religious rituals the hunters risk the possibility of fatal accidents. Only after puja is complete can the harvest begin.

The harvest is a community event that requires several people, extensive labor, and substantial skill. In fact, according to custom, no one person can honey hunt alone. In turn, a network of honey hunters across the region communicates and makes plans leading up to a harvest. People are needed to carry equipment, collect wood cut grass, build a fire, collect water, cook tea and rice, set up camp, secure the rope ladder, suspend and lower the baskets, and the list go on. Once all equipment is in place and a fire has smoked out the hives, the honey hunter descends a rope ladder suspended from the top of the cliff and use two long sticks, one to cut the comb and the other to control the suspended basket in which the comb must fall. Traditionally while harvesting honey he has not worn any equipment to protect against bee stings and fastens himself to the ladder with rope. However in the past ten years foreigners who have come to make documentaries brought extensive equipment to prevent stings and minimize risk. Even so, he still wears minimal protective clothing and feels more comfortable

without safety equipment. Once all the combs are cut they sit together at the base of the cliff and share the fruit of the harvest. Not only the hunting team shares in the rewards, but also they bring rewards for the entire community. Remaining honeycomb is processed and the honey packaged to bring back to their village and homes for use until the next harvest. But more than the honey itself benefits the village the entire event brings community together to engage in a very old, important ritual.

Knowledge of bees

‘How many eyes do bees have?’, he asked me. I stumbled on an answer for a second before he recited their anatomy, prompting his 13-year-old daughter to do the same—5 eyes, 6 legs, 2 antenna, 2 long teeth, and 1 dropper. Clearly, participant 1 possesses technical knowledge of bees. Growing up, his father kept a log hive. A couple times a year he would stick a large spoon inside the log and pull out saturated combs of sweetness.

Participant 1 lives in Pokhara, where he began beekeeping 15 years ago with two hives. Today he has 140. At the beginning, he taught himself and learned from his brother how to care for the bees and extract their honey. Two years into beekeeping he took a government training supported by GIZ. These days he teaches trainings and serves as president in his province for the Federation of Nepal Beekeepers, an indication of his mastery of beekeeping. In fact, he has taught trainings in rural villages in coalition with ICIMOD.

He explained to me explained the exact lifespan of each of the three types of bees—drones, workers, and queen—how many times a day workers leave the

hive to collect nectar and pollen, the dance they use to communicate where to collect nectar and pollen, and how they produce the honey during the night by eating nectar, gargling it, and excreting honey via their dropper.¹ He is aware of many threats to the bees including weather variability caused by gradual environmental change, pesticides, and mobile towers. But, he informed me that *A. cerana* are good at fighting disease. Still, as weather patterns slowly change the bees slowly become less active. Though the moderate temperatures of hilly areas like Pokhara are perfect for *A. cerana*, climate change may not be. Absconding, when colonies abandon a hive, becomes a larger challenge as weather becomes more unpredictable.

Participant 2, despite having only kept bees for 10 days before the interview, related the most extensive technical knowledge of all 8 participants. She and a friend, who together hatched the plan for a bee farm in Pokhara, took a training from ICIMOD experts just a month and half before the interview. In addition, she has conducted thorough independent research online and forged connections with beekeepers throughout Pokhara and Kathmandu, many of whom she visited to learn more. All of this was to ensure she had enough knowledge before starting her own hives. She reiterated much of the same knowledge as participant 1, and then some. She knew the preferences of bees as if they were her own—at least 14-17% sucrose level in plant nectar is best, the hive must stay at least 32 degrees Celcius, hives should face Southeast, and her technical

¹ This is not the exact process by which bees produce honey, but it closely resembles the process: bees pass nectar from mouth to mouth to reduce the moisture content and then store it in the comb (Australian Honey Bee Industry Council 2019). Any incorrect information could also be due to misinterpretation.

knowledge continued. Even with thorough knowledge, her curiosity is infectious, and she continually learns from others and welcomes feedback.

Khibang villagers possess a more general knowledge of bees' migration patterns, daily life, needs, and threat to health, most often self learned or obtained from neighbors, with the exception of two participants who took trainings. They explained that bees leave for lower elevations when the weather turns cold and return to Khibang hives when the weather warms. Day to day the bees come and go from the hive collecting pollen and nectar from flowers. In the words one interviewee, they work when the flowers are in bloom, spending their days building combs and making sweet things, they eat seasonal crop and flower and tree pollen, but not the cursed rhododendrons. The bees like lots of sun and warmth.

One Khibang villager, participant 6, repeatedly told me that he had not taken a training and thereby knows very little about bees. Though he lacked technical knowledge, his responses evinced that he learned more through observation than he credits himself for. He did not receive formal instruction, but has acquired sufficient knowledge by watching his bees and learning from neighbors. Though this participant emphasized the necessity of training, a different villager, participant 4, who received training about a year ago when a beekeeper from Beni came to Khibang, displayed limited mastery of apiculture.

This participant frequently referred to a notebook (presumably from the training) to answer interview questions, demonstrating minimal retention of the information taught. In one instance he mistakenly stated that Khibang villagers

keep *Apis mellifera* bees. A few minutes later he corrected this statement and affirmed that actually people keep *Apis cerana*. This particular beekeeper has four hives all currently uninhabited. Clearly, knowing a Latin name has little utility for his ability to keep bees. This participant wants to try box-hive beekeeping because it is easier, he can produce more honey, and sell it. It is evident that the training instilled an aspiration to try a different form of beekeeping more than it provided information useful to Khibang villagers who keep log hives. In fact, possessing awareness of technical scientific knowledge about bee species and box-hive methodologies lessened villager's confidence in their intuitive, learned knowledge, as exhibited by participant 6. Though participant 4's lacking mastery of beekeeping revealed the ineffectiveness of the aforementioned training, he still was able to explain the composition of a colony and each type of bees' life span, more information than participant 6 relayed.

I asked one villager to see his hives, he told me to come back the next morning, when the bees feel lazy and are unlikely to sting. This man, participant 5 keeps 2 box hives in addition to 5 log hives, of which only 1 had bees at the time. He began beekeeping 20 years ago and at one point had about 45 hives in his home village of Gharamdi, which sits at a lower elevation than Khibang. He spent 10 years working in the Middle East and since coming home to Nepal has returned to beekeeping. He bought one of his two boxes and built the other himself, as well as more frames to go in both hives². Like participant 4, he received formal instruction, though not in Khibang. He took a 5-day training on

² I was unclear whether he built the hive or just the frames to go inside, however my language teacher's transcription confirms that he has made box hives in addition to log hives.

agriculture and beekeeping in Pokhara 17 to 18 years ago, where he learned how to rear queen bees, something he did just 3 months earlier to build a second colony. Like the Pokhara beekeepers, he understands the composition of a colony, the three types of bee's life cycles and responsibilities, and knows by their buzzing when to harvest honey. He has shared his knowledge with other villagers, which may be evident in similar information relayed by subsequent participants, such as participant 7 who also understands how to make new queen bees and multiply colonies. However, it is unclear which knowledge villagers have shared/obtained from others and which they have learned through independent observation.

While most villagers only noted harsh weather or perhaps other insects as threats to bees' health, when asked directly if factors such as pesticide use and climate change affect bees, they often answered "yes." Participant 3, 6 and 7 pointed out that within the past 3 years pesticides used to kill a bug infecting saag (greens) in nearby villages like Sikha and Garha has begun to jeopardize their bees. Participant 6 has warned farmers against spraying pesticides and told me people need to change this problem. These same participants as well as the box-hive beekeeper also agreed that climate change is affecting bees, but did not elaborate on how.

Participant 8's knowledge of wild cliff bees comes entirely from observation and cannot be compared in the same way to other participant's knowledge of keeping hive bees. The nature of the cliff bee prevents up-close observation, yet participant 8 understands the bees' migration patterns and work

habits/daily work. When asked if the wild bee populations face any threats, he responded plainly no, there are bees. Sitting in the jungle, observing a cliff, our eyes confirmed this. He lacks technical, scientific, statistical knowledge, but possess the necessary comprehension to know when, and in the case of honey hunting more importantly how, to harvest from the bees.

Caring for bees, controlling bees

Participant 2 explained to me that keeping bees is like caring for children, you ensure they are fed and safe, check on them often, and try to prevent them from leaving. When the flowers do not provide enough food, she feeds the bees sugar syrup and makes them artificial pollen (a mixture of egg yoke, chickpea flower, and a little honey)—it feels like packing lunch for your kids, she said gazing at the hives like a proud mother. Her gaze turned towards the empty spot of flattened ground where one colony flew from home and the expression of pride turned to one of regret and longing mother. Everything she does for the bees encourages them to stay: timely inspections of each hive, which she keeps track of on a spreadsheet, ensuring not to disturb any one hive too often, checking for insects, signs of poor health or predators like birds, moths, wasps and hornets. The more threats the bees face the higher the likelihood they abscond. These days she has developed a hatred of ants that grows with her love of bees. She placed each hive's metal stands in bowls of oil, to keep hungry ants from climbing up its legs; with a little grease, they slide right back down. Though flattening patches of land for the hives to sit on a hillside demanded arduous labor, she did so for the bees, who prefer a sloped landscape. Participant 1 also checks on his bees every

week, and even plays with them. Everything that participant 2 does for her bees he does too.

* * *

Participant 5 delicately pulled a frame from the box, admiring the cohort of bees banded together building yet another perfectly geometric matrix of honey comb. Early morning sun rising over the Himalaya peaked through the cracks in the small rooms boarded up walls; it lit the honey to aglow. He watched the bees intently. One escaped worker fell to the ground, he swept her up between his index finger and thumb and placed her back in the hive.

In Khibang, where daily life demands hours of manual and agricultural labor, villagers appreciate the minimal work beekeeping requires. In the cold season villagers occasionally feed their bees sugar syrup and cover the hives to protect against the rain. Participant 6 checks his hives everyday to see if anyone stole honey in the night and dusts off the spider webs. Like participant 2, participant 5 checks his hives for ants and places the hives on a bench with its legs in water bowls to deter the honey, baby bee eating insects. He, as well as participant 7, also take great care to separate new queens away from a colony to prevent fights and absconding. However, beyond providing a log hive that invites bees to make a home for the warm season if they so desire, most villagers pay minimal attention to the insects. Food, inspection, protection—most of these needs the bees provide for themselves or the plants provide to them.

Concerning wild cliff bees, their independence matches their size. Humans cannot offer them a home, food, or shelter from the rain; direct care is

impossible.³ Even so, participant 8 pays the cliff bees extensive attention. In the months before any harvest he tromps through the jungle to pay each cliff many visits. He observes the hives' growth and the bees' activity, continually assessing where and when to harvest. In this sense, though he does not provide materially for the bees, and cannot even come physically close to them before descending the rope ladder, he watches them with deep fascination.

The keepers

In rural areas where villagers strictly abide by Hindu culture women are not allowed to keep bees, participant 1 told me. Despite this, he knew that women in the Kaski district who keep bees; he taught them. Still, he professed that beekeeping is challenging for women because it requires technical skills and knowledge, which women often lack due to minimal education. Men in contrast, according to him, do not need training to keep bees. Furthermore, bees dislike the bright red lipstick and vibrant kurtas women often wear, they prefer soft colors. He explained that women are best suited to keeping European bees.

Participant 2 speculated this statement might have meant that because European bees sting less than native bees women feel less scared to keep them. People may think beekeeping is too much work for women, that they are not capable of carrying the hives, or that they fear being stung, but participant 2 was firm in her belief that women are capable. She plans to bring a jar of honey to every beekeeper who assumed she and her friend were only interested in keeping

³ Clearly providing care for wild bees is incomparable to nurturing hive bees. However, scientific observation of population health and habitat availability for the purpose of improved policy can also be considered a form of care. In this case, the Indigenous Bee Project executed by ICIMOD indirectly supports, protects, and provides for *A. laboriosa* (Ahmad and Partap 2008).

as a past time just to prove it. Nepali society is slowly relaxing the expectation that women work exclusively in the home and the same goes for beekeeping. Currently male beekeepers in Nepal far outnumber female beekeepers, but “we’re going to change that,” participant 2 declared, “women are capable.” In fact, she argued that women could even be better suited to keeping bees because their societal roles require women to make homes and take care of children, work participant 2 likened to beekeeping. But regardless of gender she posited, anyone with interest, who feels comfortable around bees can be a beekeeper. It depends on individual perspective, she explained, “with love and interest, anyone can do it.”

No women in Khibang keep bees, but all interviewees affirmed women are capable, according to participant 3 a few have even received training. Given bee’s low maintenance anyone can keep them. But most women are scared and disinterested. One woman expressed this very sentiment: she fears being stung. When asked if other reasons explain why only men keep bees however she explained that women spend all day working in the fields and in the house, which she believes they are more skilled at doing than men, and so they do not have the time men do to keep bees.

According to God, women cannot honey hunt, participant 8 explained. He jokingly asked me if I would make a good honey hunter, ‘do you want to try?’ But even *if* I could be the next harvester of cliff bee combs, I am not allowed.

Feeling when in the presence of bees

When at first I showed up at his office and explained that no, I do not want to learn how to keep bees, rather I am studying the relationship between people and bees, he expressed skepticism. But as soon as I asked him to show me his hives he began to open up along with the boxes of bees. We peaked inside and tasted honeycomb, and his knowledge flowed effortlessly, enthused by my curiosity. He wore no net or gloves while pulling out frames. He smiled down at the bee excreting honey on his pink button down. Watching him you may have thought the bees' tails give kisses rather than stings. He expressed zero alarm by the swarms that engulfed us, and rather welcomed each bee that crawled on his skin and buzzed in his face. They don't sting me, just nibble a little bit, he told me. He went on to explain that with bees his mind feels quiet and cheerful. "I love bees and bees love me," he stated plainly. Beekeeping may be work, but it does not feel that way for participant 1 because the time passes quickly and he takes pleasure in the tasks.

Participant 2 feels very much the same, just watching them, observing how they work, witnessing them collect pollen, she feels happy. Her fascination for bees buzzed like the bees themselves, and her care for them truly matches that of a mother's love. So far she feels beekeeping may as well be a dream job. "It's amazing...it doesn't feel like doing work."

He smiled at the world revealed inside the hive as bees buzzed around us (participant 5). For participant 7, beekeeping is his favorite type of work; of the labor subsistence agriculture requires, beekeeping is the easiest. Despite an instance when a swarm of bees attacked the side of his face, causing it to swell, he

does not fear them, and rather finds it fun spending with them. Indeed both participant 6 and 7' faces and the cadence of their voices drew downward as conversation turned to the cold weather and pesticides killing bees. Even so most of the villagers feel little attachment to the bees; they leave on their own time, and the next season new bees come. Several participants needed convincing from my homestay sister to give me an interview, which appeared to be in part because of confusion regarding my interest in bees. Participant 1 often laughed at interview questions, as though he found such ideas silly and had never considered them before. He put it quite plainly, he keeps bees "because [he] likes bees" (Khibang participant 1). At the very least, as the givers of honey, bees garner his appreciation.

Similarly, participant 8's admiration for cliff bees roots in his love for their honey. Four or five log hives reside on the roof of one of his multiple homes in Lower Sinuwa, though none of them appeared to have bees. But he takes less interest in the hive bees because the strength of their honey cannot compare to that of the cliff bees'. He sat at the base of a tree, knees casually tucked into his elbows, gazing with a look of wonder towards the cliff, the combs, the bees. We watched in silence for at least twenty minutes. At times he appeared to be thinking, a hint of a smile softening his face. When I asked him if he felt at peace in the presence of the cliff bees, he responded with a nod and "mmhm"—*aananda, shanti* (relaxed, peaceful).

His feelings towards the bees cannot be untangled from his feelings towards their honey and the process of hunting it. As a young man he watched

with amazement when his father, grandfather and uncles descended from cliff heights to harvest the massive combs. His interest and inspiration grew from witnessing them. The very first time he descended the rope ladder he felt scared and uncertain. The angry bees attacked him with agonizing stings. A single mistake could cost his life, as he told me repeatedly, and he has no insurance. After that first time when he successfully cut three combs and returned with honey, everyone congratulated him. Now, 25 years later, he feels no fear while honey hunting. He feels nothing particularly special at all. Rather, he is sharply focused on executing the task at hand and avoiding fatal mistakes.

Lessons bees teach

As a caveat I should mention that though some participants came to the subject on their own, I prompted interviewees to express what they have learned from bees with questions that assume bees *do* have potential to teach humans rather than presenting it as an open ended question.

Participant 1 explained that bees have very short lives, but they are always busy. This observation leads him to question why we humans are not always busy. Bees, he believes, can teach us how to develop, how to save; they are continually growing their hive and preparing for the future. While participant 1 admired bees' persistent hard work and diligent planning, participant 2 recognized their incredible teamwork. Bees know how to divide labor in order to accomplish large tasks collectively. She marveled at how, though there are thousands of individual bees, they collaboratively construct exact replicas of perfect geometry. Not only are they a team of master mathematicians, but also they are sustainers of

other species; participant 2 explained how though they take from flowers, they do not harm them, and rather enable their reproduction. In this way, the bees teach how to engage in non-exploitative, reciprocal relationships. What is more, they keep their home immaculate. Any waste—dead bees, pee, etc.—is promptly removed from the hive. In fact, they carry dead bees far from their home because they know dead bees attract predators. Participant 2 has drawn numerous lessons from discerning bees' incredible diligence, collective work ethic, intelligence and hygiene.

In Khibang, participant 4 answered with a chuckle that bees teach humans “*phul miTho chha*” (flowers taste good). Similarly, participant 6 laughed and declared that bees teach humans when they sting them. Participant 5, the Khibang villager with box-hives, posited that bees teach us if we do not work we cannot eat. Accordingly, they also demonstrate agriculture.

The Value of Bees and their Honey

“In every Nepali house there is one bottle of honey,” declared participant 2 (Pokhara). Given honey's diverse medicinal usefulness and importance for puja, this statement seems accurate. Indeed, all participants noted at least one of the manifold uses of honey— food, medicine, gift, religious offering, market item—and often emphasized its value. However, in Khibang, findings were contradictory. Simply put, if you do not keep bees, cannot afford honey or do not receive it as a gift, you will not have honey. As a result, some families keep honey and others do not, and according to both participant five and six, no, honey is not important. Even so, many villagers possess knowledgeable of honey's medicinal

properties, eat it when available, gift it to their near and dear, use it in religious ceremony, and sell what ever is left over.

Medicine

“Honey is important. Old people say it is good for health” (participant 3, Khibang). All participants agreed. It boosts immunity, fights colds, soothes aches, heals cracked skin, and supports vitality. Beekeepers from Pokhara mentioned that Ayurvedic practitioners use honey in numerous recipes. Participant 1 relayed that acupuncturists even use bee venom to treat patients.⁴

In Lower Sinuwa participant 8 and his family each take one teaspoon of wild cliff bee honey once a week with hot water to strengthen immunity. He frequently and enthusiastically mentioned that wild honey makes him feel strong and energized, repeatedly accrediting cliff honey for his good health and physical capabilities, such as carrying heavy bundles of grass and hunting for honey. However he cautioned against consuming more than a couple spoonful’s it can make you feel dizzy.

Local Nepali people are not the only ones aware of honey’s, particularly wild honey’s, healing properties. Several trekkers inquired about cliff honey’s medicinal benefits. One Swedish man even bought a liter for his mother and her joint issues, while other’s tried it out of curiosity.

Religion

⁴ Some observations suggest that practice may contradict knowing. While staying in Khibang, my homestay sister had a cold. I noticed a full bottle of thick, pale honey on the shelf, but never once observed her consume it to treat her sickness. Rather she spoke of visiting to the clinic in a neighboring town approximately 30-minute away by foot. Similarly, when a sheepherder’s dog bit my homestay brother through his pants (it did not break skin), my sister treated the welt, but not with honey. In these instances, despite wide spread and age old beliefs in honey’s healing properties participants did not put this knowledge to practice.

While all three of the women I conversed with (one interviewee and two informal participants) noted honey's importance in religious rituals, only one of seven men explicitly indicated honey's religious use. When asked about this gendered knowledge disparity, one Khibang woman explained that because women are responsible for puja, they possess knowledge of honey's spiritual importance, while men, who do not conduct religious ceremonies, do not need to know of its holy uses.

For both participant 8 and his entire community, honey hunting's roots run deep; it is a sacramental tradition at the crux of their heritage as the extensive, elaborate rituals surrounding the event indicate. Though the harvest itself involves extensive sacrament, the participant did not mention religious use of *honey* per se.

Sale

Honey sale varied significantly between type of bee, form of beekeeping, and study location. For participant 1 box hive beekeeping of *A. cerana* provides a full time job. He collects honey from each hive three times per year amounting to fifteen to twenty kilograms of honey from each hive annually, which he sells locally at 1000Rps per kilogram. Participant 1 also sells beeswax, hive boxes, and colonies in addition to honey. He sells 100-150 colonies at 9500 Rs per colony each year, making queen rearing an even more profitable endeavor than honey production. In fact, participant 2 purchased her hives from him. She intends to sell multiple bee products besides from honey including wax, pollen, royal jelly and propolis, products for which she sees an unmet demand. However, she has yet to

extract honey from her hives. She also plans to bring her hives to farmers for pollination, a service exchange participant 1 already partakes in.

While selling honey and bee-products is the goal for Pokhara beekeepers, selling honey in Khibang is only possible if the bees produce enough to have extra. In turn, honey sale relies on seasonal variables like whether the bees inhabit their hives, the quantity of plants in bloom, and whether it is warm and sunny enough for bees to work. In effect, how much honey villagers produce is largely out of their hands. Most villagers harvest twice a year, extracting about one kilogram of honey per log. Upon harvesting, villagers eat most of the honey straight from the comb, and afterwards bottle some to keep as medicine.

Participant 3 occasionally sells two to four kilograms of honey locally for 2000 Rs per kilogram. Neighbors know who produces honey and come directly to their homes to buy it; as participant 5 explained, people in Khibang want honey, so he need not go far to sell it. According to participant 7, people from Gorepani and Beni also come to buy honey.⁵ Though most only produce honey, participant 5, who keeps two box hives, also makes and sells wax, and told me that with more hives he could sell colonies as well.

Participant 8 does not honey hunt to sell honey. But these days, wild cliff honey draws customers from around the world to Lower Sinuwa. Koreans, who come with technology to test the purity of the honey, provide the most regular and loyal business. People trekking through pay 50 Rs to taste just a teaspoon of the

⁵ Though I interpreted this participant to say that honey can also be sold in Gorepani and Beni, my language teacher's transcription of the audio recording interpreted that people come from these places to purchase honey in Khibang.

cliff bees' sweet nectar, and buy a whole litter packaged in a reused soda bottle for 120 USD. Occasionally, participant 8 receives special orders for cliff honey via phone call, and so ports bottles to Pokhara and then ships them to buyers. Otherwise, the market for this honey walks right through his hotel.

Currents of development and perceptions of future opportunity

For participant 2 the journey has just begun, but she dreams of becoming a master beekeeper and has big plans for her bee farm that involves not only lots of hives, but also fruit trees, flowers, herbs and a bee bath. By growing different fruit trees like orange, lichee, mango, or kiwi, and herbs it is possible to make fruit or herb flavored honey. This interest in agriculture came automatically once she started keeping bees; bees and farming go naturally together.

But she does not reserve these ambitions for herself. She argues that Nepal has a huge economic potential for producing and selling honey. Domestically alone the demand surpasses the supply, without mention of global interest in Nepali honey. Nepal is home to various species of bees that can live in different climate throughout the entire country, therefore she believes Nepal can meet this demand. Besides from selling honey, she also sees prospects for innovative design and diversified production. Currently most beekeepers only make honey even though demand exists for several more specialty bee-products like royal jelly, propolis, and beeswax. The most innovative technology in Nepal today, she argues, is the box hive; for starters farmers need to learn techniques to make these other products and rear queen bees. Furthermore, many Nepali farmers still believe that bees ravage plant's nectar making them infertile rather than assisting

in their pollination. This stands in the way of exchanges between farmers and beekeepers for pollination services and space for hives. She suggests that farmers could use bees rather than pesticides to increase crop yields.

This entrepreneurial endeavor has also empowered her with passion, confidence and determination. She felt tired of her previous job and longed to start something of her own. Scouring the Internet she had happened upon beekeepers from New York City and declared that if they can do it in a massive city, I can do it in Nepal, where 70% of the land is forest. In fact she argues beekeeping provides an example and avenue for career potential within Nepal as opposed to work abroad. Even as she pursues modern beekeeping, she plans to keep at least one log hive in the future, just to learn how it works. For starters, the log looks aesthetic. More so, she believes “it’s important to know our roots.” Plus, she added, maybe she can redesign the log hive; innovative a more productive model of the traditional method.

Participant 5 in Khibang shared this exact idea; he plans to experiment with putting frames inside a log-hive. However, despite this design scheme, he posited that one person alone cannot spur substantial development, but maybe if many people came together to improve beekeeping’s potential perhaps bees could bring positive change. Regardless, in Khibang, where the cold, rainy weather kills many bees and few villagers can afford modern hives, even if they have received training, participants expressed minimal enthusiasm or optimism regarding the potential to develop beekeeping or beekeeping’s potential to bring development in their village. Even so, every interviewee expressed an interest in trying box-hive

beekeeping because of its comparative ease to log-hive beekeeping. Participant 5 stated that with 35 to 45 hives you could easily make 4 to 5 lakh (hundred thousand) Rs. Several participants similarly noted that with 10 or more box hives beekeeping could provide a living. Indeed, participant 5 has plans to make 15 hives, 10 to 11 within a year, all from his current two colonies.

Still, villagers lacked solid plans pursue box-hive beekeeping, especially at that scale, given the financial and geographical inaccessibility—they would have to transport a box from Beni, a several hour walk and subsequent bus ride away—of such hives. More realistically, participant 7 plans to divide his colonies until he has 10 log hives. But even if he achieves this, the guarantee 10 colonies stay, survive, and return in following seasons appears slim, as only 2 of his current 4 hives are occupied. Another villager wants to take a training on modern bee-keeping but thinks he's too old. His son received training, but not a hive. He lives in Kathmandu working an odd job and looking to go abroad for employment. Though villagers can earn some money from beekeeping at the end of the day participant 3 sees it as another requisite for subsistence farming, only viable on a small-scale. Furthermore, he explained that the lack of 24-hour electricity supply restricts the potential to make other bee-products like wax.

In Lower Sinuwa, tourism has made honey hunting a lucrative endeavor. Though I found it unclear whether participant 8 has formal relationships with eco-tourist agencies, he did explain that foreigners pay a lot of money to watch him honey hunt. The three foreign-produced documentaries that have featured him in the past 11 years as well as efforts from ACAP to engender tourist interest in

honey hunting have likely had a hand in this. However, he never suggested that tourist interest alone could sustain this tradition. According to participant 8, local youth have lost interest in learning an old tradition like honey, it is too challenging and scary, and they all live in Pokhara these days. Consequently, in most places only old people know how to hunt honey. At 45 he is the youngest honey hunter in the area and though he affirmed that he would teach anyone interested in learning, he told me that no one has approached him. He has two son in their twenties, but neither know how to honey hunt, in part because their father believes it is too dangerous. In fact, he does not even allow his elder son to accompany the team to the largest cliff because the path alone is too perilous. Consequently, he believes that after him no one in the area will be able to honey hunt, and so this many-millennia-old tradition *will* inevitably die.

Perhaps the nostalgia wrapped up in honey hunting's coming death is part of what draws so many film groups to the Himalaya's cliffs. At first, participant 8 insisted that foreign documentary makers understand his culture and accurately represent it in very original, real films. He welcomes all of them, shares his knowledge and experiences, and allows them to partake in their traditional practices. He reiterated that it is good they come. But eventually he let on that foreigners mix a little bit of his culture with a little bit of their own. They only ask about honey hunting technicalities.

These outside filmmakers have brought extensive equipment, like full body suits and climbing gear. But otherwise, no part of the honey hunting tradition has changed. In fact, not even this equipment has changed how he

harvests honey because participant 8 feels less safe using foreign protective gear than performing the harvest with minimal, simple safety equipment.

Just like little has changed about the practice, according to participant 8, little has changed about him. These days everyone knows who he is and come from around the world to meet him and take a photo with him. His social role in the village has shifted similarly; people drape him in flower garlands and say he's a good man. His own view of the importance of honey hunting has also grown since Discovery Channel, BBC, and other media have featured him. But he maintained that he is still same person as before. In addition to harvesting honey, he runs a trekkers' hotel with his family, serves on the Community Forestry User Group board, farms fields of vegetables, and cares for three buffalo, just as he has for years.

Reliance on bees

Towards the end of each interview I asked a pair of questions: "do people need bees?" "do bees need people?" Though variation existed, across the board participants responded that yes, people need bees. Both participant 1 and 2 stressed bees' ecological role as pollinators that sustain our food and the planet's biodiversity. In fact they both quoted a misquote of Einstein declaring that, without bees, humans would die in four years because there would be no food. Contrary to this epiphany, we would still have a food supply without bees, though it would be drastically compromised. Besides statistical technicalities, their message was clear: humans need bees. Bees also provide participant 1, and in the

future likely participant 2, with an income. In this way, bees also provide financially for him so that he can provide for himself and his family.

The bees however, according to participant 1, do not need humans, at least not *A. cerana*. The same unarguably goes for *A. laboriosa*. But not everyone agreed that *A. cerana* needs humans. Participant 2 chuckled and pondered the question for before responding that bees need humans to for protection against their many predators. “But humans need bees more than bees need humans...[and] the more you know, the more you realize how much we need them.”

According to several Khibang participants, humans need bees because bees provide honey. Without honey they would not have medicine. In this way, villagers rely upon bees for their health. After flipping through his notebook participant 3 also mentioned that people need bees because “*ras phaida lyauchha*” (pollen brings benefits). Participant 6 similarly voiced that people need bees for pollination, which ensures they have food, in addition to medicine. Other villagers however did not touch on the benefits of pollination until asked if the environment also needs bees, after which most participants responded “yes,” and alluded to pollination services.

Participant 3, 5, and 6 all posited that just as people need bees, bees need people. Humans protect bees from predators, keep them warm when the weather turns cold, and feed them when flowers are not in bloom so that they can stay in the log-hives and survive cold weather. Participant 7 agreed that this is the case for hive-bees, but added that jungle bees can survive independently. After

thinking for a second, participant 4 stated that bees do not need people because they can live on their own in the forest. Likewise, there is little question that cliff bees have no need for humans,⁶ and though people do not necessarily need cliff bees, honey hunting does.

Discussion And Analysis

The relationship between bees who reside in a box and their keepers can be categorized as co-dependence, passion, and attachment. All three beekeepers verbally and/or physically expressed deep affection for their bees. The fact alone that they would refer to themselves as “beekeepers” indicates the degree to which they identify with bees. Though they may rely financially on bees the most of all participants, the provision of income does not engender a commoditized relationship. Rather, thorough knowledge demonstrates intimacy, while curiosity to continually learn more reveals a desire to persistently improve care. These participants feel happiest with their bees, they love them like parents love children, and invest in their bees as much as they take from them. More so, they see bees as teachers, the carriers of profound life lessons humans have not quite figured out. However, what can be described as wholehearted closeness may also be painted as attachment. Box-hive beekeepers pouring out of love is also a persistent effort to dictate bees environment as much as humanly possible. This control does not result in immoral exploitation, but it does reveal obligatory constraints inherent in an intensely involvement relationship. Technical

⁶ Though participant 8 did not suggest this, it is worth noting that if land use change and climate change continue to threaten *A. laboriosa* population stability, perhaps in the future they will become reliant upon humans to amend the threats we created and maintain cliff bee populations.

knowledge, provision of love, experience of great joy, and equally sizable bids for control motivated by emotional as much as financial attachment connect “modern” beekeepers and *A. cerana* in Western Nepal.

When mediated through the log hive, the relationship between people and *A. cerana* resembles co-existence, involving general indifference and occasional pleasantries, characterized by sufficient knowledge and care but minimal control. Participant’s incredulousness towards my research interest and the apparent comicalness of questions like “how is the health of your bees,” “why do you keep bees,” and “how do you feel when you’re with bees,” revealed the comparative passiveness that distinguishes most Khibang participants’ relationship to bees. The bees come and go on their own; if they choose a villagers log home, their honey is welcomed, but if they do not come, that is just how life goes. The bees are another piece of village life that access to improved technology could make easier and more lucrative, but the resources are not available. In this sense, villagers’ relationship with bees reflects the hardship of village life, lack of opportunity and choice, and necessity of subsistence practices. Still, Khibang participants expressed a fondness and respect for bees and their health-giving honey that reveals the value of these relationships even if largely uninvolved.

The interconnection of *A. laboriosa* with honey hunters and village communities is one of independence and single-side admiration constituted by worship, heritage and fascination. For participant 8 and the Gurung people of Lower Sinuwa the pursuit of cliff-bee honey and the honey itself comprise value worthy of risking one’s life. Not only the practice of honey hunting, but also the

vitality of its practitioners rely on the bees and the energy of their honey. The sustained enacting of their cultural heritage and social union depends on bees. Though foreigners often place attention on the singular honey hunter, the actual execution relies on many hands and brings benefits to even more people. In this sense, bees have and continue to play a pivotal role in community livelihood. Bees and their sweet nectar are life giving, and the respect paid to them matches their value. For participant 8 personally, the relationship also involves distanced yet potent attention, serene intimacy with nature, and fearless surmounting of another species' thresholds. The cliff bee and the honey hunter engage in a primitively human, deeply spiritual, fundamentally cultural relation of one-sided dependence.

Each of these relationships represents a different human-environmental relationship rooted in place and together changing associations reflective of both locally and globally influenced dynamic cultural currents. In Pokhara intense love and control of bees mirrors the necessity of managing and constructing nature when human urbanization impedes the environment's otherwise self-directed path of development. Where less space exists for non-human species, controlling the environment becomes a necessity; human use and existence of nature become synonymous. Beekeepers demonstrate that this control, however, can also manifest as love. In Khibang, unattached relationships demonstrate how people must be more responsive to the environment's needs and limitations. Villagers accepted the climatic unviability of large-scale beekeeping rather than pushed back against nature's barometer. In Lower Sinuwa, through the independence of

cliff bees and danger of honey hunting the environment tells people they are not meant to harvest wild combs. Yet, attending to human, cultural requisites that play out within and in concert with another species precedes abiding by nature's perilous barriers. The environment is inextricably included within their cultural, religious heritage, and thereby synonymous with their livelihood. The variability of these relationships as exposed through beekeeping and honey hunting affirms the fundamentally place-based nature of human-environment interconnection. As Campbell argues, "distinctions and identifications of people and animals are contextually produced, and indexically re-signified according to variant positions and interests" (Campbell 2013 pp.213).

The range of relationships also demonstrates impacts of development and fluidity of social norms, and their geographic specificity, as manifest through various forms of beekeeping. For example, though the swelling influence of foreign interest, eco-tourism development, and increasing access to and reliance on outside resources and livelihood opportunities may have yet to change the *methods* of honey hunting traditions, they have begun to change villagers' perceptions of the actual *value* and *reliance* upon this tradition. While the intrepidity and motivation of honey hunters exemplifies Campbell's argument that "the contingency of human life on ancestral livelihood legacies, on ritual recognition of place spirits, activates diplomacy of exchange with a variety of non-humans with influence over health and fertility," the current modernization of certain aspects of village life is weakening this contingency (2013 pp.350). Though foreigners feel awe-struck by the sheer human propensity and perplexed

yet amazed by the cultural and spiritual importance of such dangerous pursuits for honey, participant 8's cautions against his son's learning to honey hunt demonstrate that villagers may increasingly be placing greater value on insuring human life than attending to ancestral rituals, as further indicated by participant

Social change is not only apparent in shifting values placed on honey hunting, but also perceived benefits of different modes of hive beekeeping. In Khibang, though several interviewees mentioned their parents or grandparents keeping hives, the oldest logs in the village date back no more than a couple generations⁷ and 4 of 5 participants started beekeeping just recently. This apparent novelty of an age-old practice puts in question presumed richness of traditional knowledge and contends that tradition cannot be generalized and rather varies upon place and environmental limitations. Like Campbell argues in contesting the possibility of articulating a singular, unchanging "cultural relationship to the environment," "nature and culture are not neutral terms of description, or stable categories for analyzing objective phenomena" but rather dynamic, living entities with diverse iterations (Campbell 2013 p.350). The landscape of "traditional" beekeeping in Khibang demonstrates just how powerful environmental forces are in shaping practices that, though may hold cultural significance, are perceived more as the necessities of subsistence lifestyle than the preservation of heritage or traditional ecological knowledge. In fact the cultural currents of modernizing Nepal appear to exert a stronger pull on Khibang

⁷ I can only draw from participants experience and have no firm evidence of how long log-hive beekeeping has been practiced in Khibang. Consequently, it very well could be a much longer tradition than these interviews conveyed.

residents who desire to, at the very, least try “modern” beekeeping despite recognition of climatic and financial limitation. This demonstrates a willingness to sacrifice traditional practices for perceived modern convenience if given the opportunity. Evidently, the sentiments of Khibang villagers question not only the richness of indigenous knowledge, but also the value of supposedly age-old practices, or, seen differently, customary requisites of isolated agrarian economies. Again, it surfaces that increasing connectivity and knowledge of alternative livelihoods draws people towards modernizing cultural values about what livelihood looks like and away from historically-rooted ways of life.

Perspectives on gendered capabilities for keeping bees further reveals a gradient of change contingent on geographically rooted culture and environment. By comparing location-specific findings it becomes clear how familial responsibilities, religious customs, and social expectations play out within various modes of beekeeping as entwined with cultural currents. While participant 8 ensured me that he holds nothing against women, to this day female participation in honey hunting goes against the orders of god: religious beliefs entail that women’s engagement would jeopardize the entire process/endeavor. However, as foreigners have become interested in witnessing honey hunting, women to accompany men to the base of cliffs, something that previously would have enraged the gods. In Khibang, all participants voiced that anyone can, including women, can keep bees and expressed nothing alike to Hindu traditions that forbid women from touching bees. But they always added that women have little

interested or are scared of being stung, a fear my homestay sister confirmed.⁸ The traditional value of log-hive beekeeping may have weak roots in Khibang, but the expectation and belief held by both genders that women must spend entire days working in the house and fields because this is what they are best at means that no Khibang woman is likely to try beekeeping anytime soon. In a place like Pokhara however, women could be the apiculturists of the future. Though I lack the context of participant 2's familial responsibilities, it is clear that for her, and perhaps other young, educated, urban Nepali women, beekeeping is a vehicle for challenging gender norms as much as a means for livelihood.

From Lower Sinuwa, to Khibang, to Pokhara barriers and opportunity to women's involvement in beekeeping reflect geographically rooted cultural codes and human-environmental relationships. Where the environment is both setting and actor of ritual performance, adherence to religious customs has consequences on life itself. Simultaneously as environment has become object of tourist attraction, the encounter and subsequent blending of seemingly incompatible gender norms is inevitable. Where environmental rhythms provide and constrain human livelihood little room exists to challenge cultural gender norms. However, where the environment has become more a making of human design more than the expression of its own intention, human's, specifically women's, capacity to pry and mold social norms matches the apparent control of humans over nature.

⁸ It is worth noting that my homestay sister did not introduce me to a single woman who keeps bees, though participant 3's wife informally partook in the interview, likely because no women do. However this may also demonstrate an internalization of gendered expectations that limit women from keeping bees and impart the belief that women as naturally unable to keep bees.

Conclusion

This research aimed to understand a selection of people's experience with beekeeping and perspective of bees as a lens to analyze human-environmental relationships in Nepal. Humans need bees, so knowing how to care for them translates to knowing how to care for ourselves—our food, the Earth's plants, this shared home. Through the execution of three case studies focused on three different forms of honey production/collection this study identified key factors that shape these relationships and revealed how human-bee relationships as a lens to understand human-environmental relationships reflect components of development and changing social norms in contemporary Nepal.

Log-hive beekeeping in Khibang village demonstrated people's responsiveness to the environments, including the bees', needs and limitations and agreement to these conditions. In Lower Sinuwa, though the independent nature of wild bees suggests that people may not be meant to hunt cliff honey, honey hunting's deep, value laden, cultural roots are intrinsically entwined with environment that pushing against natural barriers becomes synonymous to livelihood—though culture is shifting. The caring, controlled relationship of Pokhara beekeepers and their colonies exhibits how controlling the environment becomes a requisite of nature's continuation in urbanized settings. These relationships demonstrate a gradient of change in the interaction of people and their environments and the effects of access to information and resources, cultural traditions and currents, and geography as determinants of human-environment relationships as discerned through beekeeping and honey hunting.

Though this research engaged meaningfully with a selection of people and places, its relevance is limited by the small sample size and geographic scope. Future research could expand by visiting other mountain regions of Nepal and conducting similar interviews with a larger selection of people.

To end, let us enjoy the sweet nectar of bees, but carry with us at least one lesson of their teachers: never take all the honey, leave plenty for the bees.

List of Interviewees

Participant 1, Begnas, Pokhara
Participant 2 Lovely Hill, Pokhara
Participant 3 Khibang, Myagdi
Participant 4 Khibang, Myagdi
Participant 5 Khibang, Myagdi
Participant 6 Khibang, Myagdi
Participant 7 Khibang, Myagdi
Participant 8 Lower Sinuwa, Ghandruk

Bibliography

- Ahmad, Farooq, and Uma Partap. "Living with Honeybees – A Decade of Enrichment of Thought and Understanding." *Sustainable Mountain Development: Himalayan Honeybees* (ICIMOD) 54 (Spring 2008): 26-30.
- Athayde, Simone, John Richard Stepp, and Wemerson C. Ballester. "Engaging indigenous and academic knowledge on bees in the Amazon: implications for environmental management and transdisciplinary research ." *Journal of Ethnobiology and Ethnomedicine* 12, no. 26 (2016): 1-20.
- Awale, Sonia. "What's the Buzz." *Nepali Times*. Kathmandu, March 2017.
- Campbell, Ben. "Nature's Discontents in Nepal." *Conservation and Society* 3, no. 2 (December 2005): 324-353.
- contributors, Wikipedia. *Pokhara*. May 6, 2019.
<https://en.wikipedia.org/w/index.php?title=Pokhara&oldid=895845073>
(accessed May 12, 2019).
- Dewey, Caron. "Bees in Trees." *Bee Culture* 5, no. 146 (2018): 79-80.
- Farooq Ahmad, Surendra Raj Joshi, Min Bahadur Gurung. *The Himalayan Cliff Bee Apis Laboriosa and the Honey Hutners of Sasaki*. Vol. 1. Kathmandu: International Center for INtegrated Mountain Development, 2003.

- Gray, David E. "Theoretical Perspectives and Research Methodologies ." In *Doing Research in the Real World*, 16-38. London: SAGE Publications Ltd, 2014.
- Gurung, MB, F Ahmad, and SR Joshi. *Sustainable Management of Beekeeping in Nepal: An Effort of ICIMOD's Project Entitled "Indigenous Honeybees in the Himalayas"*. Bees and Livelihoods, ICIMOD, Kathmandu: ICIMOD, 2002.
- Gurung, Min Bahadur. "Poor Mountain Households Improve Income through Beekeeping." *Appropriate Technology* 2, no. 33 (2006): 31-32.
- Heaton, Thomas. "Nepal's honey and beekeeping industry is about more than profit." *the Kathmandu Post*, Mar 2019.
- Joshi, Surendra Raj. "Honey: A Source of Nutrition, Medicine and Cash Income for Himalayan Farmers." *ICIMOD*. <http://www.icimod.org/?q=1519> (accessed March 9, 2019).
- Kristky, Gene. "Beekeeping from Atiquity Through the Middle Ages." *Annual Review of Entomology* 62 (January 2017): 249-264.
- Morse, B. "Bees and Bee-keeping: Opportunitstic Honey Hunting among Hunter-Gatherers ." In *Insects and human life*, 93-108. Bloomsbury Publishing, 2006.
- Pant, Suman. "Field Methods and Ethics Lecture Notes." Kathmandu: SIT Nepal: Development and Social Change, 2019.
- Partap, Uma, Min Bahadur Gurung, and Prem Manandhar. *Better Livelihoods with Indigenous Honeybees*. Directed by Deepak Bajracharya. Produced by ICIMOD. 2013.
- Sivaram, Dr. V. *Status, prospects and strategies for development of organic beekeeping in the South Asian Countries*. Division of Apiculture and Biodiversity, Department of Botany, Bangalore University , Bangalore: Bangalore University.
- Thapa, R., S. Aryal., and C. Jung. "Beekeeping and Honey Hunting in Nepal: Current Status and Future Perspectives." In *Asian Beekeeping in the 21st Century*, by P. Chantawannakul, G. Williams and P. Neumann. Singapore: Springer, 2018.
- Thapa, Ratna. "Himalayan Honeybees and Beekeeping in Nepal." *Standing Commision of Beekeeping for Rural Developent*.