

This article is an extract from the BLS Winter 2008 Bulletin, with a few extra illustrations: the expedition was part-funded by a grant from the British Lichen Society



Lichens of Nepal Expedition 2007

This report provides a summary of the 2007 lichen collecting expedition to Langtang & Shivapuri National Parks, supported by a small grant from the BLS. Those participating were Louise Olley and Andrew Cross (Royal Botanic Garden, Edinburgh) and Lokendra Raj Sharma, Mohan Joshi and Binod Regmi (Department of Plant Resources, Kathmandu and Department of National Parks & Wildlife Conservation). Of the 1220 specimens collected, 112 have so far been positively identified to species level and around 60% of the total to genus. So far, at least ten species are considered new to Nepal, including *Hypogymnia alpina* Awasthi, *Haematomma wattii* (Stirton) Zahlbr., *Cryptothecia striata* G. Thor and *Psilolechia lucida* (Ach.) Choisy. Species of *Japewia* and *Biatora* may well be new to science.



Map of expedition location

Background

The last checklist (Sharma, *Enumeration of the Lichens of Nepal*, 1995) reported 465 species from 79 genera known from Nepal, and a more recent literature survey reveals an increase to 771 species belonging to 167 genera. Lichenologists estimate that at least 2000 lichen species should occur in Nepal, and over 50 of Nepal's 75 districts still remain unexplored. Many difficulties are faced by Nepali researchers (such as the lack of international botanical journals and type specimens) so few students/scientists

feel encouraged to embrace calls to undertake biodiversity inventories and to monitor and conserve biological diversity. It is hoped that this collecting expedition will provide further impetus for the study of the diversity of Nepal's lichens, to improve conservation and encourage publications in local scientific journals.

Expedition field notes (accompanied by extracts from Louise Olley's personal diary)

Day 1 - Friday September 14

Bus from Kathmandu to Dunche. When crossing the landslip area before Dunche we collected a specimen of cf *Lepraria* sp. from the dry underhang of a rock face alongside the road. We collected a *Heterodermia* from low shrubs on the rocks whilst fending off leeches.

"All along the trail we were coming across precipitous muddy and rocky landslides, each one seemingly bigger than the last. I wish we had taken photographs but we didn't because we were so mud-covered and wet, it didn't even cross our minds."

Day 2 - Saturday September 15

Dunche to Thulo Syabru (arriving well after dark). Along the road from Dunche to Barku, we collected a few small specimens from a medium-sized *Pinus roxburgii*, the only time we collected from this species as it doesn't appear to get much higher. After Barku (our lunchtime stop) we left the road and joined the trail up to the ridge line and then along a trail to Thulo Syabru. Initially we went up through farmland and open woodland. Some of the oak stands had the appearance of pasture woodland. We found a *Pannaria* on an older *Quercus*. The woodlands above Barku are south-facing and have some potential for lichens.

"When it rains the leeches head straight onto the path (when they're not hanging off the foliage). The first person is safe from them but with each subsequent walker the pheromones that attract the leeches gets stronger and stronger so everyone tries to be at the front". "I stopped to tie my laces and had to flick off 15 tiny leeches almost immediately. They move incredibly fast and are very difficult to handle as they attach straight on to your hands and fingers." ... "Went through 2 litres of water by 3PM and still have no desire to pee!!"

Day 3 - Sunday September 16

Thulo Syabru to Bamboo (arriving early evening). Collections from trackside trees, in lower temperate mixed broad-leaf trees. Primarily *Quercus semecarpifolia* and *Alnus nepalensis*, also *Acer* sp. Some collections from wayside boulders near Thulo Syabru. We walked down through farmland (some abandoned), to a bridge across a tributary of Langtang River. On the far side of the bridge, along the valley side with exposed wayside boulders and tall cliffs we collected specimens from some boulders and exposed soil. From the junction of this side of the valley we dropped down towards the Langtang River, descending through uncultivated bamboo woodland on very steep north-facing slopes. Once down at the river level we trekked along the Langtang trail through lower temperate woodland with *Alnus glutinosa*, *Quercus* sp., *Acer* sp. and a host of other tree species. Some of the trees were large and the forest appeared to be relatively undisturbed being some distance



Negotiating a waterfall on the trek...

away from settlements. We collected our first *Pyrenula* from this lower temperate woodland. Many of the trees had their trunks covered in mosses and liverworts, often leaving no room for lichens.

"We were heading down to about 1720m by the Langtang Khola, an enormous and beautiful river with gushing white waters, vast boulders and a path that led across a long suspension bridge and under a waterfall. Poor Andy was carrying my umbrella and it broke under the pressure of the water, leaving him completely soaked and the rest of us in fits of laughter."

Day 4 - Monday September 17

Bamboo to Ghoda Tabela (Ghoratabela). This was a very long day's walking as we went up over 1200 metres. We crossed the river upstream from Bamboo and went along the south facing slope trekking up the main Langtang trail. Woodland on the southern side continued from day 3 with *Alnus*, *Quercus* & *Acer* etc – essentially lower temperate woodland. Once over the river, the woodland opened out to younger woodland and scrub in places. Close to Ghoda Tabela we went through mixed woodland with *Tsuga dumetorum* on the other side of the valley. This type of forest is very shaded, dark and humid but we arrived too late in the evening to explore it. We collected some twig flora species off some scrub on the edge of a clearing (probably an old abandoned field) close to Ghoda Tabela Lodge. Collections also from *Alnus nepalense* and *Viburnum* sp.

"Today was an incredible climb but because we were collecting on the way and kept stopping we didn't notice the gruelling nature of it till near the end. As usual, I managed to drink nearly 4 litres of water. All systems so far are fine now that I have Compeed on my blister. No need even for a rub down with Deep Heat. The only down side is that I don't sleep as well as I had hoped considering the amount of energy we expend during the day."

Day 5 - Tuesday September 18

Day at Ghoda Tabela (Ghoratabela). Collections from rocky pasture plus trees and shrubs (upper temperate mixed broad-leaf) around Ghoda Tabela including *Sorbus cuspidata*, *Quercus semecarpifolia*, *Viburnum* sp., *Daphne papyracea*, *Zanthoxylum nepalense*, *Abies* and *Rhododendron* spp. The afternoon was spent collating collections and writing up packets. By a Buddhist prayer wheel we found a large *Sorbus cuspidata* with *Dimerella lutea*? The tree appeared to be capable of supporting the local equivalent of a Lobarion community.

*"We were out collecting by 9AM and realised pretty quickly that we were right next to a mosquito pool/breeding ground and no amount of repellent was going to protect us. It was the most foul two hours of collecting in drizzle and mosquitoes and I got bitten and frustrated scrabbling around between the three prevalent species *Zanthoxylum*, *Berberis* & *Mahonia*, all extremely spiny!"*

Day 6 - Wednesday September 19

Ghoda Tabela (Ghoratabela) to Langtang. Collection from trees and shrubs adjacent to track including *Sorbus cuspidata* and *Zanthoxylum nepalense*. Also in open glades in upper temperate mixed broad leaf forest and stones of old settlement. Soon after leaving Ghoda Tabela we went through a boulder field covered with a thicket of *Zanthoxylum nepalense*. The main stems supported both crustose species (e.g. *Haematomma*) and foliose species (e.g. *Nephroma*, *Umbilicaria*). The trail continued up through pastures, scrub and patchy woodland on the same side of the valley as the settlements. The north facing slopes are less accessible because of the river and remain wooded.

"This morning I had Tibetan tea for the first time (salty tea with oodles of yak butter fat), it was wonderful. Today was also the most fabulous and easiest of day treks. Mostly the path was gentle, there were few mosquitoes, the weather was mostly sunny (only about an hour of mist and rain) and the views were utterly spectacular, it just seems to get better and better"....

Day 7 - Thursday September 20

Langtang to Kyangin Gompa. Collections from trees and shrubs south of the Langtang River. The lower slopes had been cleared of their woodland and reverted to scrub and patches of abandoned pasture, with young *Larix* recolonising these areas. The only good lichen habitat here was the scree slope part way through the boulders although we did find some nice *Peltigera* on the *Rhododendron* heath on the slopes above the bridge. We also did some collecting on and between boulders in pastures and on soil by the stream.

“Finally Kaijin Gompa came into sight and we were assured by nomadic Yak farmers that there was a bridge (Hurray!) By this time I was fully into my altitude headache and had to stop every 10-15 minutes to recover my breath. The temperature had dropped and the mist had come down and after our 6AM start it felt like sheer drudgery.”... “pounding headache is gradually worsening, incredible fatigue, waves of nausea with a cold sweat on my upper lip. Breathing is heavy and I have a burning hot face and head like having caught the sun, don’t want to move.”



A species of *Lasallia* collected by expedition members

Day 8 - Friday September 21

Kyangin Gompa. I was ill with mild altitude sickness and was forced to stay behind. Collections by the others from a magnificent old-growth birch woodland extending almost from the valley floor up to the tree line on the north facing slopes was by far the most exciting bit of habitat so far on the expedition. The woodland included a mixture of broad-leaved species including *Sorbus microphylla*, *Rhododendron campanulatum* and *Ribes*. *Abies spectabilis* was present (on the ridges) but was very rare. The birch had long strands of *Usnea* cf. *longissima*. The valley floor and

lowest slopes had long been cleared of trees and were now a mixture of pastures and low *Rhododendron* heath (mostly *R. lepidotum*). The woodland area we entered was the most accessible part from the Langtang Bridge. Once in the wood, we could see large mature *Betula utilis*, some pollarded and lopped, lichens were everywhere. The first mature birch, with a girth of over two metres took about half an hour to go over.

“It is now nearly 2.30PM and I am feeling much better, the air is cold and it has been cloudy all day with a few drops of rain. I am waiting for the cloud to rise so I can take my second look at the huge glacier. Like the Grand Canyon, its awesomeness cannot be fully appreciated until you see it for real. It is utterly breathtaking and no photograph can ever fully do it justice. I feel very privileged to have seen one. Being here is like being on top of the world.”



Examining collections in the field

Day 9 - Saturday September 22

Kyangin Gompa to Kyangin Ri. Collections from grassland, scrub and boulders, earth and rock in snow patches, on slopes of Kyangin Ri up to approx 4600m. Also from open grazed juniper & yak pasture with *Rhododendron* & *Cassiope/Juniperus* scrub. I had recovered well from the previous day's altitude sickness and we all set off for the alpine pastures, struggling up a very steep slope outside the village to get to a ridge at 4600m. After a short rest in the thin air, we set off from the ridge aiming to get to a saddle and then drop back into a valley just as the mist came down. Andy saw a relict piece of scrub just below the ridge on a steep, soft, rather unstable slope. As we had gone far ahead he grabbed as many species as he could from the ground and from a small shrubby *Rhododendron* ? *alpinum*. The valley down was a mixture of grazed low

shrubland with boulders and pastures but near the top we walked through an extraordinary eroded sandscape. The boulders had good lichens and despite the cold we collected our way back down the valley.

“They breed a half way cow – the father is a yak and the mother is a cow and unfortunately the result is an animal that looks like a mild mannered cow but has the aggressive temperament of a yak. It yields better milk apparently. Some have the excess hair and others don’t so you can’t tell what’s what. Suffice to say I am avoiding contact with all meandering cows, just in case!”

Day 10 - September 23

Kyangin Gompa to valley floor of Langtang River. Collections from open grazed *Rhododendron/Cassiope/Juniperus* heath. We set off up the valley to see what habitat lay beyond the village. We collected in *Rhododendron* scrub and boulders on the valley floor picking up various species of *Cladonia*, *Stereocaulon*, *Umbilicaria* and *Lasallia*. We wanted to cross the river to get to the upper part of the birch wood on the opposite side but after our guide tested the depth of the water we found it would be impossible to cross so we continued up along the northern side adding various *Rhizoplaca*, *Lecanora* and other specimens to our collection. After an hour or so we saw that the habitat was unlikely to improve. We were exhausted from the previous day’s collecting so finished early to work on the collections.

“The Japanese tourists celebrated a 70th Birthday and then very ceremoniously in typical Japanese elegance, handed out porter tips in beautifully folded origami paper, cheering each porter in turn. We joined in the celebrations and were offered a sponge birthday cake which we shared with our porters –

who on the whole, thought it was horrible. As the evening went on, traditional Nepali dancing broke out but by this time I had retired with two large paracetamol and a pair of ear plugs.”



A species of Pleopsidium collected in the Langtang Valley

Day 11 - September 24

Kyangin Gompa to Ghoda Tabela. Rain. Collections from birch wood south of Langtang River. Species collected from included *Abies spectabilis*, *Betula utilis*, *Rhododendron campanulatum* and *Sorbus microphylla*. It was a very wet one hour’s walk over to the birch wood and we worked our way up an exposed ridge line south of where the others had collected before. We picked out a couple of mature *Abies* amongst the birch on the ridge and aimed straight for them. We followed the trail along the spine of the ridge which was relatively open and collected from open *Rhododendron lepidotum* heath, thereafter from *Betula utilis* and *Sorbus microphylla*. *Rhododendron campanulatum* was abundant in the understory but not a

good host. *Usnea cf. longissima* hung down in long trails from the branches on the edge of the wood. We collected many pinhead lichens and foliose species (*Lobaria*, *Nephroma*, *Umbilicaria*) plus *Graphis*, *Gyalecta*, *Ramalina* and *Lecanora*, as well as many unidentified specimens.

"The rain didn't stop for one minute which made writing up the packets in the field very difficult. We couldn't use umbrellas in the wood so we all got pretty soaked, thankfully the rain has kept the mossies away (I've only just recovered from the last bites) but if the rain continues tomorrow we will be in trouble as we are headed through leech territory again". "Thankfully I've regained all my energy. My legs feel incredibly strong again, my headache has completely gone and I feel alert and interested in everything."

Day 12 - September 25

Ghoda Tabela to Thulo Syabru. Very heavy rain all day. Long trek, no collecting. Got into Thulo Syabru after dark.

"Woke up at 6.30AM to torrential rain. We started trekking late at 9-ish and the rain didn't let up. I was fine until on the opposite side of the river we noticed the largest land slide I have ever seen and quite frankly it terrified me. We had one really hairy landslide to pass which sent adrenalin through me so fast that when I was across and safe my body felt so depleted of energy I nearly fell over. I walked for hours soaking wet through to the skin, sweating and cold with a soaking woolly hat. I sporadically ran on adrenalin for the whole day as we had to pass each tricky patch. Eventually we arrived at our destination in the dark and absolutely soaked through."

Day 13 - September 26

Thulo Syabru. Collections from a *Pinus wallichiana* stand west of Thulo Syabru. Some lichens collected from *Pyrus pashia*. Andy, Binod and Mohan headed off to a stand of *P. wallichiana* on the north facing slope a short walk along the trail from Thulo Syabru leading back to Dunche. The *Pinus* were mostly young trees with a dense *Rhododendron* understory intermixed with other broad-leaved shrubs such as *Pyrus pashia*. One *Pyrus* had a very interesting looking smooth bark lichen flora so they collected as much of it as they could. Specimens collected on this day included several pinheads, *Chrysothrix*, various graphidion species and a crustose species with bright red lecidine fruits.

"My hair is so dirty I think it is beginning to clean itself!"....."It is now 4PM, packets are more or less up to date but still drying and I am hoping that the others are safe and will be back before dark. This afternoon I managed to get through to the UK on the satellite phone. It was such luxury and so lovely to hear my Dad's voice."

Day 14 - September 27

Thulo Syabru to Shin Gompa (Chandanbari). Collections from old-growth *Abies spectabilis* wood along the ridge line from Danda Tea Shop. *Icmadophila*, pink



The new generation of Nepalese lichenologists ?

pinhead, *Pyrenula*, *Sulcaria*, graphidion species and *Chrysothrix*. The group set off and went up the hill to the top of the ridge line. We went through a *Quercus* woodland and collected *Baeomyces*, *Sticta*, *Collema* and *Peltigera*. The woodland had large *Quercus semecarpifolia* with an understory that included several *Acer* species. This woodland gave way to farmland at the top of the ridge, where we had lunch. We collected from *Sorbus cuspidata* trees left standing in the clearings and pastures below the ridge. The *Abies* stands near the farmstead had a lot of younger trees but as we got further away the trees got older. We became very excited when I spotted a bright yellow *Sulcaria virens* hanging high from a large old *Abies*. Some of the trees were huge but as light was fading we had little opportunity to collect. Pinheads feature strongly on *Abies* and we found another pink/purple one! We also collected from huge swathes of a yellow ? *Chrysothrix*, and found various graphidion species and a *Pyrenula*.

"After a bad start, my love of lichens kicked in and I forgot about my troubles and just started collecting. The views were obscured by cloud all day but the lack of sunshine and rain made it a perfect walking/collecting day. We walked through the most beautiful Abies forest followed by a gorgeous, pink Rhododendron barbatum wood with peeling pink bark and huge hairy petioles. They were fairy trails so utterly picturesque; I could never have imagined such places."

Day 15 - September 28

Shin Gompa to Laurebina. Collections of several interesting looking crustose lichens from *Abies spectabilis* wood & lignin on north side of ridge. We walked uphill through patchy scrub and young woodland all within easy reach of the settlement and we collected a few soil lichens from a muddy/mossy bank. Not far along the trail we went over the top of the ridge line and started trekking along the north facing slope through mature *Abies* woodland. This was a great habitat and worth more collecting attention. Sadly, heavy rain came in just before lunchtime and we had to stop. We sheltered in a lodge for a long time by a warm stove before moving off to get to the isolated lodge at Laurebina. We were all very wet on arrival but fortunately there was a good stove and we managed to get the lichens partly dry. Some collecting also from *Viburnum erubescens* (possibly a *Dimerella*), *Cotoneaster* and *Berberis*.

"After a lovely evening at Shin Gompa I slept very badly in yet another slanting bed and woke to hear a rumour that Maoists might cause a bus strike for three days. Rain started 10 mins after leaving for collecting but Andy managed to chivvy me along and in the afternoon he bought me a Tibetan bracelet to go with my Tibetan necklace"... "At lunch time we were at our third viewpoint stop and we still couldn't see more than 30m in front of us for cloud and mist. We really have no concept at the moment of how high we are. We saw few birds and animals because of the rain but we did see another wild Delphinium. Lots of mushrooms including chanterelles collected by our guides and eaten for lunch where I saw a 2.5 year old still being breastfed – practically unheard of in the UK!!!"... "My hair is now seriously grim but thankfully it is cold most of the time so it's hidden under my woolly hat."

Day 16 - September 29

Laurebina to Gosainkund. Very heavy rain. No collections. We headed up to Gosainkund in driving rain and sleet. During the walk we passed many interesting lichens on rocks but the weather prohibited us from stopping for more than a moment.

"No let up in rain and arrived absolutely soaking after having had to give up the brolly at the pass for fear of it blowing away – or worse still – taking me with it."... "Vague views through the cloud and mist gave us some idea of our height and a distant waterfall roared beneath us. Sadly it was far too cold and wet to admire the scenery."... "We arrived sodden and frozen to the core. The hotel is as cold and damp on the inside as it is on the outside! We all huddled round a poorly working stove but Andy and I got progressively colder and since my woolly hat and socks were sodden I was quite prepared to part with 750 rupees for a Tibetan hat and long socks which are wonderfully warm".... "My hair is too

revolting to describe through in a perverse kind of way I rather like being a little wild and smelly – an odd sense of freedom from the obsessively sanitized west.



Day 17 - September 30

Gosainkund to Ghopte. Crossing the Lauribinayak Pass at 4610m. Heavy rain from midday. Little collecting. We spoke about collecting at Gosainkund but given that our clothes were still wet and that rain or snow could return at any moment we decided to push on. We set off early and the porters broke a trail through the snow over the pass. Once over the pass, the slopes were pretty steep and the woodland near the track didn't seem very old. We collected a few specimens from some older *Juniper* trees but otherwise the day was spent trekking to Ghopte. Only a minute *Umbilicaria*, a tiny brown foliose sp. and a crustose lichen were collected.

“The scenery was amazing until the rain clouds started to form. Sadly most of my snow photos were overexposed because I forgot to use the snow option built into the camera. Luckily Andy and Mohan got some good ones.”

Day 18 - October 1

Ghopte to Mangengoth. Collections from upper temperate woodland. Species collected from included *Abies spectabilis*, *Rhododendron* spp. and mature *Juniperus squamatus*. We passed through a *Rhododendron barbatum* stand and open mixed woodland. After lunch we went through a *Juniperus squamatus* woodland where we found new lichens not seen before. We found a *Solorina* on soil on a boulder, sharing its habitat with an odd thallose liverwort and our first *Micarea*.

“Today started very cold but hotted up. Our first rain free days for over a week thankfully, as last night I had condensation drips on my sleeping bag and face and to top it all someone missed the toilet – very grim, the moon and stars last night were absolutely amazing though.”

Day 19 - October 2

Mangengoth to Gul Bhanjyang (Gulphu). Collections from *Abies spectabilis* and *Rhododendron* sp. on side of ravine south of Mangengoth alongside trail, also from wayside trees (e.g. *Myrica esculenta*) and shrubs (e.g. *Rhododendron* and *Berberis*). The trail went alongside a gully and mixed woodland which was good for lichens. We collected more *Sulcaria* and took habitat photographs while the others went deeper into the woods where there were great tussocks of *Cladonia*. We then climbed out of the valley and the trail passed through mature mixed woodland with occasional *Abies*. As we approached the fringes of the Langtang National Park the scene became more agricultural with woodland (exploited *Quercus semecarpifolia*) shifting to pastures. The slopes at the edge of the park were wooded, steep and with badly eroded gullies. Finally we left the park and descended through farmland towards the village of Gul Bhanjyang.

"Today was a hard slog mainly down hill on exposed clay which would have been a slippery nightmare if it had been raining. We saw a snake and I saw my first buffalo close up. Andy finally succumbed and bought us both a Snickers bar. Never has chocolate tasted so good"... "Tonight I drank my third millet distilled alcohol and then braved a look at my feet. Both big toes are now very black and I am wondering if I will lose the nails!"

Day 20 - October 3

Gul Bhanjyang to Chisapani. Main collection from soil exposures on gully sides. An epic walk through farmland from one side of the valley to the other, down and up through terraced fields. Very little time to collect.

"Today was a great day but sadly we did hardly any collecting as we had to walk all the way through to Shivipuri. I woke to discover my mountain lassitude ('Rum doodle's euphemism for hangover) had lifted and I ate a four-egg and onion omelette, a honey and lemon pancake and my usual gallon of Tibetan/milk tea. Today I saw a huge, no, massive, grub (a potato pest I'm told) it was the size of a large fat finger - eeew! Shortly after I passed a man cultivating his soil with an enormous sharp scythe-like instrument but he was in bare feet! I watched him work while I ate two huge slices of a cucumber the size of a marrow."

Day 21 - October 4

Shivapuri National Park near Chisapani. Collections from young woodland and scrub on a circular walk. Fairly disturbed habitat. We set off along the vehicle track out of Chisapani. The soil exposures of the cutting supported a crustose lichen with black lecideine fruits which we added to our collection. After half an hour or so we left the vehicle track and set off on a foot trail. This trail took us through wetland pastures fringed with scrub. The shrub lichen flora was diverse and we collected from different species of shrubs including *Viburnum*, which appeared to support the richest lichen flora and we found *Normandina* on it in two locations. After lunch the party thinned out along the trail and we collected as best we could from young dense woodland, which on the whole was poor in species.

"We were lucky enough to be escorted off the main path by the local warden so we managed to see the national reserve properly. We saw a green pigeon (higher than its usual range) and we saw several wonderfully bright and hairy caterpillars, porcupine prints and the scat of a common leopard."

Day 22 - October 5

Shivapuri National Park. Chisapani to Sundaridal. Collections from wayside trees, woodland and scrub on track from Chisapani to Sundaridal. Species collected from include *Viburnum* cf *erubescens*, *Quercus semecarpifolia* and *Lyonia ovalifolia*. We walked out of the field to meet the bus on the fringes of Kathmandu. We were all out of packets but we couldn't resist collecting from a

stand of well-lit *Viburnum* amongst pastures in a glade, especially as we saw a *Pyrenula* on one of the branches. One large hollowed out oak on the trail invited exploration and two species were collected from the lignum.

“ We passed children walking home from school clearing cobwebs from the paths with long poles with dusters on the top. School children were also harvesting pathside herbs. I felt deeply sad to be leaving but at the same time I was so mentally tired that all I could do was look forward to a good hot shower.”

Conclusion

Despite bad weather and the distances covered, the results of the expedition far exceeded expectations for a first visit to Nepal and the 1190 specimens collected were more than twice that expected. We also have a photographic record of the journey with over 500 habitat photographs. The collections will be identified and divided at the Royal Botanic Garden Edinburgh, with the top set sent to the Department of Plant Resources in Kathmandu. The expedition has highlighted areas that are valuable, accessible and which need more attention. It is my hope that in the future with collaboration we will make use of this information for more targeted explorations.



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