



The Disappearing Glaciers of Kilimanjaro— Conducting Collaborative Undergraduate Research on Africa’s Tallest Peak

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In May 2006, former Vice President Al Gore leaped from the political podium to the big screen, starring in his documentary *An Inconvenient Truth*. This film painted an ominous picture of the implications of global climate change, and offered a scathing critique of government policies toward carbon emissions. Perhaps the most vivid image it presents is the recession of the snows of Africa’s tallest peak, Mount Kilimanjaro. For the past 11,000 years, the top of the mountain has been covered with a series of massive glaciers, giving it a distinctive white cap. In the past century, this cap has shrunk in size by nearly 88 percent. Lonnie Thompson, glaciologist at The Ohio State University, predicted in 2002 that the glaciers will vanish entirely by 2015 or 2020, the result of global warming (Thompson et al. 2002). He and other scholars have since debated whether the phenomenon is solely due to human-induced climate change, or to factors such as increases in solar radiation, decreasing precipitation, or mountain-side deforestation (Kaser et al. 2004; Mölg et al. 2008).

Though the disappearing glaciers of Kilimanjaro have gained the attention of geologists and climatologists interested in its possible global implications, little attention has been paid to those whose lives will be most immediately affected. The mountain is home to more than 800,000 people, most of whom are Chagga-speaking farmers living on its lower slopes. These individuals have long depended on the mountain for their livelihoods. Water from the mountain’s numerous rivers and streams supports everything from irrigation of crops such as bananas and coffee to cooking and sanitation. The ice cap has long been considered the source

of these waters and in turn the people’s prosperity, and to this day remains central to culture and religious beliefs. The likely disappearance of the glaciers thus raises questions concerning health and livelihood, and indeed the very identity of these mountain communities.

Last summer, I began a program of research aimed at filling many of the gaps in our understanding of how glacial recession will affect those living on Kilimanjaro. I had several aims. First, I wanted to explore the implications of glacial recession through the perspectives of the residents themselves, to bring a local dimension to a phenomenon largely discussed in global terms. Second, I wanted to situate the narrative I gathered within the broader historical experience of the mountain, a reflection of my training as a historian and my ongoing research on the history of water management on Kilimanjaro. Third, I wanted to use the project as an opportunity to draw connections between African studies, public health, and the study of climate change, in a way that could facilitate dialogue between disparate fields.

This project was particularly suited to The College of New Jersey’s growing initiative to involve students in faculty research, particularly in the humanities and social sciences. Thus, I recruited two undergraduate students—Beatrice Kwok and Tamra Wroblecky—to join me in the college’s summer student-faculty research program, the Mentored Undergraduate Summer Experience (MUSE). We proposed a nine-week program of research, with a five-week research trip to Tanzania for the purpose of conducting interviews and gathering data from local



archives, libraries, and newspapers, followed by four weeks at the college for transcription and data interpretation.

From the start, I considered Beatrice and Tamra to be full collaborators in the project. After a period of orientation, in which I familiarized them with the region, its history, its current problems, and the basics of Kiswahili (the national lingua franca) and Kichagga (the local language of Kilimanjaro), we worked together to devise a research program. We narrowed our focus to two sites: the town of Moshi and a region on the mountain slope called Kilema, both places where I previously conducted extensive research and retain numerous contacts. Then we isolated a list of stakeholders—mountain farmers, elders, teachers, secondary school

Tanzanian local buses, called daladalas, are largely converted minivans that run set routes at fixed fares. However, they depart when full (often in excess of twenty people and/or various forms of livestock), and therefore the trip could take anywhere between one and a half and three hours.

Once we arrived at our stop, we walked another thirty minutes—often longer as we struck up conversations with passers-by—to meet our local contact Aristarck ‘Stanley’ Nguma. Stanley, as he preferred to be called, is a retired schoolteacher and longtime friend. He assisted us in choosing specific individuals in the community to interview, and also worked with the students as a language interpreter and cultural liaison. Each day we sought to

week, felt confident enough in their skills to send them off with Stanley to conduct interviews on their own. At the end of each afternoon, we would return to Moshi, discuss the progress we had made and any preliminary conclusions we could draw, and prepare for the next day.

Most of our sixty interview subjects were men and women between twenty and seventy years of age, in occupations ranging from full-time farming and teaching to business and the trades. To widen our project to include younger respondents, we distributed a set of surveys based on our core research questions to nearly four hundred students—aged fifteen to twenty-one—at two public secondary schools. We also interviewed several of their teachers, in an effort to see how students’ responses might be influenced by the school curriculum.

Beatrice and Tamra considered our five weeks in Tanzania to be, in their words, “a life-changing experience.” Though both had some previous international travel experience, neither had ever traveled to, much less lived in, a developing country. They quickly adjusted to the differences in standard of living between the United States and Tanzania, and gained an appreciation for the richness of the local cultures. They learned the particular importance of greetings, especially in rural communities. As we walked from place to place, I encouraged them to smile and greet nearly everyone they saw with Kiswahili phrases such as “Habari gani” or Kichagga ones such as “Shimboni shavo.” Such expressions both helped the two to feel more at ease in a foreign setting, and also conveyed to those around us that we were friendly and interested (and, at the very least, not lost). This friendly rapport often yielded us interesting experiences and, in some cases, useful interviews. Beatrice and Tamra also learned to be cognizant of differences in culture. For example, a few

“This experience has not only broadened my global vision and ability to navigate an unfamiliar cultural landscape, but has also been the perfect stepping stone to prepare me for a career in the Foreign Service.”

—Tamra Wrobletsky

students, and people in the mountain-climbing industry—designed a set of core research questions, and from these devised sets of interview questions and surveys tailored for each group. On May 20, 2008, we departed for Tanzania.

On our arrival, the three of us settled in Moshi, using the Kindoroko Hotel as our home and base of operations. We adopted a five-day per week work schedule, dividing our time between the two sites. The days in Kilema were by far the longest. We awoke at 6:30 a.m., ate a quick breakfast, and then commuted via public transit from the bustling town to the lush mountainside farmlands.

speaking with between two and four people, often who lived several miles apart. We would sit down with them, exchange greetings, and—rather than ask a series of questions—attempt to start a conversation about the significance of the mountain in both the past and present, the importance of the glaciers, whether they were in fact receding, and—if the person indicated that they were—how this would affect the health of the local community. The first week, I acted as the leader of these discussions, and later would reflect with Beatrice and Tamra as to how the discussion went and why. I quickly increased their level of participation and, by the last



times we arrived for appointments, only to find that our prospective interviewee was nowhere to be found. Though frustrated at first, they quickly picked up that people on the mountain perceive time very differently than they do. Another example we came to know intimately was transport. Our daladala journeys to and from the mountain required not only tremendous patience, but also a high tolerance of discomfort. Rather than fixate on the deficiencies of our transport, Beatrice and Tamra found that it fostered a unique sense of community, and they used the opportunity to engage in conversations with those around them.

Beatrice and Tamra also thrived from the experience academically. For the very first time, they felt they were “practicing the art of being historians,” and found that they needed to translate the lessons they had received in the classroom into practices that would lead to success in the field. They learned that a field researcher must be a dynamic thinker, willing to improvise at a moment’s notice to take advantage of opportunities. During interviews, they learned how to recognize a potentially interesting remark made by their interviewee, and deviate from the standard question set in order to pursue that line of thinking. Likewise, they discovered the importance of rephrasing questions on the fly so that they might be more easily understood. As time passed, I noticed tremendous growth in their analytical abilities, and they took found great enjoyment in making unexpected discoveries.

I also noticed growth in my own thinking. Having traveled to Kilimanjaro four times in the past six years, and spending over a year and a half there, I had much more familiarity with the region and its peoples than my students. Travel with them, however, allowed me to experience the mountain through their eyes. I found myself thinking about numerous topics in different ways, asking questions I had not

previously asked, and in turn I feel it sharpened my overall approach to field research.

Once we returned to New Jersey, we turned our attention from data collection to transcription and interpretation. This work is ongoing, as is the project as a whole, but thus far we have noticed very revealing patterns. First, we discovered that among the general population, there is widespread acknowledgement of glacial recession, but understanding of the phenomenon depends largely upon the age of the respondent. Younger people were more likely to cite lessons learned in school, while elders relied upon their own observations of the mountain’s peak over time. Some even indicated that they had learned of glacial recession through Swahili-language media, including television, radio, and newspapers.


“The journey to Tanzania forced me to let go of the comforts of home, opening my eyes to a world beyond my familiar surroundings; it was an irreplaceable experience that gave me the opportunity to grow both academically and personally.”

—Beatrice Kwok

We were not surprised that people would recognize the glaciers shrinking over time, since these changes are readily visible to the naked eye. What we found revealing is how people understand its cause. They almost unanimously claimed that a century of deforestation on the mountain’s slopes was the key factor, with some even citing various aspects of forestry policy during the German and British periods of colonial occupation. This response thus situates glacial recession within the historical experience of the mountain, and conceives of it as a local, rather than a global, event. It is

also striking in that it mirrors the work of some scholars who have asserted that deforestation on the mountain’s slopes could be a contributing factor to glacial recession (Duane et al. 2008). Regardless of accuracy, it is an interesting coincidence that mountain farmers and some academics are reaching similar conclusions. I feel this example illustrates the importance and potential value of local knowledge and perspective, and will serve me well in teaching its importance to students. Our school-age respondents and those in the mountain-climbing industry also cited human-induced global warming as another contributing factor. Even when they did so, though, they stressed the importance of local factors, such as pollution by industries in Moshi and elsewhere in Tanzania.

Our findings also indicate that the people believe glacial recession threatens the local environment, with potentially devastating implications for public health. Smaller glaciers, they feel, are leading to warmer temperatures, less rainfall, and less water in streams, rivers, and irrigation furrows. These changes, in turn, will lead to reduced crop yields—especially for bananas and coffee—as well as increased incidence of waterborne diseases like typhoid. Scientific data seems to indicate that these resources will be harmed little by glacial recession, as most water used by the people comes not from glacial



melt but rather from precipitation in the alpine forests. Nonetheless, these fears are certainly widespread. Those in the mountain-climbing industry focus on the importance of the glacier as a tourist draw, and fear that fewer people will visit a Kilimanjaro without a white cap. Though expressions of fear focus on health and livelihood, the greatest potential loss is likely to local identity. For generations, the people have looked to the white cap of the mountain as a beacon for their people, a place of deep cultural and spiritual significance. Its disappearance could provoke a distinct challenge to how people think of themselves. Anxiety is so strong that, for many people, it is unthinkable that the glaciers could ever disappear entirely. As

one respondent said, “if the glaciers disappear, it will be the end of our life.” Another went even further, saying that without the glaciers “you will find no life. No Chagga at all. Kilimanjaro will perish. Tanzania will no longer be known to the world.”

Even for those who accept their complete disappearance as a real possibility, many refuse to give up without a fight. All across the region, local government agencies and the Kilimanjaro National Park are promoting the planting of trees, in hopes that forestation will help to stop glacial recession, and maybe even help restore the glaciers to their former size. For these initiatives, local leaders hope to find support from international agencies and nongovernmental organizations. In the

words of one local official, “Kilimanjaro is not only for Tanzanians or Chagga people. It is a worldwide precious thing. It should be saved.”

Thus far our conclusions are preliminary, and there is definitely much more work to be done. Over the next few years, I plan to continue the program of research, hopefully recruiting other students, gathering more respondents in Kilema and Moshi, and extending to other regions of the mountain. This will enable me not only to introduce the topic in my forthcoming book manuscript, but also to develop it as an independent project. This line of research has the potential to illustrate the importance of local knowledge in broader discussions of issues such as global climate change, as well as to emphasize the importance of interdisci-

plinary work involving fields as diverse as public health, climatology, and history. Whether the conclusions reached by the peoples of Kilimanjaro match the current trends in scientific scholarship is irrelevant. They are the ones who will experience the phenomenon most readily, and only by understanding their views and opinion will academics and policy makers be able to introduce forms of knowledge that prove useful. For Beatrice and Tamra, who are about to enter their senior year, the experience of working in the field has helped to shape their growth as scholars. They have a new appreciation not only for field research and interdisciplinary work, but also for their place in the world. In the future, I see faculty-student collaborative research programs such as ours rising in popularity, in turn allowing us faculty to better serve not only our students, but also our own programs of research. ■

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