

## Notes on the HMRSC VI Field Excursions

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Two field excursions were organized as part of the HMRSC VI in Ethiopia. The itinerary can be traced in the sketch map of Figure 1.

**Figure 1:** Sketch map showing the route of both HMRSC VI field excursions.

The first excursion on September 5, 2001 was an afternoon trip to Debre Sina/T'armaber Pass which is about 200 kilometers NNE of Addis Ababa at latitude 9°51'08" N and longitude 39°41'07" E. The T'armaber Pass is at an elevation of 3,260 m and has an incredible outlook across and view into the Rift Valley at Debre Sina at 2,446 m above m.s.l. (Figure 2) This is part of the East Africa Rift Valley that extends from the Dead Sea and ends as an underwater trench in the Antarctic Ocean, some 8,000 plus kilometers in length. From the top of the escarpment to the next fault block, of which Debre Sina is part, the elevation change is nearly 1,000 meters. The actual floor of the Rift Valley at that point is about 1,100 m above m.s.l. along the Awash Wenz. The T'armaber Pass is also the drainage divide between the Mediterranean Sea and the Indian Ocean. It also provides an outstanding example of a dyke (Figure 3). (Written contribution by H.L. BLOEMER.)

**Figure 2:** View from the top of the escarpment of the Rift Valley near T'armaber Pass down to the next fault block.

**Figure 3:** A participant of the field excursion is climbing a dyke near the T'armaber Pass.

The second excursion was a field trip to the Bale Mountains National Park. A comprehensive field guide written by H. ARAYA was made available to the participants of the field trip:

**This is Ethiopia** – a highland country in the Horn of Africa. There are many remarkable plant and animal species in the lowlands, highlands and mountains that are divided by the Great Rift Valley. This is the Great Rift of Africa and the world which starts in Mozambique and continues through Ethiopia and Eritrea to the Red Sea and ends in Syria. The Great Rift Valley is the most striking feature of the land seen from space.

The Great Rift Valley divides Ethiopia into two on a south-southwest to north-northeast alignment. The elevation varies from 4620 m a.s.l. on Ras Dejen (also called Ras Dashen), the highest mountain on the northwest margin of the Simen Mountains, down to 110 m below sea level in the Kobar Sink, in the northeast Dallol depression, which is part of the Great Rift and the lowest area of the country. Both features are found more or less at the same latitude of 12-13° N.

Our field trip is to the southeast, starting at an altitude of 2400 m around the Semien Hotel in Addis Ababa. Entoto Mountain, on whose south-facing flanks Addis is located, rises to just over 3000 m a.s.l. The road out of Addis to the Great Rift drops to 2180 m at Saris and 2120 m at Kaliti at the boundary of Addis Ababa with Oromiya Administrative Region. The first small town is Akaki, about 20 km from the center of Addis Ababa and at 2030 m. Akaki is traversed by the Akaki River, which drains through the most industrialized quarter of Addis Ababa and is highly polluted. Despite pollution, however, it is much used by local people and their animals, and also to irrigate fields of vegetables. Human and industrial pollution is one of Addis Ababa's major environmental challenges. The first hydroelectric power dam in the country (Aba Samuel) was located just south of Akaki, but is now silted and no longer in operation.

The next town, about 50 km from Addis Ababa, is known as Bishoftu, the local Oromo name, and also Debre Zeit, which is the name it was given by Emperor Haile Selassie's government. The area is at an altitude of about 1800 m and has one large temporary lake and five crater lakes. Both Bishoftu and

Hora lakes are classic circular caldera lakes. Further away is Green Lake which gets its name from the abundant growth of the alga, *Spirulina*.

At about 70 km from Addis Ababa is Mojo. The altitude is 1740 m at the bridge over the river. The small town is the site of an edible oil factory and a tannery. It is a nodal transport point where roads from all four points of the compass meet: Awassa (south); Minjar (north), Nazareth (east) and Addis Ababa (west). We will come back to this point from Awassa.

From Mojo, the road goes through an area of badlands and over the lip of the Great Rift to the attractive town of Nazareth. This is the narrowest point of the Rift in Ethiopia and has an elevation of 1580 m above m.s.l. Further east is the Awash National Park which includes Fentale, a volcano that is still active with numerous steam vents in the center of the crater as well as around the rim. This is the place where the Great Rift opens out into the Afar Triangle. The road continues over the Awash River to Dire Dawa and Djibouti to the east, Harar and Somalia to the southeast, and Assab to the northeast.

The town of Nazareth is next to Wonji sugar estate, the oldest sugar plantation in the country. The bagass is recycled into paper at the local paper mill. The sugar estate can be readily seen on the descent into Nazareth as a green expanse to the south of the town. Our route takes us south out of Nazareth and passes over the Awash River by the village of Melkasa. Seven kilometers off the main road is the resort of Sodere built around natural hot springs. This is a favorite weekend resort with hotels and a disco night at the weekends. Despite these attractions and distractions, hippo and crocodile are seen regularly in the river and the trees are full of birds and Grivet Monkeys.

Starting from the bridge over the Awash River, the road starts to climb up reaching Asella at 175 km from Addis where the average elevation is 2330 m around the bus station. From the bridge, on a clear day one can see the Chilalo Mountain Range with Chilalo Mountain standing clear at 4138 m. Asella is a highland town where the first attempt to introduce a multipurpose agricultural development package was made. This was linked with adaptive research and one result can be seen in the extensive fields of rapeseed grown in the area. Much of the oil from the rapeseed is used for the soap factories based in Nazareth. The area also grows malting barley for Ethiopia's flourishing beer brewing industry.

After Asella, the wide sweeping road passes through a series of small towns:

**Sagure** about 30 km from Asella with an elevation of 2420 m; to the east, at about 7 km, lies the town of Lemu.

**Bokoji** – a town 50 km from Asella with an elevation of about 2700 m is now famous as the birth place of two of Ethiopia's outstanding athletes: Haile Gebre Sillasie, the World 5000 and 10,000 m record holder, and Derartu Tulu, the winner of the women's 10,000 m in Barcelona.

**Merero** is found a further 30 km along the road south. This town is bounded by two high mountains, the higher one being Mount Kaka at 4190 m to the southwest of the road.

**Assasa** is the next town. There is a waterfall about 200-250 m from the road (see Figure 4) where a water powered flourmill is situated. Such mills are not often found in Ethiopia. Assasa is near to the headwaters of the Wabe River, which feeds the Melka Wakena hydro-electric power station. This is the largest power generating facility in the country but the dam was almost empty last June because of three years of drought in Eastern Ethiopia. This resulted in severe power rationing for the whole country – every three days, one third of the country and a third of Addis Ababa went without electricity from 7 a.m. to 11 p.m. This disrupted many economic activities. Before the rain, the reservoir had very little water and much silt and it is expected to only be able to serve for a short time before it is being entirely silted up. Fortunately the rains were sufficient in July for a regular electricity supply to be restored at the beginning of August.

At about 20 km from Assasa (about 300 km from Addis) we join the road from Shashemene in the Rift Valley to the west. The road continues east for 100 km to Bale-Goba. Local buses take up to five hours to cover this distance because the heavy black soil over which the road is built is very unstable causing many maintenance problems. See Figure 5. However, the view to the north of the wide plain dominated by cereal crops and to the forested mountains of the south can help distract the traveler from the slow progress.

Before climbing up to the Bale Mountains, the road passes through three small towns – Dodola, Herero and Adaba. Dodola is the local administrative center, and also the base for a new eco-tourism venture as part of an Integrated Forest Management Project of Oromia Development Association supported by GTZ. The mountain range to the south of the road still has quite extensive patches of indigenous forest including some old, possibly very old, Heather/ *Erica* forest. The Project has built five huts which are managed by the local communities, each of which has identified a hut-keeping family. Rates for services, particularly guides and horses, from the communities have been set and all the revenue from visitors to the area goes directly to the communities. Eco-tourism is part of a comprehensive program to enable forest dwellers to obtain a reasonable income from their forest areas as well as be responsible for conserving the forest.

After Adaba the road climbs steeply to Dinsho at the northeastern border of Bale Mountains National Park. The climb passes through Juniper forest ascending to an elevation of about 3350 m on the road. Nearby, cloud-covered slopes rise to nearly 4000 m. At the top of the climb there is a dyke with a general trend northeast-southwest. The road then dips into the Gaysay Valley traversed by the Wabe River, which we will meet again at the Sof Oumer Caves. The Gaysay Valley and Mountain is a favorite site for the endemic Mountain Nyala which grazes in the swampy grassland. Another endemic mammal, Menelik's Bush Buck is found in the forest.

The town of **Dinsho** spans the Wabe River. It has grown considerably since the Park was established in the early 1970s, but benefits from the Park are only now beginning to be shared with the local community. During the change in government in 1991, the lack of good relations with the local people led to the farmers invading the Park and killing a very large number of Mountain Nyala. Just outside the town is the track leading to the headquarters of the Bale Mountains National Park.

**Robe** is the next town at about 2440 m elevation and 400 km from Addis Ababa. This is the new Zonal Center with some new government buildings and an airstrip. The town is about 15 km from Goba to the south.

**Goba** was the regional capital when Bale was an administrative region under the rule of Haile Selassie and the Mengistu government. It still has better infrastructure and services than Robe, and is the main town for visitors to the Bale Mountains National Park.

**Sanetti Plateau** is at the top of the Bale Mountains with an average altitude of 4000 m. The climb from Goba at 2900 m to the plateau takes a route through various vegetation zones. Just outside Goba are *Eucalyptus* plantations which have replaced the indigenous *Juniperus* and *Podocarpus* forest. Above the *Eucalyptus* one comes into what is left of *Juniperus* mixed with *Hagenia*. There are many open glades where animals are grazed and wild flowers peculiar to the area are found, such as a local *Brassica* (cabbage). At the upper limit of the forest, at 3500 m, the main trees are *Erica* (tree heather) and a tree called St. John's Wort with large yellow flowers. The natural *Erica* belt has been almost eliminated through cutting. The wood is very hard and burns without producing smoke while the leafy twigs will catch fire even when they are wet.

Above the timberline one comes to a bushland and grassland complex. The bushes are an endemic *Alchemilla* (Lady's Mantle) and various species of *Helichrysum* (everlasting flowers). The round white cushions are not for sitting on: the *Helichrysum* is full of spines! The ground is very spongy underfoot. This is due to the activity of the endemic Giant Mole Rat which tunnels under the soil and pulls in piles of grass and other herbs for food and bedding. This rodent is a favorite food of another endemic mammal, the Ethiopian Wolf (Simen Jackal). It has a remarkable long muzzle for pulling rodents out of their burrows.

The Afro-Alpine expert, Olov Hedberg, characterized these high Afro-Alpine areas as being "summer during the day and winter during the night". This is because each night the temperatures drop below freezing point and then melt during the day when temperatures frequently rise above 20° C at the surface of the soil – air temperatures are often much lower. For this reason many of the plants have thick coverings of hair and the ability to curl up at night and open out during the day. The soils are thin on the slopes where patches of solifluction are also found. The generally smooth topography and the presence of moraines and isolated small mountain lakes, like Hora Bacha, provide evidence of extensive glaciation during the last ice age. See Figure 6.

Man and domestic animals are not often found in this harsh environment. However, there are 4 small houses (tukuls) at the foot of Tulu Dimtu and the area is important for grazing when forage in the lowlands is scarce. The plateau has salt licks and the people bring their animals up to visit these.

The second highest mountain peak, Tulu Dimtu (also called Mount Batu), is also found rising from the Sanetti Plateau to 4307 m (Figure 7). Dimtu means peak in Oromiffa, the local language. There is a transmission station on the peak with a single guard who spends much time hiding from the windy weather. Tulu Dimtu is about a 30 km rugged drive or walk from Goba.

### **From Robe to Sof Oumer**

The distance from Robe to Sof Oumer is around 100 km. We travel east passing several small towns and large state farms where bread wheat and malting barley are grown. At about 65 km, we reach the town of Goro having passed through a northwest southeast direction depression sandwiched by two volcanic ridges. These are covered with a dense vegetation of bushes and small trees which are bare during the dry season, but covered with flowers and leaves during the rains.

**Sof Oumer** is a sacred pilgrimage site for Muslims. The descendants of Sof Oumer are still living in the area and they hold traditional rights over the caves. The caves are sacred and have places for prayer and the making of offerings. People go there and ask for special favors and when they are granted, the supplicant returns to fulfill his promise.

The Sof Oumer Valley was formed by the same Wabe River we crossed in Dinsho. At Sof Oumer, the river has cut through limestone forming a narrow valley before it disappears into the Sof Oumer cave system (Figure 8).

The road down to the caves is very rugged and poorly maintained. The road cuts through the same sequence of rocks as the river. There is hard Adigrat sandstone at the top, but it is being heavily eroded. This sandstone was deposited during the Triassic period of the Mesozoic era. Below there are alternating layers of marl, shale and limestone; the marl and shale are much softer (unconsolidated) than the limestone, so the limestone juts out as shelves around the valley. The limestone was formed during the Jurassic. The former river-bed is at a higher elevation and alignment than the present cave system and has a different direction than the present one.

The full cave system was first explored and mapped in the late 1960s. The entrance to the caves is dark and wide, but inside there are both large chambers and narrow passages. Locally it is assumed that the total length of the cave system is 15 km from the entrance to the mouth. However, in the 1980s some Russian speleologists (cave experts) went through the system in one hour, making the distance between 3 and 4 km. You can see the different caves, pillars and pot holes (swirl holes) on the side of the river and at the gate into the caves. There are also collapsed blocks inside the cave but it requires high-powered lights to see these clearly. The altitude at the present river bed is 1170 m. It can take up to an hour to climb up or down to the caves, according to the physical capacity of the visitor.

### **Return to Addis Ababa**

After visiting Sof Oumer, we return to Goba for the night. The next day we leave for the Great Rift Valley, joining it at Shashemene 160-170 km from Robe. The road passes through the towns we commented on earlier, Adaba, Herero and Dodola, and then continues west to Kofele at 2600 m elevation (Figure 9). In this town there is a road north to Bekoji which we already passed when coming south from Asella. About 25 km drive to the west, the road joins the Addis Ababa to Kenya highway at Shashemene. This is a very busy town as it lies at the junction of five roads.

1. West to Arba Minch, through Wollaita Sodo to Konso where people have practiced terraced cultivation for more than 600 years.
2. East, from where we have come, i.e. the Bale Mountains and Sof Oumer.
3. North to Addis Ababa through the floor of the Great Rift Valley.
4. South to Kenya through Awassa and then to the border at Mayale.
5. Southeast to Wendo Genet which is a site with natural hot springs at the edge of a very large caldera. Princess Tenagnework, a daughter of Haile Selassie, developed this site. Her house is

part of a modern hotel where her father's bedroom is kept as a museum. The view over the wide valley of the caldera southwest to Awassa is very beautiful, particularly during sunset. The hot springs have now been developed into a small swimming pool and baths. The area is very popular with parties of tourists whose special interest is bird watching since it offers outstanding opportunities to observe local bird life.

We take the road south to Awassa which is 30 to 60 minutes drive, depending on the type of vehicle used. The name Awasa serves for the town (capital of the Southern Nations, Nationalities and Peoples Regional State of Ethiopia) and the lake. The town on the southern shore of the lake is expanding rapidly – as is the lake itself. The two Wabi Shebelle Hotels (No.1 and 2) situated on the lake shore, are now being flooded by the rising water level. It is safe to swim and recreational boating is also possible. The town is about 275 km from Addis Ababa and at 1650 m above sea level.

On the route back to Addis Ababa and about 70 km north of Shashemene, there is one of the country's designated National Parks, Abijata-Shalla National Park. A view of the area with the four Rift Valley lakes, Shala, Abijata, Langano and Zway can be had from the top of the road just before it drops into the lakes region. The park suffered badly during the change in government in 1991 and 1992, and most of it has been taken over by the local people. The park authorities have a small area where ostrich, some antelope and other wildlife can be seen. However, the main reason for the Park is the lakes which have a breeding colony of Great White Pelican, and which are visited by thousands of migrating birds from Europe.

Langano to the east of the main road is a reddish colored lake due to suspended materials. It has hotels with boating facilities, but only small fish. Lake Shalla to the west is in a very deep crater and has very hot springs around the shore. The water of the lake is highly alkaline and sterile. Local people use both the lake and the springs medicinally. The local people measure the temperature in local sayings: "it can cook corn in five minutes" and really they do cook there because you can find corn husks littered around there (Figure 10). Lake Abijata is to the north of Lake Shalla. It is shallow filled with fresh water from Lake Zway and, in the past, was highly productive producing much fish for people and the birds, particularly the Great White Pelican. Although decreasing there are still many birds to be seen at this lake.

About 50 km further north on the drive to Addis Ababa we come to the town of Zway and Lake Zway. The lake is very productive and supplies fish for the local people and Addis Ababa, and also irrigates the large state farm. Here we will rest and have lunch in the Bekele Molla Hotel. After Zway we come to Meki and Mojo towns. Mojo is where the Addis Ababa-Djibouti road and railway line pass through and where we left the Rift Valley road to go east to Nazareth. The last stage of our field trip takes us from Mojo back to Addis Ababa.

All photographs taken by V. KAUFMANN.

**Figure 4:** Waterfall at the Wabe River near Assasa.

**Figure 5:** Rough road conditions north of Assasa often cause flat tires.

**Figure 6:** Furrows and ridges caused by cryogenic processes on a slope, Sanetti Plateau at 3870 m.

**Figure 7:** View from a lower level of the Sanetti Plateau towards Tulu Dimtu (4307 m) which is covered by a thin layer of snow. Giant lobelias can be seen in the foreground.

**Figure 8:** Wabe River disappears into the Sof Oumer cave system.

**Figure 9:** A group of Ethiopian children at the road side.

**Figure 10:** Corn is cooked in natural hot springs at the shore side of Lake Shalla.