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ExSA-Pre 7

The Bangweulu block and Irumide belt: a Traverse across the SE margin of the Congo Craton

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(in partnership with the Geological Survey of Zambia)



ITINERARY IN BRIEF

The Irumide field trip will develop a composite cross section across this fold and thrust belt that defines a part of the SE margin of the Congo craton. Commencing in Mansa, the trip starts with the volcanics and granites of the Bangweulu block, one of several components of the Paleoproterozoic Congo craton. It will then examine the stratigraphy and structure of the unconformably overlying sediments of the Muva Supergroup. It will trace these sediments into the Late Mesoproterozoic deformation seen in the foreland region of the dramatic, NW vergent, Shiwa Ngandu fold belt. Turning south, it will follow along strike the upright structures and huge late-tectonic granite massifs of the Irumide belt before viewing the SE vergent structures of the internal zones exposed east of Mkushi.

Several controversies bubble gently around this little studied orogenic belt. Notably the tectonic setting of the Bangweulu Block basement of volcanics and granites; the nature of the Muva cratonic basin, the depositional environment of its quartz rich sediments and its subsidence driving mechanism; the role and implications of the recycled late-orogenic Irumide granite bodies; the geodynamics of the Irumide deformation and metamorphism; and the nature of post-Irumide, cobble conglomerates, and epirogenic deformation. All of which provide room for new contributions to this little studied area.

The trip will involve long drives in 4x4 vehicles over the high plateau of Africa. The large distances between key outcrops will allow time for discussion of the evolution of this unique 'rough plateau' and its marginal rifts. Accommodation will be in lodges of variable quality and interest. Historical highlights along the way are the memorial to Paul von Lettow-Vorbeck at the strategic Chambeshi Bridge and the "Africa House" at Shiwa Ngandu. The natural rock formations of the Mutinondo Wilderness camp will also be memorable. The timing of the trip coincides with the unique "early spring" russet colours of the Miombo woodland, characteristic of this high plateau region.

Meal Key

BB	Bed and Breakfast
DBB	Dinner, Bed and Breakfast
DBB+	Dinner, Bed and Breakfast plus one additional activity
DBB++	Dinner, Bed and Breakfast plus two additional activities
FB	Full Board (includes 3 meals per day)
FB+	Full Board (includes 3 meals per day) plus one additional service
FB++	Full Board (includes 3 meals per day) plus two additional services
FI	Fully Inclusive (includes all meals and local drinks), plus all activities

Day 1**20 August 2016**

You will be met, by your tour coordinator at Lusaka airport and assisted with the boarding procedures for the Charter flight to Mansa.

Overnight in Mansa, Mansa Lodge BB, dinner at leisure

Day 2**21 August 2016**

Paleo-proterozoic Volcanics and granites of the Bangweulu terrane.

Overnight in Mansa, Mansa Teja Lodge FB, packed lunch, dinner at leisure

Day 3**22 August 2016**

Paleo/Meso-proterozoic Mporokoso Group sediments of the Muva Supergroup (Sgp); NW vergent structure of the eastern margin of the Mporokoso Group basin.

Overnight in Kasama, Kasama Thorntree Lodge FB

Day 4**23 August 2016**

Transition from flat-lying Muva Sgp to the NW vergent and upright folds of the Shiwa Ngandu fold belt.

Overnight at Shiwa Ng'andu House FB

Day 5**24 August 2016**

Shiwa Ngandu fold belt, syn--orogenic granites and post-orogenic conglomerates.

Overnight at Mutinondo Wilderness Camp FB

Day 6**25 August 2016**

Upright structure, amphibolite metamorphism and major granite bodies of the internal zone of the IB

Overnight at Loza Guest House FB

Day 7**26 August 2016**

SE vergent structure of the internal zone. Arrive Lusaka late afternoon. Drive to Lusaka.

Overnight at Protea Hotel Lusaka BB

Day 8**27 August 2016**

Road transfer to Lusaka Airport, for International flight to Oliver Tambo Johannesburg, and onward flight to Cape Town.

Description:

To provide an overview of the Mesoproterozoic stratigraphy and tectonic evolution of the Irumide Belt, its basement and post tectonic evolution.

The trip will develop a 400km cross section from the Luapula river valley to the Luangwa river valley across the high plateau of northern Zambia. Development of the Central Africa Plateau, Zambia's rift basins, places of historical and natural history interest will be discussed along the way.

The Bangweulu Block of northern Zambia is one of several discrete crustal units that comprise the Congo Craton. It is formed of Paleoproterozoic crust of Ubendian belt gneisses and schists and older protolith, overlain and intruded by Paleoproterozoic acidic and andesitic volcanics and granites.

On this basement a major cratonic basin system developed, characterised by variable thicknesses of quartz sandstones and siltstones known as the Muva Supergroup. The Muva Supergroup today outcrops in two distinct basins, the NE/SW trending Irumide?Shiwa Ngandu basin to the east and the triangular Mporokoso basin to the west. Both areas were subject to a phase of NW directed fold and thrusting at about 1050Ma. This deformation is seen in the Mansa area as steep ductile shear zones in the volcanics, granites and folds and thrusts in the Muva sediments.

The deformation created the Luongo fold belt and the large asymmetric fold that declines the eastern margin of the Mporokoso basin today. To the east the deformation created the major fold and thrust belt seen in the in the Irumi hills and in the Shiwa Ngandu area. Eastwards the upright structures pass into SE facing ductile shear zones imbricating Bangweulu basement and Muva cover sediments under amphibolite grade metamorphism.

This deformed terrane is intruded by late-tectonic granites of circa 970Ma and similar regional K/Ar cooling ages. NW/SE directed Irumide kinematics terminate at the Pan African age, ENE trending Mwombeshi shear zone. Irumide structures were reactivated during Pan African and Late Paleozoic/Early Mesozoic deformational events. Cenozoic rifting created the relatively rough topography of the region and bounds the Bangweulu/Irumide plateau to the NW and SE. Present day drainage systems closely reflect this Neotectonic activity.

Notes:

- All prices in **US Dollars**
- This Quotation does not guarantee confirmed services, accommodation or flights
- Baggage limit on all charter domestic flights is 20 kgs in soft baggage
- Itinerary and costing, based on 9 participants ONLY

Minimum Persons 10

Maximum Persons 25

COSTS INCLUDE:

- Transport
- Fuel, Tolls, Transit, all Transport Permits & R10 million Passenger Liability,
- Accommodation as indicated
- Breakfast at Mansa and Kasama Lodges
- All meals, beverages, and activities on Shiwa Estate, including access to Library and Archives.

- Tea/Coffee services in the chalet before breakfast, full English breakfast, lunch and three course dinner at Mutinondo Wilderness
- Breakfast at Protea Hotel Lusaka
- Charter flights (Proflight-Zambia) and airport departure taxes (from Lusaka only)

COSTS EXCLUDE:

- All services except those listed above.
- Flights, Airport taxes, Visas,
- Sleeping bags,
- Porterage,
- Tips and gratuities,
- Anything of personal nature