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# Ancient Egypt's Lost Legacy?

The Buduma Culture of Lake  
Chad

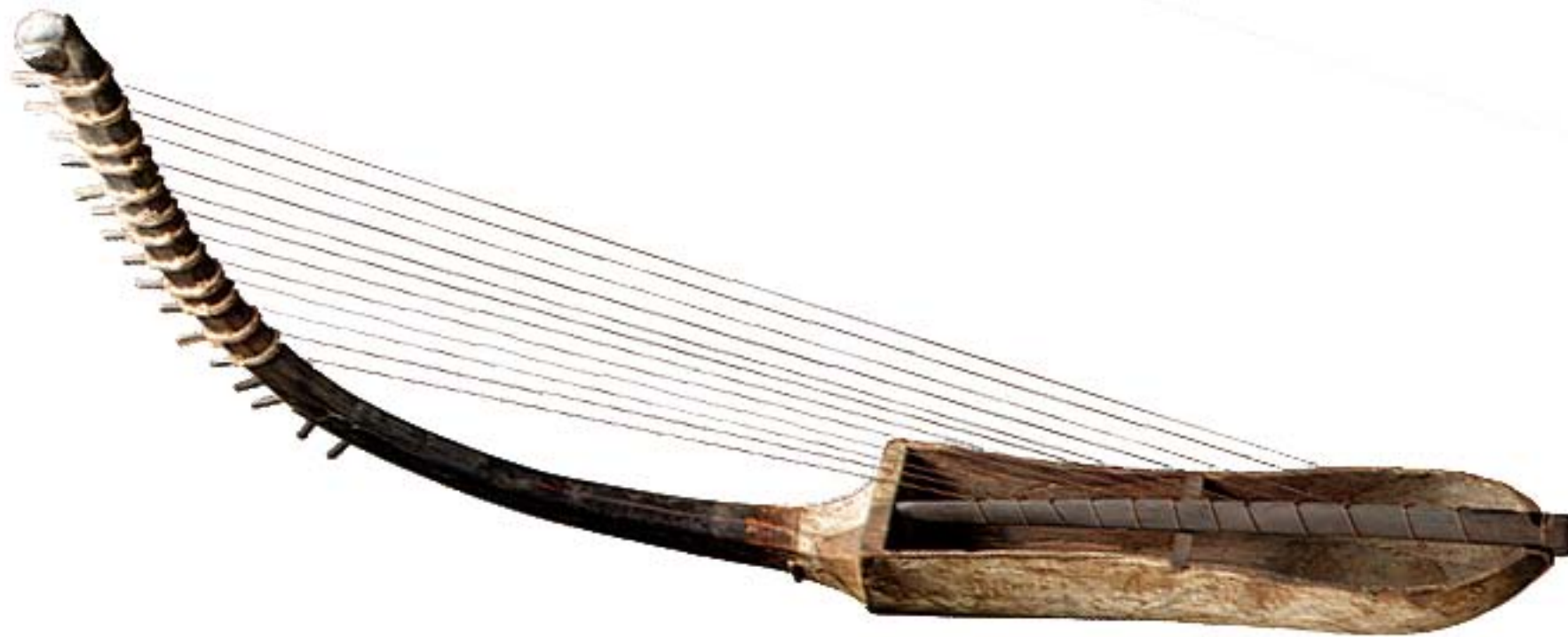


Guy Immega

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## The Buduma Culture of Lake Chad



Egyptian Arched Harp, New Kingdom, late Dynasty 18, ca. 1390–1295 B.C.  
[Metropolitan Museum of Art, Heilbrunn Timeline]

Guy Immega

# Foreword

In 1951, when I was six years old, my parents took me to my first movie: *The African Queen*. The romance of the jungle – and the challenge of piloting an old steamboat among crocodiles and hippos – thrilled me. Like a duckling seeing its mother for the first time, I imprinted on Africa.

Without conscious memory of this early movie experience, when I volunteered for the U.S. Peace Corps in 1965, I chose Africa as my destination. From 1966-68 I worked in Niger on a medical team in the Sahel south of the Sahara – far from a jungle. However, my village of N’Guigmi was near Lake Chad, a vast, watery wilderness. Again, with no recollection of Humphrey Bogart, I decided to build a boat (actually, a hippo-proof barge) and venture onto Lake Chad.

As a pretext for boating, I started a project to survey for schistosomiasis, a waterborne parasitic disease. While on the lake, I met the Buduma people, poling papyrus pirogues. We made friends and I took photographs, as did other Peace Corps volunteers. I paid a Buduma boat builder to construct a model

papyrus boat, which now sits in my living room. I also arranged for Buduma musicians to play a concert on their Biram harp. I still have the original reel-to-reel tape recordings of their rhythmic music.

By 1987 Africa was a private memory, beyond the comprehension of my friends. However, while working as an aerospace engineer in Vancouver, I noticed a travel poster from Egypt in my supervisor’s office. It showed an ancient Egyptian painting of a man playing an arched harp, identical to the Biram harp of the Buduma people. I wondered if the Buduma were culturally connected to ancient Egypt. Now, twenty-five years after seeing the poster, and forty-five years after my stay in Africa, I’m able to connect the clues. In addition to papyrus boats and the arched harp, the Buduma have Kuri cattle (a unique, water-adapted breed) and speak Yedina, a Chadic language related to Ancient Egyptian.

Five thousand years ago, at the start of the Early Dynastic Period, the Sahel and Sahara were green, with abundant game and forage (4, 8). Lake Mega-Chad had an area up to ten times larger than Lake Chad in the

1960s. The lake had gigantic Nile perch, crocodiles, hippos, and papyrus reeds. Lake Chad is 1800 kilometers to the west of the Egypt (13), less than two months by donkey caravan from the similar environment of the Nile River. The Abu Ballas Trail across the Sahara (10, 15) connects these two regions.

For three thousand years, ancient Egypt was the dominant super-power in North Africa. Its language and culture spread to other regions south of the Sahara. Ancient Egyptian traders may have settled at Lake Chad and founded the fiercely independent Sao people – reputed to be giants. They brought with them papyrus boatbuilding, fishing, Egyptian cattle, musical instruments and Afroasiatic language roots.

Legend says that the Buduma are descended from the Sao. Perhaps they were a remnant of ancient Egyptian culture, insulated from conquest and change by the profound isolation of Lake Chad. Were the Buduma a living link to ancient Egypt?

With the drying of Lake Chad, the Buduma have dispersed. This photo-essay is a record of what may be the last decades of their culture.

# Dedication

This essay is dedicated to my wife Gayle. Without her love, encouragement and support, old photographs of the Buduma would have remained in a drawer.

## Acknowledgements

Thanks to Geraldine St. Onge, M.D 1931-2011 who provided many of the photographs in this essay.

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# Sailing in the Sahara

In 1967, I was a Peace Corps Volunteer in the village of N'Guigmi, near Lake Chad in eastern Niger. The remoteness of that vast waterway fired my imagination. I built a barge from oil drums, to travel on Lake Chad and collect water samples.

A local mechanic helped me weld the frame. I obtained hand-sawn African mahogany planking from an Arab trader. A tent of reed mats provided sun protection. An aluminum chest (which once held surgical tools) contained survival supplies. I spent a month rebuilding a salvaged outboard motor. A friendly military commandant gave me gasoline. A local contractor provided a truck to haul the *Pelagic* to the water.

I was ready to sail on Lake Chad!



Niger in West Africa [© 2011 Google]





Transport of the barge *Pelagic* to Lake Chad [photo G. St. Onge M.D., 1967]



## Lost on Lake Chad

I couldn't find my moorage, a muddy patch of cleared reeds on the lakeshore. I stopped the engine and drifted among endless islets of papyrus. Desert winds blew floating rafts of green stalks across the water, changing the shoreline. Tall reeds obscured the flat land beyond – just as desert nomads could not see the miracle of an inland sea south of the Sahara. A thick wall of papyrus separated two starkly different worlds.

As evening approached, a cloud of mosquitoes descended; fortunately, I'd taken antimalarials. Which way was land? Swimming ashore guaranteed a debilitating infection of parasitic schistosomiasis flukes.

I was prepared for larger dangers. I'd built my barge, inaptly named *Pelagic* (for open water), as a defense against hippos and crocodiles. Fortunately, there were none nearby – I hoped. But my clumsy catamaran was heavy and the sun-canopy caught the wind. My outboard motor barely moved it and gas was scarce and expensive. I couldn't travel far. A short maiden voyage seemed safe enough.

After I'd motored about a kilometer, I became completely disoriented. In 1967, in the middle of the Southern Sahara, there were no radios or rescue

services. Nobody knew that I was gone. I dropped my anchor, an X-shaped contraption made from old angle-iron bed rails. No use drifting in the dark.

Sudden twilight transformed Africa from bright vibrancy to mysterious shadows. No electric lights or moonlight leavened the blackness. I listened to noises in the papyrus reeds: a splash of water – perhaps from a *capitaine* fish, a Nile perch as big as a man. Or was it a crocodile? I should have brought a flashlight and mosquito net. I hadn't expected to be out after dark.

"Help!" I hollered. Of course, no Africans spoke English and I couldn't speak Buduma. "Heelllp!" I repeated the call every minute, pumping my lungs like an opera singer. There were no echoes from the featureless wall of reeds. I continued calling for perhaps half an hour. Was anybody nearby?

As the last light faded, a Buduma woman poled a papyrus pirogue across the shallow water. I gratefully climbed aboard the reed boat. It only took ten minutes to reach land. I gave her my pocketknife and showed her how to open it – a small token of my gratitude. Her shy smile flashed white teeth in a dark face.

Once ashore, I easily found the path to the village.





Launch of the barge *Pelagic* in Lake Chad [photo G. St. Onge M.D., 1967]





Niger (arrow shows N'Guigmi Lake Chad region; no road existed from Gouré to N'Guigmi in 1968) [© 2011 Google]



## N'Guigmi in Niger

The Republic of Niger is a landlocked country in West Africa, named after the Niger River. The northern region of the country is mostly Sahara Desert, with Sahel to the south. Lake Chad is in the southeastern corner of Niger, 1500 kilometers from the capital city of Niamey at the western end of the country. Today, a population of 16 million live along Niger's southern border.

Niger ranks 186th of 187 on the UN Human Development Index. It has the highest fertility rate in the world, with 7+ births per woman, and half the population has just reached puberty. However, average life expectancy is only 53 years, with 11% infant mortality in the first year. The Sahel is threatened by droughts and desertification. A million people died of famine between 1972 and 1984. Severe drought and starvation continue today.

I was twenty-one when I joined a U.S. Peace Corps medical team assigned to eastern Niger. From 1966 to 1968, volunteer doctors, nurses, education workers and technical staff (me) worked to re-establish hospitals in Maïne-Soroa and N'Guigmi that were abandoned by the French when Niger gained independence in 1960. In our first year, a smallpox epidemic struck the region. With trucks and medicine from the WHO (UN World

Health Organization), I helped organize a team to vaccinate Toubou nomads in the bush (for an account of these adventures, see *Smallpox, Slavery and Toubou Warriors* in the iBooks Store).

The village of N'Guigmi (see map on previous page) – about three thousand people in 1967 – was 700 kilometers from the road terminus at Gouré. To get there, vehicles plowed through sand across the wild bush of the Sahel, a vast scrubland that spans the width of Africa south of the Sahara. On our first trip eastward, our Land Rover – laden with a U.S. Army field hospital – rolled on its side at the base of a sand dune. Nobody was hurt but we were stranded in the Sahel. Fortunately, a nomad used his camel to tip the vehicle upright. We arrived late in N'Guigmi after dark and met the worried search party looking for us.

N'Guigmi – the name means 'bad water' – was once part of the ancient Kingdom of Kanem-Borno. N'Guigmi is home to Kanuri and Kanembu people, as well as settled members of the traditionally pastoral Wodaabe-Fulani and Daza/Toubou ethnic groups. The Buduma people lived on the islands of nearby Lake Chad.

N'Guigmi was a military center for the region. To suppress Toubou rebellions, Nigerien Army troops from across Niger were stationed in an abandoned

French Foreign Legion fort. N'Guigmi was a hub for natron salt caravans from the Kaourar-Bilma Oasis and the last stop on the road to Chad. Hausa was the market language; Nigerien government functionaries and foreigners spoke French. Unlike other villages in the dusty Sahel, N'Guigmi felt cosmopolitan with many cultures and languages. The N'Guigmi hospital had a team of translators to interpret medical complaints.

I lived in a "banco" (mudbrick adobe) house with a palm log roof infested with bats. Once, I caught a cobra under the bed using an improvised pole with a sliding wire noose; I chopped its head off with a hand-hoe. Black scorpions prowled the floor at night. I slept under a mosquito net and took chloroquine to ward off malaria. We had no electricity, telephone service, or running water. Mail delivery varied from weekly to monthly. We ate goat meat and onions, the only local vegetable. The Peace Corps provided \$75 per month living allowance for housing, food and all other necessities. It was enough.

For two years I was happy in isolated N'Guigmi.



The 700 km Bush Track Road to N'Guigmi  
[photo G. St. Onge M.D., 1966]





N'Guigmi Sous Prefecture on the Celebration of Niger's Independence Day, August 3, 1966 [photo G. St. Onge M.D., 1966]



# Lake Chad Wilderness

The village of N'Guigmi was civilized compared to the watery wilderness of Lake Chad. More than the rest of the Sahel, the islands and waters of Lake Chad were *terra incognita*, an ecosystem as remote and mysterious as Antarctica. I could not resist the power and romance of this inland sea, one of the great natural wonders of Africa.

Lake Chad is in central Africa, between the Sahara and the Sahel. Its shallow basin is larger than Lake Erie. Nowhere else in the world is such a large freshwater reservoir found so far from the ocean and in such a hot climate. Below Lake Chad is an aquifer of fossil water (50,000 years old). In 1960s, a French-drilled artesian well supplied N'Guigmi with sterile, fresh water with no pumping.

The level of Lake Chad has always fluctuated. In the early sixteenth and nineteenth centuries the lake almost disappeared. In 1912 the French army marched across its dry bed. A French military map from 1926 noted that: "Sometimes Lake Chad is covered in water and sometimes it is partially or completely dry." In the late 1950s, it filled to an average depth of 1.5 meters

(10 m maximum) with an area of 26,000 square kilometers. Now, it is less than a tenth of that size (3). At the time of predynastic Egypt, **Lake Mega-Chad** was up to ten times larger (4, 8).



During my stay in 1966-68, Lake Chad brimmed with fresh water. Hippos, crocodiles and the giant Nile perch dominated the lake, along with countless waterfowl and aggressive mosquitoes. Tall papyrus reeds choked the borders – the flat land of the Chad Basin made it impossible to see open water. Clumps of papyrus would break off and float freely in the wind, colonizing all shorelines. The solid wall of papyrus, with ever-changing borders and no visual landmarks, made lake navigation difficult.

Many Buduma lived on **floating papyrus islands**, buoyed by the thick root-mass. Except for the Buduma with their papyrus reed boats, most nomads of the Sahel knew little of the lake. Desert raiders could not cross it with camels or horses. However, due to drought and civil wars in Chad, by the 1990s many of the northern Buduma had retreated to the Niger shore of Lake Chad.





A View of Now-Vanished Lake Chad near N'Guigmi [photo G. St. Onge M.D., 1967]

## The Mystery of Lake Chad

Lake Chad is also a limnological mystery. Several rivers flow northward into the lake – the main being the Chari River and its tributary the Logone River – and none flow out; the lake is a "terminal basin" meaning that it has no exit to the ocean. Lake Chad is shallow and is exposed to blazing sun and the dry Harmattan wind; logically, it should be a giant salt lake or a dead sea. However, the lake water was fresh.

Although Lake Chad has no apparent outlet, its waters may percolate into a sub-Saharan aquifer or the Soro and Bodélé depressions, once part of Lake Mega-Chad (8). The best explanation for Lake Chad's fresh water may be that it is occasionally filled by sudden flooding from sustained monsoons in the jungles of the Central African Republic. However, with global warming, rain is rare in the Sahel.

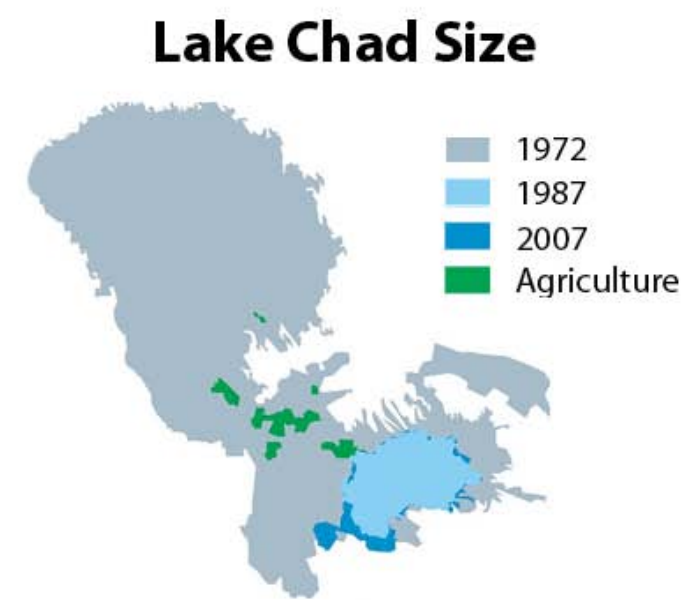
Lake Chad basin is one of the most important agriculture heritage sites in the world. Because the lake has shrunk dramatically in recent decades, the UN Food and Agriculture Organization has labeled Lake Chad an "ecological catastrophe," predicting that the lake could disappear this century, like the Aral Sea. After the terrible droughts of the 1970s, and because of heavy water use for irrigation in the south, Lake Chad has retreated far from N'Guigmi. Almost no remnant of

Lake Chad remains in Niger. However, the drying of the lake may not be permanent. In 1955/56, Chari River floods inundated the archipelagos of the lake. If monsoon rains come again – likely, due to increased atmospheric water vapor – Lake Chad may refill.

In the meantime, there are tentative plans to divert water from the Ubangi River (the largest right-bank tributary of the Congo River) with a dam and 96 kilometers of canals to pump water uphill into the Chari River to replenish Lake Chad. In 1994, the Lake Chad Basin Commission (LCBC) endorsed the project and, in 2008 the heads of state of the LCBC member countries issued a request for proposals for a World Bank-funded feasibility study. To date, the LCBC has raised more than \$5 million for the study. The World Bank is also providing \$10.6 million for a project to reverse land and water degradation in parts of the lake.

No interbasin water transfer schemes have gone forward to date. Refilling Lake Chad from the Ubangi River will take decades. How will this change the jungle ecology of the Central African Republic? Will the Congo's goliath tigerfish invade Lake Chad? If the project goes forward, a revitalized Lake Chad could provide fish and agricultural crops to nearly 30 million people in Nigeria, Cameroon, Chad and Niger – increasing much needed food security for Africa.





Dry Lake Chad near Bol, Chad (May 2005)  
[photo Cédric Faimali]



Shrinking Lake Chad [Wikipedia Commons images]





## Schistosomiasis Survey

Partly as an excuse for adventure and partly as a public health initiative, I started a Peace Corps project to survey for waterborne schistosomiasis (*Schistosoma haematobium*, also known as bilharzia), a debilitating parasitic disease found in African rivers and lakes. The goal of the project was to determine the extent of local infectious areas in Lake Chad so villagers could avoid them. While doing this survey, I came into close contact with the Buduma people.

Schistosomiasis has a complicated life cycle. It is spread when an infected person urinates into the water of the lake. Microscopic eggs in the urine hatch and invade an intermediate host snail. When another person wades in the lake, tiny worm-like larvae (cercaria) leave the snail and penetrate human skin. Then the flukes migrate to the bladder and mature into egg-laying adults. Thus, the parasite has two long-term reservoirs: the snail and human bladder. It can re-infect people who rarely visit the lake shore – or humans can transmit the disease to new snail hosts by urinating into the lake.

I feared “schisto.” The lifetime infection causes anemia, malnutrition, reduced growth and impaired cognitive development. It is a chronic disease of people who live near fresh water in the tropics.

Schistosomiasis ranks second behind malaria as the most socioeconomically devastating parasitic disease; it afflicts more than 100 million people in Africa. It has been infecting humans for at least 4000 years and had its own ancient Egyptian hieroglyph (a dripping penis). In the 1960s there was no effective treatment, although the drug praziquantel is available now.

Besides building my motored barge *Pelagic*, I also constructed a schistosomiasis collection system (see the photo on the next page) that employed the metal box from my Peace Corps medical kit to hold filter paper to catch the parasitic worms. I used a salvaged pump to push lake water through the filter paper. Iodine both killed and stained the cercaria worms trapped on the paper. I counted the worms at each location.

Unsurprisingly, the dangerous areas were those used for clothes washing and watering animals. The open water of Lake Chad was free of cercaria worms. Since the Buduma roam over the large expanse of the lake, they live and work in mostly schisto-free areas.

With this knowledge, and when hippos and crocodiles were not in the area, I occasionally went swimming in Lake Chad from my barge – a delightful experience in the hot Sahel!





Author Collecting “Schisto” Samples in Lake Chad [photo G. St. Onge M.D., 1967]



# The Buduma on Lake Chad

For millennia, Lake Chad was the private world of the Buduma, fishermen and nomads who roamed with their cattle from island to island. They lived beyond the reach of other ethnic groups, Borno conquests, European colonists and new African governments.

Never more than 25,000 people, legend says that the Buduma retreated to the lake because they lost a territorial war. But their Sao ancestors were already familiar with lake life. They endured floods and droughts, famine and disease. Through it all, the Buduma maintained a unique culture, self-sufficient and independent – perhaps the freest people on the planet.



Giant Papyrus  
*Cyperus papyrus*



## Papyrus Reed Boats

Papyrus reeds, reaching twice the height of a man, choked the shores of Lake Chad. In the absence of trees, N'Guigmi villagers used the reeds for matting, fencing and house building. The ancient Egyptians also used papyrus for boats, mattresses, mats, rope, sandals, and baskets. Famously, they made writing scrolls from papyrus (the English word "paper" is derived from the word "papyrus").

The Buduma navigated Lake Chad in papyrus reed boats called *kadai* in Yedina. These were similar to ancient Egyptian papyrus boats, the primary water transportation on the Nile (where wood was also scarce). Buduma boats had a high, ornamental prow and a blunt stern. In 1969, Thor Heyerdahl used Buduma boat builders to construct the original *Ra* from papyrus; he attempted to cross the Atlantic Ocean to prove that ancient Egyptians could have made the same voyage (now a rejected theory).

Papyrus boats are ideal for Lake Chad. They can be built anywhere from abundant papyrus reeds. The only tool needed is a knife; in the Neolithic Era this would

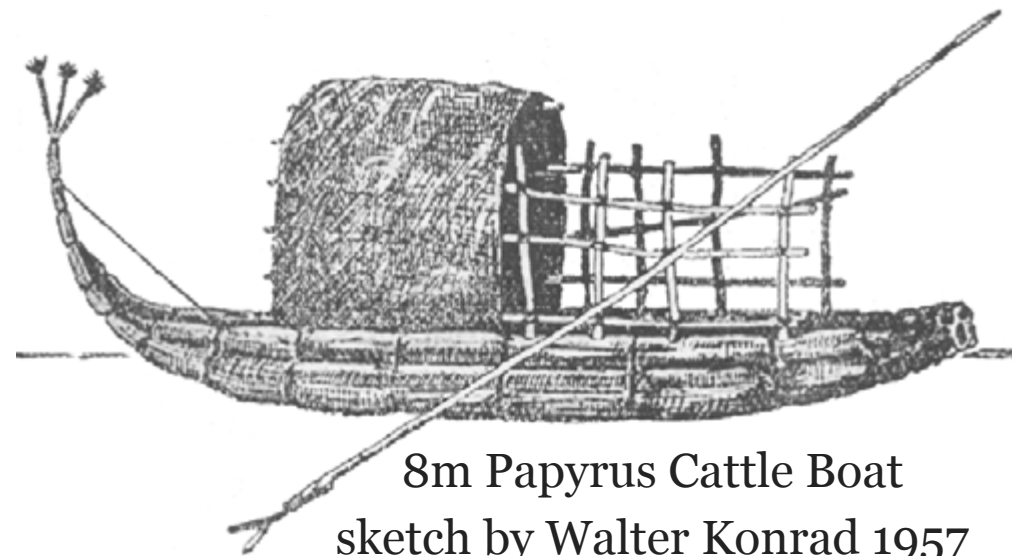
have been a simple stone blade. The triangular reeds are cut and dried in the sun. The tough skin is peeled and twisted to form rope. Tapered bundles of reeds are tied together - and then the bundles are tied to each other to construct the boat.

Historically, the Buduma built very large papyrus boats, some used to carry livestock (14). Double-pontoon papyrus barges transported natron salt (hydrated sodium carbonate), used by the ancient Egyptians for embalming and recently as a cleansing agent.

I was a passenger on Buduma papyrus boats several

times. They were surprisingly stable and comfortable. The hull is not watertight; the reeds simply float, so the boat is unsinkable. However, the reeds on the bottom absorb water, adding ballast so that the boat has little tendency to tip or roll.

The Buduma papyrus boats were either poled in shallow water or paddled in deeper water. They lasted several years before becoming waterlogged. When older boats lose shape and become too heavy, they are left to rot along the shoreline. Papyrus boats are disposable watercraft with no environmental impact.



8m Papyrus Cattle Boat  
sketch by Walter Konrad 1957





Buduma Papyrus Reed Boat Construction [photo G. St. Onge M.D., 1967]





Papyrus Boats in Water (note old boat with paddle on left) [photo G. St. Onge M.D., 1967]





Buduma with Papyrus Reed Boat and Pole [photo Jerry Koloms, 1969]

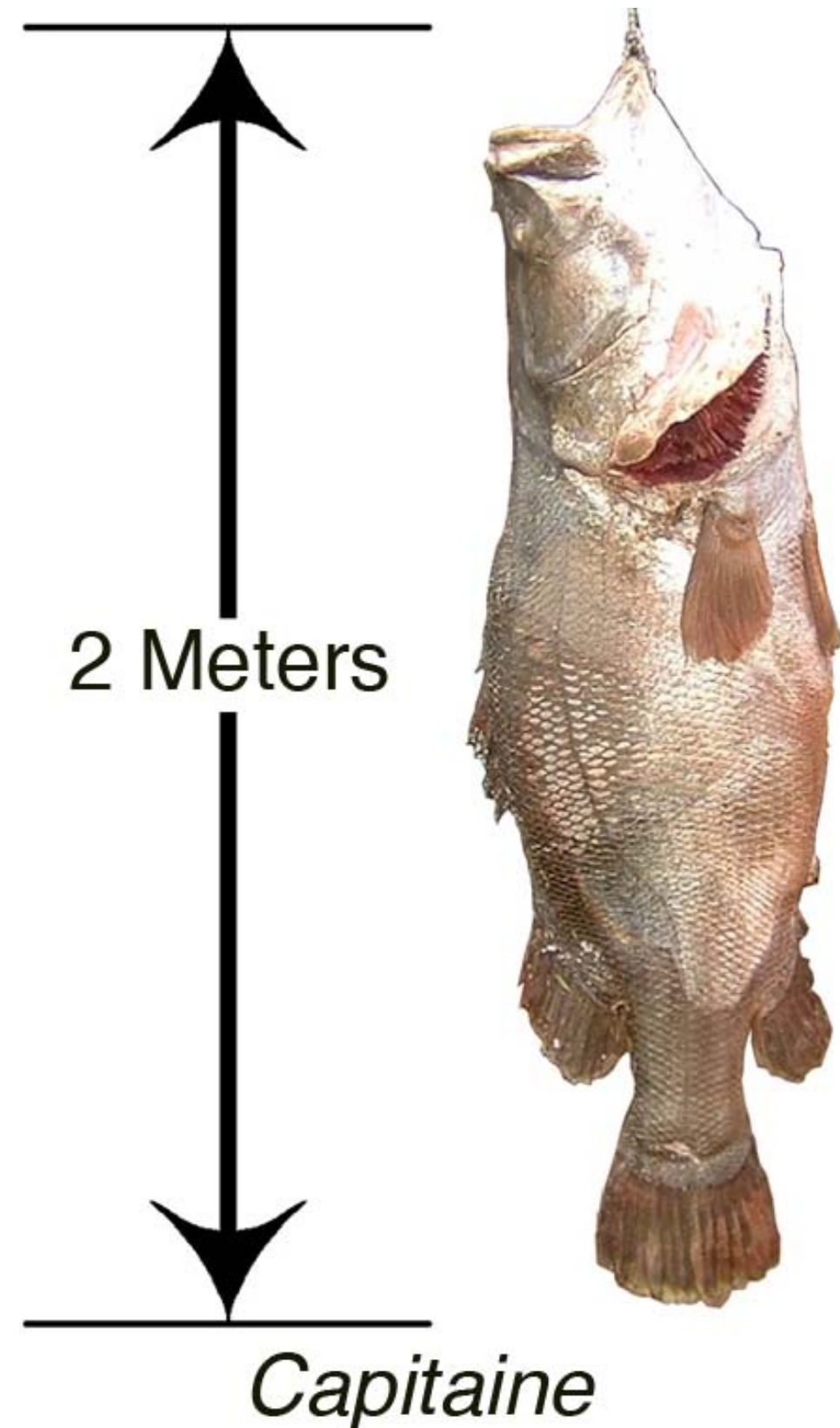


## Fishing for Nile Perch (*Capitaine*)

The Buduma were accomplished fishermen. They caught many species of fish including the famous "*Capitaine*" (Nile perch) using a net or a spear attached to a rope. The Nile perch grows to an enormous size, almost two meters long, and has a mouth large enough to swallow a soccer ball (football). It was a top predator (along with the crocodile) in Lake Chad. *Capitaine* provided a high protein diet, as well as dried and smoked fish for trading.

The Nile Perch is a freshwater fish belonging to the family *Centropomidae*. It is native to the "Afrotropic ecozone" (sub-Saharan Africa) where it was originally found in the Congo River, Nile River, Senegal River, Niger River, Volta River, Lake Turkana, Lake Chad, and other river basins. The ancient Egyptian city of Latopolis (Ta-senet or Esna) was named in honor of the Nile perch, *Lates niloticus*.

I occasionally purchased fresh *Capitaine*, which is prized for its delicate, white meat. I enjoyed the fish sautéed in peanut oil, a welcome change from tough goat and camel meat.



Nile Perch (*Lates niloticus*) 1.8 meters 140 kg  
[Wikipedia Commons photo – smudger888 via Flickr]



Buduma Fishing Camp on a Floating Papyrus Island (note shelter and mosquito shroud at right) [photo G. Immega 1967]





Papyrus Boat on the Nile, Fisherman with Line & Club and Basket of Fish (Tomb of Idut, Necropolis of Saqqara 2330 BC)  
(note several species of fish) [Creative Commons flickr photo kairoinfo4u 2010]



In the 1960s a daily charter flight from Fort Lamy (now N'Djamena), Chad took the fresh *Capitaine* catch to Paris for exclusive restaurant fare.

With the drying of Lake Chad, fishing has been reduced. In the early 1970s there were many hundreds of Buduma fishing families living on floating papyrus reed islands. The last of these communities became shore bound in the 1980s-1990s and only a few dozen families continued fishing. [These observations were made by Ian Mathie, who installed water wells and filtration points around Lake Chad during this period.]



Smoked Fish Drying in the Sun on a Papyrus Mat  
[photo by Ian Mathie, early 1970s]

## Papyrus Island Fishing Camp

The Buduma used **floating papyrus islands** for temporary fishing camps (see photo next page). They cut the papyrus in the center of the island and laid it flat to provide dry footing (inset); the tall reeds at the edges were left standing as a windbreak.

The hut on the right has poles dug into the reeds with a coarsely woven thatch over the top and two sides. A mosquito net hangs inside. A woven bowl-shaped sleeping mat covers the ground for protection against vermin. In the center is a cotton mattress bag, recently washed and drying in the breeze; it will be stuffed with bundles of reeds to make a comfortable bed. To the left of the mattress bag are three skeins of dyed fibre drying on a rail; these are used by the women to weave baskets.

Watertight Buduma Basket  
(with furcate coil, where  
each stitch splits the stitch  
in the preceding coil)

[Photo by Guy Immega]







Temporary Buduma Fishing Camp on a Floating Papyrus Island (with mattress cover drying in breeze)  
[photo Ian Mathie, 1970s]





Shore Bound Buduma Settlement (note fishing net and wooden boats)  
[photo Ian Mathie, 1970s]



# The Buduma and Ancient Egypt

Besides papyrus reed boats, three other artifacts of the Buduma culture suggest ties to ancient Egypt: Kuri cattle, the Biram harp and language roots.

The Buduma's distinctive Kuri cattle are adapted to a wetlands in the desert.

The 5-string Biram bow harp, played by the Buduma, is virtually identical to the ancient Egyptian instrument.

The Buduma speak Yedina, a Chadic language in the Afroasiatic phylum, which includes Ancient Egyptian.

Top: Sacred Bull of Apis, Herald of Ptah, 650 BC Memphis  
[Metropolitan Museum of Art, Heilbrunn Timeline]

Bottom: Ancient Egyptian Harp, New Kingdom, Thebes,  
1550-1069 BC [British Museum; photo by Kate Krause]





## Exotic Kuri Cattle

The Buduma were unique pastoral nomads. Instead of moving herds of cattle across the parched Sahel (as the Toubou and the Fulani do), they herded Kuri cattle on Lake Chad, near the Sahara. The Buduma were *aquatic* pastoralists and were thus immune from desert raiders (such as the Toubou), who could not venture into lake territory.

The Buduma maintained herds of Kuri cattle, a unique humpless breed confined to the shores and islands of Lake Chad. Kuri cattle can withstand clouds of biting insects but are intolerant of heat and sunlight and cannot survive extended periods of drought. Kuri cattle are fond of wallowing in water and are often immersed while searching for water plants for food, with only the nostrils above the surface. The Buduma swam their cattle from island to island to find water weeds and fresh pasturage. Purebred Kuri cattle are so adapted to Lake Chad that they cannot be raised in the arid Sahel (5, 21, 25,).

The Kuri's gigantic bulbous horns are a signature trait; each hollow horn – divided into chambers – may be as large as 50-60 cm in diameter. A variety of horn shapes are

common. Hollow horns provided flotation, allowing cattle to rest while swimming. For the Buduma, cattle were a sign of wealth; they were milked but rarely sold or butchered for meat. With the drying of Lake Chad, the pure Kuri breed is in danger of extinction.

The water-adapted ancient Kuri breed may have originated in the Nile River valley, where cattle foraged in wet marshes along the banks and delta. They may be descended from the Hamitic Longhorn (*Bos Taurus longifrons*), depicted in Egyptian drawings from 4400 BC in the Badarian period (25). As early as 5000 BC, there were ceremonial cattle burials in Egypt west of the Nile in the Nabta Playa (20, 26). Also, rock art shows cows being milked in 5000 BC in the Tadrart Acacus Mountains of Libya, north of Lake Chad (9).

Ancient Egyptians believed that the sacred bull Apis was an incarnation of Ptah, the god of the Nile River. The Hathor cattle cult existed from predynastic times. Like ancient Egyptian cattle, the Kuri do not have a hump and are variously colored white, brown, black, or spotted. In the future, genetic testing may reveal the true origin of the Kuri cattle breed.



Presentation of Cattle to Nebamun 1350 BC Thebes  
[British Museum, Wikipedia Commons image by Didia]





Kuri Bull and Cow with Bulbous Horns [photo G. St. Onge M.D., 1967]





Kuri Cattle on the Border of Lake Chad (the lake is hidden by papyrus) [photo G. St. Onge M.D., 1967]



## Biram Bow Harp

While working among the Buduma, I learned of their **Biram bow harp**. The harp's sound box is a hollowed log covered with a goatskin soundboard; it has a curved neck and five strings to the bridge. It makes only five notes. The instrument is often played by two people, with the second using one end as a drum.

I arranged for a Biram concert (see next two pages) by two Buduma musicians. The harpist sang traditional songs, including “**Malloumi**.” He used his top right hand on the bass strings and the lower left on the high notes. I recorded the performance on my battery powered reel-to-reel tape recorder. The music has a driving rhythm, intricate melodies, and repetition – with hints of the blues. Its tonal scale seemed familiar to my ear, unlike the local Kanuri oboe.

The Biram harp may have originated in ancient Egypt. The British Museum has an Egyptian arched harp (page 33) on display that is virtually identical to the Biram harp of the Buduma (1). Similar bow harps are still played in other regions of sub-Saharan Africa.

The Buduma believed that the Biram harp was a sacred instrument. Did the Buduma play the music of

ancient Egypt? It is impossible to know – but the music of the Buduma *could* have been played along the Nile 3500 years ago. Perhaps music from the Biram harp sounds like ancient Egyptian music, played by commoners or in the royal courts.

The tuning of the Biram harp may be similar to the ancient Egyptian arched harp. The minor pentatonic scale of “Malloumi” played on the five-string Biram harp includes the three notes listed below (the frequency of the other two notes are currently unknown):

- 264 Hz (drone) – [middle C = 261.63 Hz]
- 228 Hz – [Bb, 3rd octave = 233.08 Hz]
- 205 Hz – [Ab/ G# 3rd octave = 207.65 Hz]

### Buduma play “Malloumi” on Biram Harp

Recorded by Guy Immega, N’Guigmi, Niger 1967

### Commentary on the Biram Harp Photos

Audio Notes by Guy Immega 2012





Buduma Musicians Playing the Biram Harp [photo G. St. Onge M.D., 1967]





Author Recording Buduma Musicians Playing the Biram Harp [photo G. St. Onge M.D., 1967]





Ancient Egyptian Harp, New Kingdom, Thebes, 1550-1069 BC [British Museum, Wikipedia public domain photo]



## Buduma Language

The Buduma language, known as Yedina or Kuri, also suggests a link with ancient Egypt. In 1971, linguist Paul Schachter summarized what we know about the linguistic relatedness of the Buduma language in his “The Present State of African Linguistics.”

“The Buduma language was classified by Joseph Greenberg in his *Languages of Africa* as a Chadic language in the Afroasiatic language phylum. The Buduma language, also known as the Yedina, was concentrated in the Lake Chad Basin, particularly in the islands of Lake Chad. For Greenberg, the languages of the Lake Chad constitute the fifth branch of an Afroasiatic language family, which has five coordinate branches: Semitic, Berber, Cushitic, Ancient Egyptian, and Chadic. Greenberg’s classification system – and the genetic relationship [of the Buduma language] to Ancient Egyptian – was clearly documented and essentially universally accepted throughout academic circles.” (22)

In other words, the Buduma language is Afroasiatic. Yedina is a Chadic language genetically related to Ancient Egyptian. To anthropologists, language relatedness is stronger than cultural

relatedness (e.g. papyrus boats or the Biram harp). This suggests a *remote common origin of the Buduma and the early Egyptians*; they were a single people who separated at some point. Over time both dialects diverged and changed, and subsequently evolved into distinct languages. Ancient Egyptian became extinct and the Yedina language, sequestered with the Buduma on the islands of Lake Chad, continued.

Yedina also remained relatively isolated from other Chadic languages (e.g. Hausa), since the Lake Chad area is surrounded by Saharan language groups of the Nilo-Saharan phylum (e.g. Tubu and Kanuri). The migration from the east of the Chadic-speaking Sao people (7), likely ancestors of the Buduma (and Kotoko), to the Lake Chad basin may have taken place towards 600 BC, or thousands of years earlier (17, 18, 19). The Yedina language may be descended from Ancient Egyptian (or vice versa) at great time depth.

The drying of Lake Chad in the 1970s has dispersed most of the Buduma population. Without their insular lake territory, the Yedina language may go extinct, as the Buduma are absorbed into local Kanuri culture. Buduma is listed by the Google Endangered Languages Project as “ENDANGERED.”



## Living Links to Ancient Egypt?

The Buduma of Lake Chad, descended from the Sao, may be a relict enclave of ancient Egyptian culture. The geographic isolation of Lake Chad gave the Buduma protection, sustenance and autonomy that preserved prehistoric traditions little changed from life on the Nile. The Buduma had no Pharaonic royals or a privileged priestly class, with material wealth, pyramids and temples covered in hieroglyphic writing. Instead, the Buduma lived in a manner similar to commoners in predynastic Egypt.

In the 1960s, the ancient Egyptian features of the Buduma culture were evident. Recently, the drying of Lake Chad – an ecological disaster – has forced most Buduma to abandon lake life, including papyrus reed boats, fishing, and Kuri cattle herding. The Buduma people have vanished from their homeland on the water. They no longer play the Biram harp in Niger. As Catherine Baroin said in 2003: "... the Buduma people might disappear as a specific social group. Just like the Sao, that their legend maintains they stem from, they might become a mere memory from the past." (2) The ties to ancient Egypt may now be broken.

Did the Buduma descend from black-skinned ancient Egyptians? The evidence is interesting, perhaps persuasive, but not conclusive. Genetic testing may provide stronger proof. In summary, there are six arguments that link the Buduma to ancient Egypt:

1. Lake Chad is the only body of water similar to the Nile within caravan reach of the ancient Egyptians. Ancient Egyptian traders probably traveled to Lake Chad on the **Abu Ballas Trail**. The Egyptian funerary text of the *Amduat* likely refers to Lake Chad.
2. The **papyrus reed boats** of the Buduma are similar to ancient Egyptian papyrus boats used on the Nile.
3. The **Nile perch** was a major food fish of Lake Chad. The Buduma were unique fishermen in the Sahel.
4. **Kuri cattle** are adapted to a watery environment, possibly the result of thousands of years of breeding of the Egyptian Hamitic Longhorn.
5. The **Biram harp** played by the Buduma is virtually identical to the ancient Egyptian instrument.
6. The Buduma speak **Yedina**, a Chadic language in the Afroasiatic phylum, which is related to Ancient Egyptian.



# Legends and Songs of the Buduma

The source of these legends and songs was Boukar Tar, the last remaining Buduma master of the Biram five-string harp in Niger. After the 1970s, Lake Chad had dried and many of the Buduma migrated to Kanuri lands.

In 2002, Mamane Barka – a Tubu (Toubou) born in eastern Niger in 1959 – received a UNESCO scholarship to travel to Lake Chad to learn Buduma traditions and to revive the sacred Biram harp.

This was a remarkable cultural leap. The Tubu are desert nomads whereas the Buduma were fishermen. The two ethnic groups rarely mixed.

Boukar Tar passed away in 2006.



Ten-String Bow Harp, Saqqara Necropolis, Memphis 550 BC  
[Walters Art Museum, Baltimore; Wikimedia Commons Image]



## Mamane Barka visits Boukar Tar

Boukar Tar welcomed Mamane Barka to Doro Léléwa, bordering Lake Chad. The Buduma master thought that the holy Biram harp had seen its last days, since no young people were interested. After many rituals of purification, he agreed to teach Mamane Barka the secrets of the Biram and the lyrics of the mystical songs.

After Mamane Barka learned the cultural heritage of the Buduma, his master presented him with his last Biram harp as a gift. Handing over the instrument to his successor, Boukar Tar asked Mamane Barka to promote it all over the world.

Mamane Barka may be the only remaining master of the Biram harp. He now lives in Niamey (the capital city of Niger) and maintains the Biram tradition single-handedly, bringing the instrument to the attention of the wider world with his own blend of desert blues. He has played two European tours and sells a CD – “Introducing Mamane Barka” – of Biram music.

Mamane Barka's music is on web sites at:  
[www.mamanebarka.com/](http://www.mamanebarka.com/)  
[www.worldmusic.net/mamane-barka](http://www.worldmusic.net/mamane-barka)



Mamane Barka Playing the Biram Harp at the Womex festival in 2009 in Copenhagen, Denmark.

[photo by Eric van Nieuwland 2009]



# Legends of the Buduma

## The Origin of the Buduma Name

(told by Boukar Tar as related by Mamane Barka)

This story explains the origin of the word Buduma. In the past, a great warrior chief decided to attack the fishermen who lived on the shores of Lake Chad. The fishermen learned that the enemy was coming. They were afraid and decided to take refuge in the tall reeds that grow on the shores of the lake. When the army arrived at the village, all the people were gone. A lieutenant of the chief said: "We should not waste our time warring against people who are afraid and take refuge in the 'Boudoum.'" The boudoum means papyrus, which grows on the shores of Lake Chad. Thereafter, the fishermen were called Buduma, which means in Kanuri, the people who live in the "boudoum."

[*Author Commentary:* The Imam of the Kingdom of Borno, Ibn Furtu, recorded in 1576 that King Idris Alauma of Borno "attacked the Sao living close to Lake Chad and forced them to flee by boats to the islands of the lake." (11, 14, 18) This may be the origin of the legend of the retreat into the papyrus and the name Buduma. Obviously, the Sao (Buduma?) already had

boats and were familiar with living on Lake Chad, where the Borno army could not follow.]

## The Origin of the Biram Harp

(told by Boukar Tar as related by Mamane Barka)

The Biram comes from an ancestor spirit of the Buduma called Karguila, who lived in Lake Chad. Every night, while the Buduma people were sleeping, Karguila played the beautiful music on the Biram. Late one night, a brave old fisherman decided to go to see who was playing this song. He went to the shores of the lake and discovered a very big spirit who looked like a "dinosaur" playing an instrument that looked like a large boat. The instrument had 10 strings and the spirit had 10 fingers on each hand.

On the first night, the spirit did not see the old man. The fisherman returned to the village but was very frightened. On the second night the old man went again to the lake. This time the spirit saw the old man and called to him. He was very afraid.

The spirit said to him, "You are the first Buduma to discover me. The name of the instrument I am playing is the Biram, which means "family." This Biram is mine but I will make another for you, which has five strings because, as a human being, you have only five fingers on each hand. Go and play it to your people



every night. Never play it in the daytime. When you play the Biram, the music will explain the spirit of Karguila to the Buduma people.”

The Buduma believed that the Biram was a holy instrument, protected from the east by the spirit of the lake and especially by the ancestor of the Buduma tribe, Karguila – and also by spirits of the desert bordering Lake Chad to the south, west and north.

[*Author Commentary:* Ancient Egyptian Biram harps often had ten (or more) strings. The Buduma understood that the Biram harp could have more than five strings. The legend of the origin of the Biram may indicate that the instrument originally had ten strings.

Note also the phrase “protected from the east by the spirit of the lake.” These enigmatic words, a loose translation of Yedina by Mamane Barka, may indicate a dim reference to the Nile. The Nile valley is east of Lake Chad and may have been the original homeland of the Sao people, likely ancestors of the Buduma.

Finally, the legend of the Buduma ancestor spirit Karguila (or Kumani) – a terrifying monster of the lake – may be pre-Islamic (not in the Quran). Karguila seems similar to the ancient Egyptian crocodile god Sobek, a powerful and frightening deity. Crocodiles were common in Lake Chad, as well as the Nile. In

some Egyptian creation myths, Sobek emerged from the waters of chaos to create the world. (12)

## The Five Strings of the Biram Harp

(told by Boukar Tar as related by Mamane Barka)

The first string is the longest, and his name is: The Husband. The second is the wife, the third is the first child, the fourth is the second child, and the fifth is the third child. Biram means “family” in the Buduma language.

## Sacred Songs of the Buduma

(as taught by Boukar Tar to Mamane Barka)

The ancestor spirit Karguila taught the Buduma twelve sacred songs of the Biram: “Mashi,” “Bulanga,” “Buni,” “Banané,” “Wo Kuru,” “Koundou,” “Tchouloum,” “Malloumi,” “Pitti Kori” (anthem of the wizards and sorcerers), “Goudo,” “Kiri Boul,” and “Karguila.” [Karguila (or Kargula) is the name of the ancestor spirit (or spirit of the water and father of the Biram harp) and also the name of the song which is dedicated to the spirit.]



## Words to “Wo Kuru”

[Mamane Barka said, “I don't know the meaning of the words. This song has a very important philosophical rule: *The school of the children is the old man.*”]

Wo kuru aji kurworom  
Kuliram yawa namwa  
Kaiga kani kingiram  
Gundorom wodum kulliya  
Awuro shiwo kaimiya  
Dagami karim kururom  
Tshuro wulan giri kileram  
Bula narema wandi jangouwa

## Words to “Buni”

Unduye bunin ju – Kilan jori kilan tayo,  
[*There is fish for everybody in the lake*]  
N'rjuriyaye bunin ja – Kilan jori kilan tay,  
[*Fish for children*]  
Amwura ye bunin ja – Kilan jori kilan ta,  
[*Fish for adults*]  
Kangwa ye bunin ja – Kilan jori kilan tayo,  
[*Fish for men*]  
Kamuwa ye bunin la – Kilan jori kilan tayo,  
[*Fish for women*]

## Words to “Malloumi”

Madu mamadu malloumi-madu  
[*You are the great marabout (teacher)*]  
Nidi goniro tammaniki  
[*I am sure that you are the great one*]  
Nidi malloumbo nonikki  
[*I know that you are malloumi*]  
Cine kidau karane  
[*Get up and learn the holy book (Quran)*]

**“Malloumi” performed by Mamane Barka**

[with permission: World Music Network]

**“Malloumi” Performed by Boukar Tar**

[Recorded by Mamane Barak 2002]





Boukar Tar, the last Buduma master of the Biram Harp [photo by Mamane Barka at Doro Léléwa, Niger 2002]



# From the Nile to Lake Chad

The Buduma maintained many cultural aspects of ancient Egypt. Recent work by Dr. Thomas Schneider (23, 24) provides two lines of evidence from the opposite direction: ancient Egyptian contact with the Lake Chad region.

The first is from the *Amduat*, a guide to the Sun God Ra in the underworld. The legend says that, to the west of the Nile, where the sun sets in the land of the dead, there is an enormous sweet-water lake – possibly Lake Chad.

The second is the *Abu Ballas Trail*, a caravan route from the Nile to the Chad Basin, where an inscription from Mentuhotep II, circa 2000 BC, was found.



Amduat Hour 1  
Sun God Ra Enters the Twilight  
Pulled on a Papyrus Boat  
[Tomb of Ramesses I, Thebes 1290 BC]



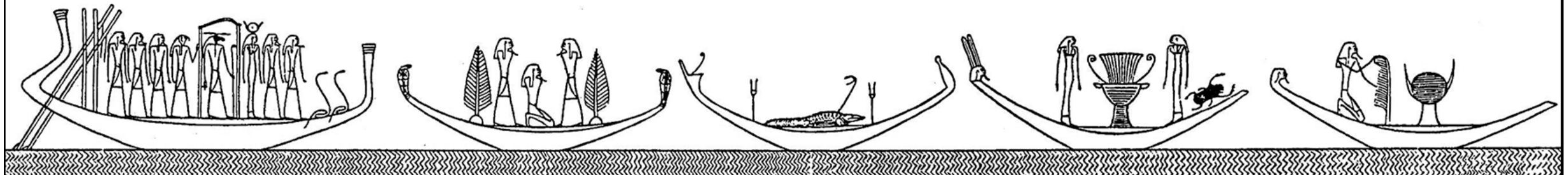
## The First Three Hours of *Amduat*

The *Amduat* is a standard funerary text reserved for pharaohs or nobility that describes a 12 hour journey of the sun god Ra (and the dead pharaoh)

against the second hour by a gate named “He who devours all.”

Hour 2. The second hour of the *Amduat* is a region dominated by a gigantic sweet-water ocean, “the water expanse of Re.” The text mentions the “green

Amduat Hour 2: The Waterway of Re [Tomb of Amenhotep II 1401 BC; S. Wiebach-Köpke]



Amduat Hour 3: The Waterway of Osiris [Tomb of Amenhotep II 1401 BC; S. Wiebach-Köpke]



through the night (23). The description of the landscape of the first three hours to the West (sunset) provides the following details:

Hour 1. Re gains access to the underworld through the “western portico of the horizon,” a passageway of 1260 km that constitutes the first hour and is sealed off

plants that are in the “Wernes”— trees and fertile fields — and speaks of the gods of the underworld as the “farmers of the “Wernes.” The gigantic lake with its surrounding lands is given the precise dimensions of 3244.5 km by 1260 km (converted units).



Hour 3. The third hour of the *Amduat* is filled by “the waterway of Osiris“ of equal dimensions to the “Wernes.” The topographical structures of the intermediate realm – stretching from the Nile Valley 1260 km to the West, followed by two gigantic lakes – finds an exact match in the paleo-environment of the Western Desert and the Chad Basin around 2000 BC.

Throughout much of the nighttime journey through the underworld, papyrus boats (similar to those used on Lake Chad today) ferried the sun god Ra and the deceased pharaoh. In the *Amduat*, the ancient Egyptians made detailed reference to a vast waterway of rivers and lakes to the west across the Sahara. This sea in the desert was likely Lake Chad.



### Amduat Hour 12

Sun God Ra is about to Appear in the East at Sunrise

The Scarab God Khepri in the bow of the boat pushes the ball of the sun across the sky,  
a symbol of rebirth.

[Tomb of Tutmosis III, Thebes 1425 BC]

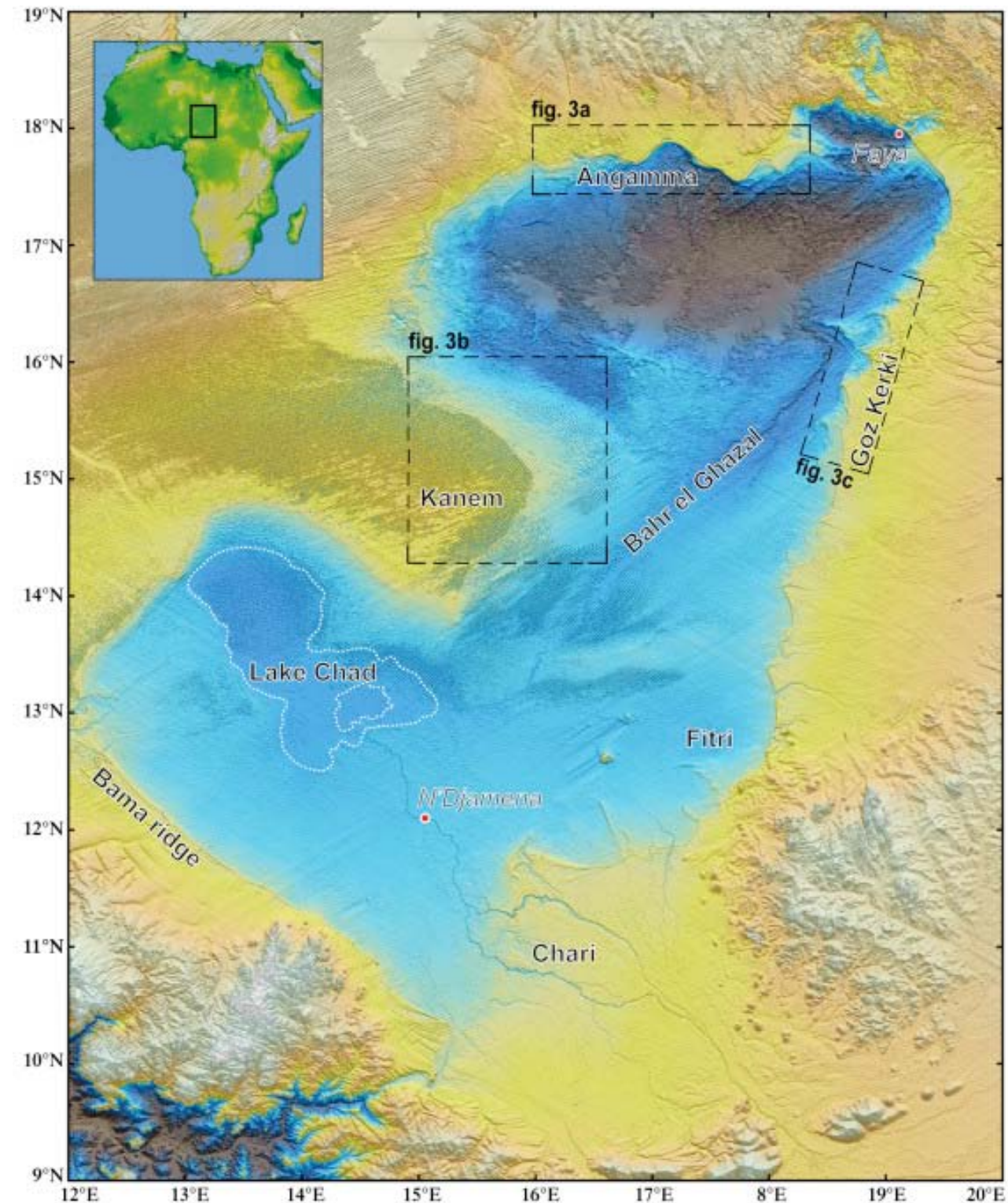


# Lake Mega-Chad and the *Amduat*

During the Holocene, Lake Mega-Chad was ten times larger than its **maximum extent** in the 1960s. When Early Dynastic Egypt began in 3100 BC, the Sahara Desert was a fertile grassland (4, 8). Lake Mega-Chad was the largest of four Saharan paleolakes, and is estimated to have covered an area of 350,000 square kilometers, larger than the Caspian Sea. Lake Chad is a remnant of this vast internal waterway.

Four thousand years ago (2000 BC), at the beginning of the Egyptian Middle Kingdom, the Lake Mega-Chad had retreated and split into a larger northern lake in the Bodélé Depression and smaller Lake Chad in the south.

The location of these two giant lakes corresponds to the topography of the *Amduat*. The length of the interstitial realm of the first hour between the “horn of the West” (the place where the sun sets) and the second hour is given as 1260 kilometers (converted units). If this distance has any factual basis, it could be seen as the distance between the oasis of Dakhlah (from where the **Abu Ballas Trail** departed) and the northern shore of the original Lake Mega-Chad.



Holocene Lake Mega-Chad (circa 5000 BC)  
[F. Bouchette et al. 2010 (4)]



# The Abu Ballas Trail to Lake Chad

Abu Ballas ('Father of Jars') was a major caravan watering station in the Sahara west of the Nile. A large depot of pharaonic pottery was discovered there in 1918. In 1999-2000, the German desert traveler Carlo Bergmann discovered the Abu Ballas Trail (10, 15) and several of its way stations (see following page).

In November 2007, Mark Borda and Mahmoud Marai discovered an inscription of Mentuhotep II (~2020 BC) on a southern continuation of the Abu Ballas Trail (page 48). Jebel Uweinat is located near the borders of Chad, Egypt, Libya, and the Sudan, more than 700 kilometers from the Nile. The hieroglyphic inscription is proof that ancient Egyptians traveled long distances through the Sahara desert, with a literate scribe to record the journey. The last known way marker of the Abu Ballas Trail is at Erdi Korko 435 km southwest of the Jebel Uweinat in the Chad Basin.

The Abu Ballas Trail may be 1800 kilometers long and is a likely link between the Nile valley and the Lake Chad region. Caravans, trade, cultural diffusion, migration and local settlement could have established ancient Egyptian culture at Lake Chad. The Sao civilization, and later the Buduma culture, could have derived or descended from ancient Egyptians.

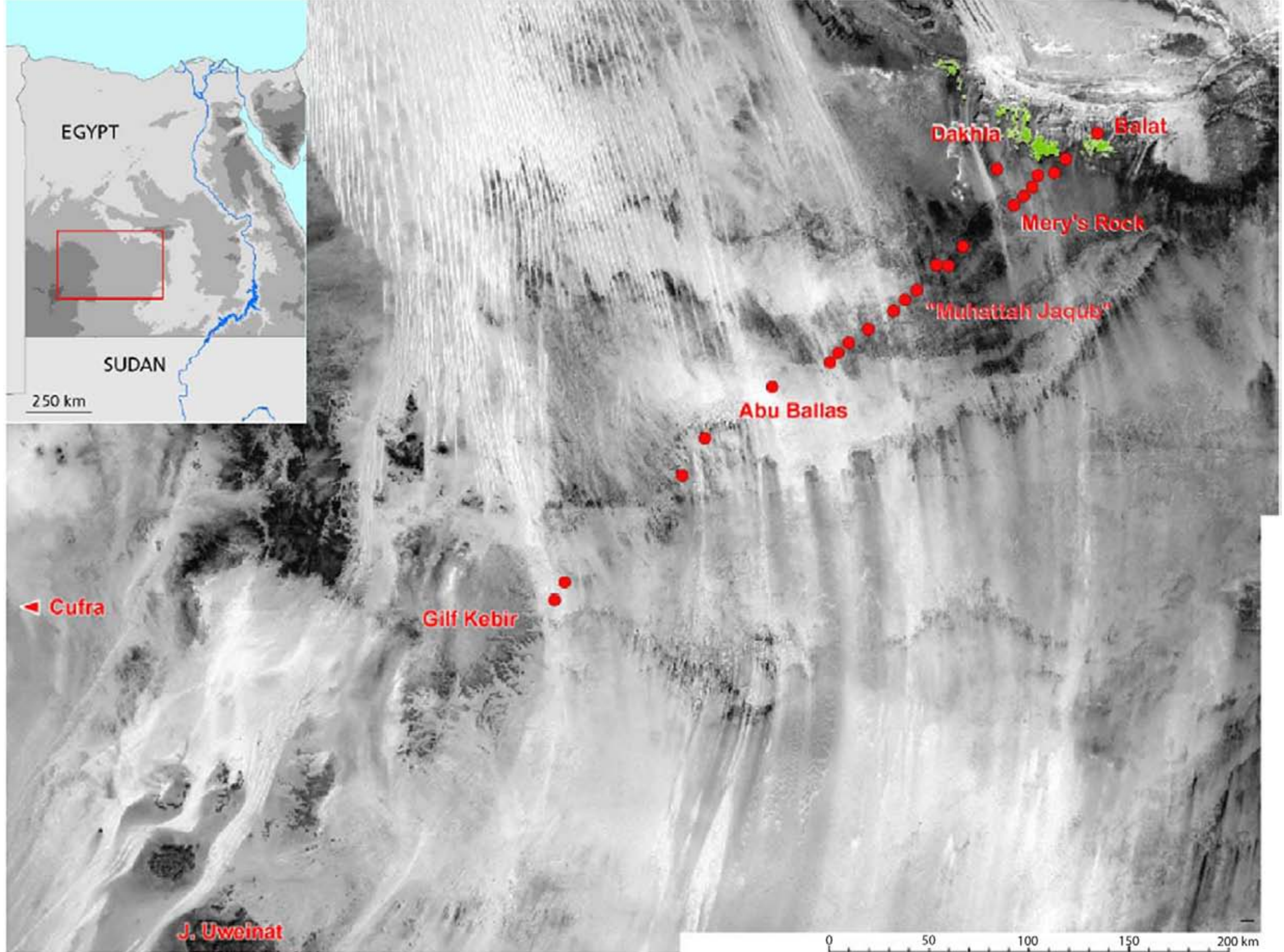


Egyptian Old Kingdom Pottery at Abu Ballas  
[photo Rudolph Kuper 2003]



Erdi Korko Marker Cairn in Chad  
[photo Giancarlo Negro, cover of *Sahara* 22, 2011]





Satellite image showing the chain of archaeological sites along the Abu Ballas Trail. [Förster (10) 2000]  
The Jebel Uweinat, where the inscription of Mentuhotep II was found, is visible in the lower-left corner.





4000 year-old Hieroglyphic Inscription of Mentuhotep II at Jebel Uweinat on the Abu Ballas Trail  
[Joseph Clayton, Aloisa de Trafford, Mark Borda (6), 2008]



# Topics For Further Investigation

The ancient Egyptian aspects of Buduma culture, and the existence of the Abu Ballas Trail, suggest additional topics for research. These can be organized into four categories: Buduma origins; linguistic questions, current status of the Buduma people; and the future of the Lake Chad region.

## Research Questions

1. Did the Abu Ballas Trail extend to Lake Chad? Is there archeological evidence near the lake?
2. Did the Sao people show Egyptian cultural influences? Do their other descendants, the Kotoko, also share Egyptian traits (music, cattle, etc.)? Why were the Sao described as giants (2, 16) with tails but no necks (14)?
3. Are Kuri cattle descended from ancient Egyptian cattle? Can we do DNA breed comparisons with ritually buried cattle in ancient Egypt (e.g the Nabta Playa)? Were aurochs first domesticated in Africa – or in Eurasia?
4. What other remnants of ancient Egyptian culture remain in Africa: Afroasiatic (Chadic) languages, arched harp, cattle, etc?
5. What is the current status of the Yedina language? Where does it survive? How many speakers remain?
6. Where is the “*Urheimat*” (original homeland) for Afroasiatic Chadic languages? Is it in the Middle East or in Africa (Egypt)? Can the “Comparative Method” (a technique for studying language development) be used to assess the genetic relatedness of Yedina to Ancient Egyptian?
7. Are there DNA links between the Buduma and the Kotoko – or other Africans near the Nile?
8. Historically, the Buduma were estimated at only 25,000 (perhaps 50,000) people. What is the current population of the northern Buduma? Do any villages remain?
9. What is the true hydrology of Lake Chad? Why was this terminal basin in the Sahel full of fresh water? Is it filled by occasional monsoons in the jungles of the Central African Republic? Will it fill again?
10. What is the potential for Lake Chad fisheries and agriculture? How will this affect the Buduma?
11. What is the status of the Lake Chad Basin Commission plan to refill the lake with interbasin water transfers from the Ubangi River?



# About the Author

## Guy Immega

I am a retired aerospace engineer and entrepreneur, living in Vancouver, Canada. My company, Kinetic Sciences Inc. built experimental robots for the space station, robots to clean up nuclear waste and miniature fingerprint sensors for cell phones. In 2005, I sold the corporate intellectual property to a Californian company. Since that time I have completed a science fiction novel and other nonfiction essays.

During the period of 1966-68, I served in the Peace Corps in Niger, Africa. Stationed in N'Guigmi, 700 kilometers from the nearest road, on the shores of Lake Chad. Our Peace Corps team resurrected an abandoned hospital and provided medical services.

In addition to vaccinating Toubou nomads in a local smallpox epidemic in 1967, I undertook a survey of schistosomiasis (a parasitic disease in Lake Chad). While on Lake Chad, I came into contact with the Buduma people.



Guy Immega 2012  
with model papyrus boat  
built by Buduma boatbuilder 1967  
[guy.immega@kinetic.ca](mailto:guy.immega@kinetic.ca)



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