



AQUATIC ECOLOGY AND SUSTAINABLE DEVELOPMENT IN KENYA

2020



TRANSFORMATIVE LEARNING JOURNEYS

EDU Africa aims to promote the process of student transformation, utilizing the unique context of Africa to help students broaden their intellectual horizons and grow personally, cross-culturally, professionally, and as global citizens.



**INTERCULTURAL
COMPETENCE**



**GLOBAL
CITIZENSHIP**



**PERSONAL
GROWTH**



**INTELLECTUAL
GROWTH**



**PROFESSIONAL
DEVELOPMENT**

PROGRAM OVERVIEW

Kenya's 42+ tribal groups, spanning 3 of the 4 African language groups, along with its breath-taking landscapes, iconic wildlife, and rapidly modernizing cities make it one of the most diverse countries in Africa. As a nation, Kenya is little over 50 years old, meaning that its colonial history, and subsequent independence, are still fresh in the collective mind. Kenya's history, its beliefs, its diversity, and its resilience have brought the country to where it is, and will continue to dictate where it heads in the future as a nation. A country built on Muslim-Arab trade along the coast, Christian missions in the interior, and a primarily agricultural and tourism-driven economy, Kenya is now rapidly changing, providing fascinating opportunities for the study and exchange of knowledge in a host disciplines.

This program engages students with various initiatives, institutions and organizations in Nairobi, Limuru, Naivasha and Elmenteita with the hope of facilitating and inspiring student transformation and global competency. The itinerary is filled with visits and activities that could extend beyond the scope of a single discipline, while still retaining academic rigour and content-specificity. As nations, cultures and societies become increasingly interconnected, multidisciplinary study abroad programming can help equip students for complex and creative responses to problem-solving and communication.

Educational Site Visits

- National Museums of Kenya
- Lake Naivasha
- Flower Farm
- Gorge Energy Park
- Oloiden Lake
- Olkaria Geothermal Plant
- Soysambu Conservancy

LEARNING OUTCOMES

By the end of this program, students should be able to:

- Demonstrate increased intercultural competence through language and cultural lessons and museums visits
- Reflect on global issues and challenges on aquatic ecosystems in the face of development
- Reflect on personal growth through structured reflection sessions, discussions with program contributors and transformative self-assessments
- Discuss key themes relating to conservation of aquatic ecosystems based on Kenya experience
- Demonstrate increased professional competencies through application of field based practical skills

Note: Specific learning outcomes and activities can be constructed in collaboration with EDU Africa's dedicated curriculum development team.

DAILY PROGRAM

Day	Travel	Accommodation	Style	Meals Included	Activities
1	Arrive JKIA	Brackenhurst	Rooms	D	Airport transfer Check in to hotel
2		Brackenhurst	Rooms	BLD	EDU Africa welcome and cultural orientation Introduction to Kiswahili lesson Limuru Marketplace challenge
3	Travel to Naivasha	Elsamere	Rooms	BLD	Tour of National Museums of Kenya, Ichthyology section Afternoon travel to Naivasha Evening film – Joy Adamson's story
4		Elsamere	Rooms	BLD	Introduction to aquatic taxonomy, ecology and sample collection techniques Boat tour and overview of Lake Naivasha Tour around Crescent Island Kiswahili lesson recap
5		Elsamere	Rooms	BLD	Survey and monitoring work including collection of samples Specimen identification and classification Sample preparation and preservation techniques Oloiden lake and flower farm tour
6		Elsamere	Rooms	BLD	Hell's Gate National Park Tour of Olkaria IV Geothermal Power Station Visit Gorge Energy Park Kiswahili lesson recap
7		Elsamere	Rooms	BLD	Soysambu Conservancy: Invasive species identification and biological control agents Practical alien species removal
8		Elsamere	Rooms	BLD	Survey and monitoring work including collection of samples Specimen identification and classification Sample preparation and preservation techniques Dinner at a local restaurant

9		Elsamere		BLD	Day trip to Lake Nakuru National Park Recap including reflection
10	Departure			BLD	Optional: The Sheldricks Elephant Orphanage, Giraffe Center visits and Kazuri Beads Farewell dinner Departure

Abbreviations: JKIA: Jomo Kenyatta International Airport; B: Breakfast, L: Lunch, D: Dinner

SUSTAINABLE DEVELOPMENT GOALS

This program engages students with the principles of the following United Nations Sustainable Development Goals:



LOCAL PROGRAM FACILITATOR

All EDU Africa programs are administered by an expert Local Program Facilitator. The facilitator meets the group of students on arrival at the airport and accompanies them for the full duration of their time on the ground. The facilitator is available at all times to assist with any student and educator needs, thus ensuring the smooth running of the program.

PROGRAM CONTRIBUTOR

Edward Njagi



Edward is a research scientist at the National Museums of Kenya. He has conducted research, inventories and detailed studies of Kenya's aquatic fauna for over many years, and has a passion for teaching and passing on his knowledge to future and upcoming scientists. Edward's focus is on taxonomy and ecology of freshwater and marine fish.

ACCOMMODATION

Brackenhurst, Limuru

Brackenhurst is located on 100 safe and scenic acres approximately 25 miles North of Nairobi. Here you will find a peaceful and quiet area, nestled in the fertile rolling hills of the Limuru region most famous for the vast fields of tea



and farmland. Brackenhurst is proudly home to one of the largest collections of indigenous plants in Africa. Students may engage in on-site recreation walking, jogging or bird watching along our forest trails Brackenhurst is equipped with a nurse and clinic to attend to any health needs should they arise, as well as a full-time security manager and a staff of 24-hour security personnel. Rooms are comfortable with ensuite bathrooms and hot showers and the food is locally sourced, tasty and nutritious. Our experienced chefs will prepare your meals buffet-style in our dining hall ranging from traditional Kenyan to international cuisine. Each learning area is prepared to your specific needs, with a custom setting and materials as per your request. All conference rooms are equipped with the following items: LED projector, TV multisystem, flip chart, whiteboard & markers, CD/DVD player, and excellent Wi-Fi Internet access.

Elsamere Conservation Centre

Elsamere Conservation Centre was once a holiday home and later to be a retirement home for Joy and George Adamson, of 'Born Free' fame. Operated by Elsa Conservation Trust, Elsamere remains a unique destination in Naivasha that provides facilities for lectures, field activities, and accommodation on the lake-shore. Here, history reconnects with the future as memories of 'Born Free' are rekindled through Joy Adamson's story and having a walk around the museum. The Trust continues its lifelong commitment to wildlife conservation and sustainability through its Center for Education in Sustainability.



CURRICULAR ACTIVITIES

National Museums of Kenya

The National Museums of Kenya is a multi-disciplinary institution whose role is to collect, preserve, study, document and present Kenya's past and present cultural and natural heritage. This is for the purposes of enhancing knowledge, appreciation, respect and sustainable utilization of these resources for the benefit of Kenya and the world, for now and posterity. The museums contain priceless collections of Kenya's living culture and natural heritage.

The Zoology department of Nairobi Museum houses the Ichthyology section, established in 1997. This contains the largest collection of freshwater, brackish and marine fishes in East and Central Africa located within the continent. The collection contains over 50,000 specimens including a variety of unique collections. A visit to the museum will afford the students an opportunity to see and learn about this wide collection. It is this visit that will form the basis of field work that students will be engaged in during the course of the trip.

Kiswahili Lesson

In the service of increasing students' cross-cultural responsiveness, they will receive a language lesson in Kiswahili. Kiswahili is the national language of four African countries: Kenya, Tanzania, Uganda and the Democratic Republic of Congo, and is spoken in numerous other countries in Eastern and South-Eastern Africa. Depending on the length of the program, students will receive lesson(s) in Kiswahili and have the opportunity to practice their skills on Kenyans as the program progresses.

Survey and Monitoring work in Lake Naivasha

Lake Naivasha is a freshwater lake, part of the Great Rift Valley in Kenya, outside the town of Naivasha, north west of Nairobi. The name derives from the local Maasai name Nai'posha, meaning "rough water" because of the sudden storms which can arise. Lake Naivasha is at the highest elevation of the Kenyan Rift Valley at 1,884 metres (6,180 ft) in a complex geological combination of volcanic rocks and sedimentary deposits from a larger Pleistocene era lake. Lake Naivasha has been the scene of a long series of exotic species introductions and is a great case-study for exotic invasives, human interference, pollution, and the resilience of a natural ecosystem.

The lake is a relatively shallow freshwater body and a recognized Ramsar wetlands of international status with a high biological diversity. It covers an area of about 160 sq km at an elevation of 1,890 m. This lake is prone to threats mainly from human settlement and agricultural activities in the areas around the greater Naivasha area. Survey and monitoring work in and around Lake Naivasha will involve field data collection including collection of samples, identification, preparation and preservation. This work will be carried out under the guidance and direction of expert and processed samples will add on to the collection in the Ichthyology section of the National Museums of Kenya.

Lake Oloiden

Lake Oloiden is a volcanic Crater Lake and home to Kenya's largest flower farms. It is popularly referred to as the flamingo's paradise as there are thousands of flamingos. The spectacular sights of flamingos can be viewed on a boat ride in this lake while also viewing wildlife in the surrounding acacia trees. While this lake is marginally small it is worth comparing and contrasting its biodiversity with that of the much larger Lake Naivasha.

Gorge Energy Park

Gorge Energy Park is a marvel of renewable energy technology. The Park's core objective is to service the energy needs of the farm, including heating of greenhouses but has been producing surplus which is sold to the national grid. This project is a classic example of sustainable energy production in an environment that is highly polluted and biodiversity status being negatively affected. A visit to the park will provide a different perspective to possible solutions to tackling threats and challenges facing our ecosystems.

Olkaria Geothermal IV Power Plant

Olkaria Geothermal Power Plant is situated at the Hells Gate National Park about 26 Kilometers from Naivasha Town. The power plant consists of four main power plants (Olkaria I, II, III, and IV) with the Olkaria IV being the latest power plant with the highest power generation of up to 140 Megawatts and consists of two separate generators powered through common geothermal steam energy source. The 140 Megawatts generated by Olkaria IV translate to about 10% of the total power supply generated country wide from all sources (e.g. hydro and wind power), and is proudly the single largest geothermal project in Africa. Electricity is successfully generated from 28 geothermal wells near the power plants.

Highlights of the tour to the plant include walking through the entire process of geothermal power generation from geothermal wells through to the generators that output power to the main grid as well as accessing the highly automated main control room. Students also get a chance to exclusively interact with personnel working in the power plant.

Soysambu Conservancy

Located in the middle of central Rift Valley and on the shores of Lake Elmenteita within the Kenya Lake System in the Great Rift Valley, Soysambu Conservancy is part of a World Heritage Site, a Ramsar Site and an Important Bird Area. The Conservancy's 48,000 acres supports five different ecosystems including savannah, Acacia forest, Euphorbia forest, Leleshwa bushland and Soda Lake. The Conservancy is home to more than 450 species of birds and over 50 species of mammals including 90+ of the endangered Rothschild's Giraffe (10% of the World's population). Through education, outreach and science based research programs, the Conservancy is at the forefront of providing solutions to guide conservation actions to safeguard nature and human welfare.

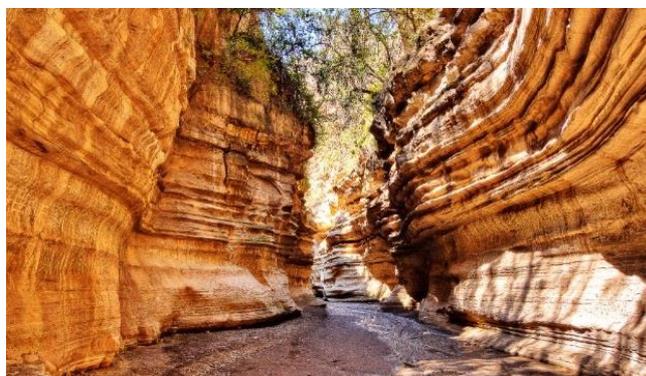
CO-/EXTRACURRICULAR ACTIVITIES

Limuru Marketplace Challenge

The Limuru marketplace is a vibrant and colorful affair with informal vendors selling a staggering array of fresh produce, clothing items and household goods. Students will be armed with some key Swahili phrases, tips on bartering skills and a list of items to be found and purchased within a small budget. Chai (mixed tea) and mandazi (local doughnuts) will be procured at one of the stalls and enjoyed with community members as part of the challenge. All market goods purchased will be donated to our service learning partners.

Hell's Gate National Park

Hell's Gate National Park lies to the south of Lake Naivasha in Kenya, North West of Nairobi. The park, which is mainly comprised of savannah ecosystem, harbours a wide variety of wildlife but is uniquely famous for its spectacular scenery which includes towering cliffs, water-gouged gorges, stark rock towers, scrub clad volcanoes and belching plumes of geothermal steam.



Lake Nakuru National Park

The most famous of the Great Rift Valley Lakes, Lake Nakuru is renowned for its magnificent wildlife. The park was created to protect the lake and its flocks of Lesser Flamingo which are drawn to the algae that flourish in the saline waters of the soda lake. This 188 sq kms park is a paradise for black and white rhino, the rare Rothschild giraffe, large herds of buffalo and an abundance of various plains game. Sightings of leopard resting on Acacia tree branches are relatively common but never guaranteed. As you move further afield into the woods, you find black and white colobus monkeys and closer to the escarpment walls and rocky ridges, mountain reedbuck, dikdik, rock hyrax are often sighted.



The Giraffe Centre

The African Fund for Endangered Wildlife Kenya (A.F.E.W. Kenya) also known as the Giraffe Centre is a non-governmental, non-profit making organization. The main objectives of the Giraffe Centre are to provide conservation education for the youth of Kenya, and to save the endangered Rothschild Giraffe, which has lost its natural habitat in

Western Kenya to agriculture. Learn about the Rothschild giraffe, one of the most endangered giraffe subspecies with only a few hundred left in the wild.

The Sheldricks Wildlife Trust

The Sheldricks Wildlife Trust has been rearing orphaned elephants and rhinos and returning them to the wild since it was established in 1977. At the orphanage, students get to learn about The Sheldricks Wildlife Trust's initiative of conservation and rehabilitation.

Kazuri Bead Factory

Kazuri, which means "small and beautiful" in Kiswahili, began in 1975 as a tiny workshop experimenting on making handmade beads. The factory is located in what used to be part of the Karen Blixen Estate (of the Academy Award winning film "Out of Africa" fame). Kazuri started with two Kenyan women and soon discovered that there were many other women in the villages around Nairobi, most of who were single mothers and in great need of regular employment. Driven by the desire to provide such opportunities, Kazuri has grown and today it has a large workforce skilled in the making of handmade jewellery.

STUDENT ELIGIBILITY REQUIREMENTS

Students participating in this program should be aware of and be prepared to handle the following essential elements:

- Walking moderate distances over muddy terrain during forest walks
- Enduring a very bumpy minibus drive to and from the Maasai Mara (+- 5-6hours each way)
- Living in a setting away from reliable internet (data plans can be purchased)
- Possessing an awareness that, due to the nature of study abroad, participation in the program might evoke a level of stress and discomfort as they are in an unfamiliar environment
- Speaking openly about race relations and the legacies of colonialism with people from different backgrounds
- Being aware that they may feel uncomfortable in certain community settings and may not be able to articulate why they feel this way
- Spending time outdoors in the presence of various bugs (e.g. mosquitoes)
- Possessing an awareness of Kenya's laws on LGBTQ+ rights

Each student that takes part in our programs is required to have comprehensive medical insurance. Travel insurance is highly recommended, but not compulsory.

Students are required to sign and adhere to the policies outlined in EDU Africa's Participant Agreement Form.

ITINERARY FLEXIBILITY AND COST

The itinerary is correct at the time of submission. It is flexible and may be adjusted to meet students' needs. In all cases, we will do our best to preserve the quality of what is presented herein. However, we reserve the right to modify the itinerary, locations, accommodations facilities and costs if any changes so dictate. All quoted accommodation is subject to availability and confirmed numbers.

Cost for the program based on per person sharing:

Number of paying persons	Free of charge faculty (land arrangements only)	Price per person USD

What this includes:

- All transport, fuel, tolls and road taxes
- Full use of vehicle for the duration of your program
- 24-hour services of an EDU Africa Program Facilitator
- All accommodation as listed above
- All meals as specified in the daily program
- All activities as listed above

What this excludes:

- Wi-Fi (only available as provided by accommodations)
- All meals and drinks not specified above
- Laundry
- All flights
- All optional extra activities
- Travel & medical insurance
- Items of a personal nature, personal insurances, visas and gratuities

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