

## WORKU LEGESSE MULAT

12225 Plano Rd, #1091 Dallas, TX 75243

### CURRICULUM VITAE

Citizenship: Ethiopian

Email: workulegesse@hotmail.com

Cell: (214) 229-5479

Work: (469) 593-0078

Web sites: [www.legesse.org](http://www.legesse.org)

Twitter: [#wolemu](https://twitter.com/wolemu)

### EDUCATION

- 2001 University College Cork, Cork, Ireland, Ph.D., Applied Ecology
- 1993 Center for Environmental Sanitation, Gent, Belgium, M.Sc.,  
Environmental Sanitation
- 1987 Asmara University, Eritrea, B.Sc., Biology

### EMPLOYMENT

- 2012-on **Sustainability Officer** at Berkner High School, Richardson, TX
- 2010-2012 **Sanitation and food safety officer**, LHJH School, Dallas, TX
- 2012 – on **Adjunct Researcher**, University of Connecticut
- 2011 – on **Research Associate**, Tree Foundation Inc.
- 2011 –on **Part time Science Editor**, ACCDON LLC
- 2009– 2010 **Research Associate**, University of Washington
- 2005 – 2006 **Associate Professor and President**, Wollo University, Ethiopia
- 2003 – 2005 **Assistant Professor**, Jimma University, Ethiopia
- 1993– 2003 **Lecturer**, Jimma University, Ethiopia
- 1987 -1993 **Assistant lecturer**, Jimma University, Ethiopia

## ACADEMIC HONORS

### **Graduate and Undergraduate**

2005-2006	Belgium Government Research Grant
2003-2005	Tropical Disease Research Grant
2001-2003	Ethiopian Science and Technology Research Grant
1997 – 2001	Republic of Ireland Scholarship
1991-1993	Belgian Government scholarship
1983-1987	Asmara University Scholarship

## EXPERTISE

Ecological Monitoring of aquatic resources/ Environmental Impact Assessment are the major areas of my specialization with considerable background and keen interest in Water resources management/ Watershed management, Sustainable living and ecological disaster mitigation.

## RESEARCH EXPERIENCE

*Undergraduate research (BSc) (7/86 – 6/87).*

**Project:** The effect of Salinity on selected Ethiopian *Triticum species* was investigated. The project was carried out at Plant Genetics laboratory, Asmara University under the supervision of Prof. Endashaw Bekele, an eminent East African scientist. This research thesis was a requirement for a partial fulfillment of BSc degree and aimed at investigating the physiological mechanisms of plant tolerance to excess salinity. This thesis was evaluated as exemplary and attracted a grade of A.

*Graduate research (MSc) (9/93 – 8/94).*

**Project:** Simulation of Human Gastrointestinal Tract to study the behavior and fate of synthetic chemicals under *in vitro* conditions. In this project more than 400 gut flora were maintained under controlled environment where their survival was monitored by direct enumeration on growth media and indirect technique by monitoring the metabolic end product. The effect of drugs on Streptococcal bacteria and its implication on their role as indicators of fecal pollution of water resources was described. The finding was published on International Journal.

*Graduate research (PhD) (9/94 – 12/97)*

**Project:** Sensitivity of Biotic Indices to Natural Disturbances, Department of Zoology and Animal Ecology, University College Cork, Cork, Ireland. The supervisor, Prof. Paul Giller is a distinguished and world renowned Water Science Expert who wrote several books in the field and published numerous articles on high impact Journals. Macroinvertebrate data collected from selected Irish and Ethiopian Rivers were analyzed to develop decision support tool for river systems in Ethiopia. This study has led to launching projects to explore the ecological integrity of several rivers in Wollo, Shewa and Jimma areas leading to the publication of results on international journals consequently policy changes to ameliorate the situation. The study on Gilgile Gibe ecological hazard led to the commencement of a national workshop to be held at Jimma University. The impact of coffee processing on springs and rivers was published in international journal and featured as research highlights by Specialty Coffee Association of America in 2012.

## CURRENT RESEARCH FOCUS

Currently major projects involve two major areas:

1. **Saving Ethiopian Orthodox Church Forests**- Much of Ethiopian forest cover has gone and many of high rising mountains already became barren and thus no longer participate in photosynthetic assimilation of energy or in the hydrological cycle. In connection with forest loss many animals and insects associated with them are likely to disappear long before we describe them. The only refuge that gives hope for future restoration efforts are Ethiopian Orthodox Church forests and conservation effort is organized under a banner of one church at a time.
2. **The Relationship between Water and Human Security in the Blue Nile Basin**- A multi university project (University of Connecticut, Addis Ababa University, Bahir Dar University, Nebraska University, and Oklahoma University) has been drafted to investigate the socioeconomic and political and regional security of hydropower and irrigation developments within the Blue Nile Basin. This water demand and the stress it causes in the region is to be investigated in the light of climate change, weather variability and the growing water demand in the downstream countries. The project has been preapproved by NSF for potential funding and the final version has already been submitted.
3. **Linking Nature Research Center to Jimma University**-Nature Research Center is a new wing of North Carolina Museum of Natural Sciences. It aims to serve as a platform where scientists and citizens discuss research outputs through its Daily Planet studio. Located in the Research triangle in North Carolina, it aspires to promote citizen science by demystifying science and connecting to everyday lives of people. Scientists from North Carolina State University are actively involved and plan to extend the Daily Planet Studio broadcast to Africa. A link between Jimma University and Nature Research Center is in progress

and the Director of the Center is scheduled to visit Jimma University in October 2012.

#### NUMBER OF STUDENTS SUPERVISED

More than 200 students work under my supervision in both undergraduate and graduate level. Some undergraduate research paper on water pollution arising from cities were selected as the best papers by the Research Department of Jimma University and were the building blocks for my own PhD work. I supervised 20 MSc students, 18 at Jimma University and 2 in the United States through distance learning program. In collaboration with Belgian Professors I also supervised two PhD students and after completing the program, they returned back to Jimma University strengthening the academic staff of Environmental Science and Technology Department.

#### RESEARCH GRANTS

1. Gilgel Gibe Hydropower Socioeconomic and Environmental impact study and mitigation project- A south-north collaborative research proposal was developed and submitted to Belgian government. Among 12 universities competing for the fund, Jimma University became among the 6 universities qualifying for funding. Consequently, a grant of US\$ 120 million was secured and the project commenced in 2006. A wide range of research work is underway and more than 40 academic staff are benefiting from the project working for their MSc and PhD at reputable universities in Belgium.
2. Incidence and prevalence of malaria around Gilgel Gibe reservoir- this project was launched in collaboration with Jimma University staff and

attracted a total fund of US\$155,000. The project was completed and the finding published on international journal.

3. Ecological impact of Gilge Gibe hydropower dam on invertebrates- This study was sponsored by the Ethiopian Science and Technology Commission and the final report was submitted. This research highlighted that a major ecological disruption occurred downstream of the dam and the ecological suggesting the ecological integrity of the river was negatively affected. It was this finding that inspired the researcher to initiate a south-north collaborative research consortium to launch a larger scope of study. The report also sensitized both the scientific community and policy makers and thus a National Workshop in integrated watershed management on the Gibe-Omo basin was held at Jimma University from 23-25 December 2010 in Ethiopia.
  
4. Jimma Research Office Grant-a number of annual funds were obtained from Jimma University Research Grant Office and many interesting results were recorded. The Biological Oxygen Demand of the waste generated by the student Cafeteria of the University was quantified for the first time and this data was used to optimize construction of biogas plant in the compound. The microbial quality of protected and unprotected springs study was also supported by this office and dramatic results obtained helped to revise the techniques used in protecting springs.

## CURRICULUM DEVELOPMENT

1. Developed, in collaboration with other academic staff, the BSc and M.Sc. curriculum for Environmental Science curriculum in Jimma University

2. Served as chairperson to develop curriculum for recently launched Ethiopian Water Resources Institute at Addis Ababa University
3. Developed the Environmental Health curriculum for Extension Health Workers under the request of the Federal Ministry of Ethiopia.

#### PROFESSIONAL ACTIVITIES

1. Since 2011, member of editorial board for Journal of Environmental and Analytical Toxicology.
2. Science Editor for ACCDON Company since 2011.
3. Since 2011, member of review board for Journal of Life Sciences.
4. 2012, Curriculum development Chair person for Ethiopian Water Resources Institute.
5. Reviewed manuscripts for several premier journals including Journal of African Ecology.
6. Member of Sierra Environmental Club, USA
7. Member of Ethiopian Public Health Association, Addis Ababa, Ethiopia
8. Editorial Member of *Ethiopian Journal of Health Sciences*, Ethiopia (2002-2006).

#### INVITED SEMINAR PRESENTATIONS

1. Keynote Speaker and chairperson for oral presentations, International Hydrology Conference Sep 10-12, San Antonio, TX.
2. Panelist on the likely causes of death of Lake Alemaya, Harar, Ethiopia. Ethiopian Public Health Association, Oct 2006.

3. Visiting Scholar, Department of Environmental Health, Brown Green State University March 20, 2007.
4. Invited Global Scholar at Grand Opening Ceremony of Nature Research Center, Raleigh, North Carolina, April 18 2012.
5. Keynote Speaker at International Hydrology Conference, San Antonio, TX Sep 2012
6. Chairperson at International Hydrology Conference, San Antonio, TX Sep 2012
7. Hailu Endale and **Worku Legesse**. Determination of nitrate level in Biological fluid in two groups of children that consume water from sources differing in the level of nitrate contamination, Agaro town, Southwestern Ethiopia. Ethiopian Public Health Association XVth Annual Public Health Conference 14-16 Oct 2004, Addis Ababa, Ethiopia
8. Tsegaye Kebede **Worku Legesse** et al. Assessment of Indoor Air Pollution in relation to respiratory complaints among Jimma University cafeteria workers, Jimma 2004. Ethiopian Public Health Association XVth Annual Public Health Conference 14-16 Oct 2004, Addis Ababa, Ethiopia
9. **Worku Legesse**. Why preaching hygiene to the public when health professionals disregard it in a health care system? Lesson from Jimma University Hospital. Ethiopian Public Health Association XVth Annual Public Health Conference 14-16 Oct 2004, Addis Ababa, Ethiopia
10. **Worku Legesse**. Physicochemical and macroinvertebrate survey of the River Gilgel Gibe upstream of Jimma water treatment plant. Ethiopian Public Health Association XVth Annual Public Health Conference 14-16 Oct 2004, Addis Ababa, Ethiopia
11. **Worku Legesse**. Population growth in Ethiopia. Has it already passed or will soon pass its tolerable bounds? Ethiopian Public Health



Association Conference XVII, Hilton, Addis Ababa, October 15-17, 2003.

## PUBLICATIONS

1. Sileshi Baye, Helmut Kloos, **Worku L. Mulat**, Aymere Awoke Assayie, Gabriel Gullis, Abera Kumie, Biruck Yirsaw. Assessment on the Approaches Used for Water and Sanitation Programs in Southern Ethiopia. ***Water Resources Management***. Accepted for publication.
2. Melaku Getachew, Argaw Ambelu, Seid Tiku, **Worku Legesse**, Aynalem Adugna, Helmut Kloos. Ecological assessment of Cheffa Wetland in the Borkena Valley, northeast Ethiopia: Macroinvertebrate and bird communities. *Ecological Indicators*, Volume **15**, Issue **1**, April 2012, Pages 63-71
3. Birkneh Tilahun, Bogale Worku, Erdaw Tachbele, Simegn Terefe, Helmut Kloos and **Worku Legesse**. High load of multi-drug resistant nosocomial neonatal pathogens carried by cockroaches in a neonatal intensive care unit at Tikur Anbessa specialized hospital, Addis Ababa, Ethiopia. *Antimicrobial Resistance and Infection Control* 2012, **1:12**. T
4. Beyene A, Kassahun Y, Addis T, Assefa F, Amsalu A, **W. Legesse**, Kloos H, Triest L. The impact of traditional coffee processing on river water quality in Ethiopia and the urgency of adopting sound environmental practices. *Environ Monit Assess*. 2011 Dec 9.
5. H. Kloos and **Worku Legesse**. Water Resources Management in Ethiopia: Implication to the Nile Basin (Ed.). Cambria Press, NY, 2010.
6. H. Kloos, **Worku Legesse**, and A. Adugna. Resource Management in Ethiopia: implications for the Nile Basin(Ed.). Helmut Kloos and Worku Legesse. Cambria Press, NY, 2010.
7. Water Resource Management in the Nile Basin. In: Kloos & **Worku Legesse**, 2010(ed.) Chapter 2, pp 31-62

8. S. Moges, H. Kloos, S. McFeeters, and **Worku Legesse**. The water resources of Ethiopia and large scale hydro dam and irrigation development. In: Kloos & Legesse, 2010(Ed.) Chapter 3, pp 63-101
9. H. Kloos and **Worku Legesse**. Small scale irrigation and hydro dams. In: Kloos & Legesse, 2010 (Ed.) Chapter 4, pp 103-122.
10. Helmut Kloos and **Worku Legesse**, Stuart McFeeters, and David Turton. Problems of pastoralists in the low lands: River basin development in the Awash and Omo valleys. In: Kloos & Legesse, 2010 (Ed.) Chapter 9, pp 253-283.
11. Semu Moges, Yirga Alemu, Stuart McFeeters and **Worku Legesse**. Flooding in Ethiopia: Recent history and the 2006 flood. In: Kloos & Legesse, 2010 (Ed.) Chapter 10, pp 285-305.
12. **Worku Legesse** and Helmut Kloos. Water pollution from industrial and agricultural sources. In: Kloos & Legesse, 2010 (Ed.) Chapter 12, pp 321-351.
13. Helmut Kloos and **Worku Legesse**. Water-related, vector borne and geochemical diseases. In: Kloos & Legesse, 2010 (Ed.) Chapter 13, pp 353-385.
14. Helmut Kloos and **Worku Legesse**. Concluding remarks on water resources management in Ethiopia. In: Kloos & Legesse, 2010 (Ed.) Chapter 14, pp387-401.
15. **Worku Legesse**, D. Hilemariam and H. Kloos. Water supply and sanitation. In: Brhane Y, Haile Mariam, D and Kloos H., 2006 (Ed.) Chapter 8, pp129-151.
16. D. Yewhalaw, **W. Legesse**, W. Van Bortel, S. Gebre-Selassie, H. Kloos, L. Duchateau and N. Peybroeck. Malaria and water resource development: the case of Gilgel-Gibe hydroelectric dam in Ethiopia. *Malaria Journal* 8:21 (2009).
17. Rani Devi, Esubalew Tesfahune, **Worku Legesse**, Bishaw Deboch and Abebe Beyene. Assessment of siltation and nutrient enrichment of Gilgel Gibe Dam, Southwestern Ethiopia. *Bioresource Technol.* 2008;99:975-979.

18. **Worku Legesse**, Solomon Gebre-Selassie. Sanitary survey of residential areas using [Ascaris lumbricoides](#) eggs as indicators of environmental hygiene, Jimma, Ethiopia. *Ethiop J Health Dev.* 2007; 21(1): 18-24.
19. Delenasaw Yewhalaw, **Worku Legesse**, Solomon Gebre-Selassie, Helmut Kloos, [Human myiasis](#) in an endemic area of southwestern Ethiopia: knowledge, perceptions, and practices. *Ethiop. J. Hlth Dev.* 2007;2:166-172.
20. Ambelu, A., **Legesse, W.**, Goethals, P.L.M. and De Pauw, N. (2006). Development of decision support techniques for river health. Centre for *Environmental Sanitation Newsletter*, Ghent, University.
21. Aemere Awoke, Argaw Ambelu and **Worku Legesse** Treatment of raw water using forssk farinosa shrub, a traditional water clarifier by 'Tsemey Bena' people. *Ethiopian Journal of Health Sciences* 2006 16(1), 9-20
22. Tefer Abegaz, **Worku Legesse** and Seid Tiku. Determination of critical concentration and durnal variation of dissolved oxygen (DO) in relation to physicalchemical variables in Boye Pond, southwestern Ethiopia. [African Journal of Environmental Assessment and Management](#) vol 10 March 2005
23. Zelke Alebachew, **Worku Legesse** et al. Determination of Ultimate Biological Oxygen Demand, and rate constant for liquid waste generated from student cafeteria at Jimma University: a tool for development of scientific criteria to protect aquatic health in the region. *Ethiopian Journal of Health Sciences* Jul 2004, Vol. 14(2) pp 101-107
24. Eshetu Gizaw, **Worku Legesse** et al Assessment of factors contributing to Eutrophication of Aba Samuel Water Reservoir in Addis Ababa-Ethiopia. *Ethiopian Journal of Health Sciences* Jul 2004, Vol. 14(2) pp 109-117.
25. Seid Tiku, **Worku Legesse** et al. Factors affecting drinking water quality from source to home in Tehuledere Woreda, North East Ethiopia (2003). **Ethiop J Health Sci** **2003**; 13(2): 95-106].

26. G. Kurkura, T. Zewudie, **Worku Legesse**. Knowledge, Attitude and Practice of Barbers towards [HIV prevention](#) in Jimma town (2002). African News letter on Occupational Health and Safety.
27. **Worku Legesse**. Boye Pond-a dying Hippopotami sanctuary in Jimma Zone Southwestern Ethiopia. Conservation Conference at Cambridge University, March 2000, Cambridge
28. **Worku Legesse** and Kebede Faris. Bacteriological analysis of protected springs in Jaimma Zone Southwestern Ethiopia (2000). Ethiopian Journal of Health sciences, Vol. 10, No. 1, pp 19-23.
29. **Worku Legesse** and Tesfaye Getaneh. Sanitary chemical analysis of protected springs in Jimma Zone, Southwestern Ethiopia (1999). Journal of *Ethiopian Health Development*, 13(1):45-48.
30. Degene Hailu and **Worku Legesse**, Pollution status of Awetu Stream as it crosses Jimma Town, Southwestern Ethiopia (1997). *Bulletin of Jimma Institute of Health Sciences*, Vol. 7, No. 2, pp 79-85.

#### REFEREES

1. Helmut Kloos (PhD). [Helmutk@comcast.net](mailto:Helmutk@comcast.net).
2. Meg Lowman (PhD), Director Nature Research Center, North Carolina Museum of Natural Sciences, Raleigh Email: [canopymeg@gmail.com](mailto:canopymeg@gmail.com)
3. Million Tadege (PhD) Institute for Agricultural Biosciences Oklahoma State University Email: [million.tadege@okstate.edu](mailto:million.tadege@okstate.edu)
4. Manos Anagnostou (PhD), University of Connecticut Email: [manos@engr.uconn.edu](mailto:manos@engr.uconn.edu)