UNIVERSITE OF ABOMEY–CALAVI

FACULTY OF AGRICULTURAL SCIENCES

MASTER PROGRAM IN BIODIVERSITY INFORMATICS

Professor Jean Cossi GANGLO
Coordinator of the program

May 2017

Content

1-Context and justification of the training

The Faculty of Agricultural Sciences (FSA) is a tertiary education institution of the University of Abomey-Calavi (UAC). One of its aim is to train students so that graduates have the capacities to serve or self-employed in the agricultural and related sectors. In order to comply with the new demands of the labor market, training programs must enable students to progressively acquire a set of skills adapted to their professional needs.

In that perspective, the FSA has adopted the education system of Bachelor-Master-PhD since 2007 so as to qualitatively improve the training of its learners and then facilitate their professional integration. In the School of Environment Management of the Faculty, several classical and specialized master training programs are implemented. Among those programs, the objectives of the master training programs of the sector "water, fishing and aquaculture" are to build capacities in rural engineering and agricultural machinery as well as skills in the domains of the management of the continental aquatic ecosystems, the management of tropical fisheries and aquaculture and sustainable management of living aquatic resources. The classical and specialized master training programs of the sector "Forest management, wildlife and rangelands" aim at building capacities to achieve sustainable management of forests, wildlife and rangelands as well as capacities in the definition of national and regional management strategies to conserve biodiversity. The main goal of the Master in Biostatistics (Applied Statistics to living organisms) is to train specialists who are skilled full to design methods of research projects and apply appropriate steps to process, analyze, and interpret data from various fields or activity sectors.

The graduate students of our Faculty and schools already remarkably contribute to the sustainable management and conservation of natural resources of the country but, it is clear that in the context of threats (habitat fragmentations, over exploitation, pollution, invasive alien species, and climate change) to biodiversity and the more and more spreading infectious diseases (fever Lassa, fever Ebola etc.) whose vectors are living organisms, it is urgent to initiate innovative training programs to build capacity to students so as to form a new generation of biodiversity scientists capable to design and achieve research products to satisfy needs of information on sustainable management and use of biodiversity in the context of global changes. It is to fill that gap that we initiate with the cooperation of the Institute of Biodiversity of the University of Kansas, the master program in biodiversity informatics.

Biodiversity informatics is a field of investigation relatively new in science and is concerned with massive occurrence data collection on biodiversity as well as environmental data; their treatments, analysis, and representations so as to derive sound research products to inform decisions on biodiversity conservation and sustainable uses in the context of climate and global changes.

In the actual threatening context of climate and global changes exacerbated by diverse pressures on biodiversity, the students graduated from this program are the new generation of biodiversity information scientists who are able to address the needs of information to alleviate threats on biodiversity and assure its conservation and sustainable uses.

The fields of applications of biodiversity informatics are quite broad and transversal. Indeed, biodiversity informatics can help answer the following questions: Where is a particular species found? Which species occur in a particular area? How well is a Biota Known? How Best to Preserve a Biota? What is the distribution of a species? How will a distribution change? Etc. Biodiversity informatics also have the potentials to characterize biodiversity on scales ranging from local to global; study single species in great detail, estimating ecological niche and geographic distribution; assess geographic patterns among suites of species (i.e., communities); assess biodiversity knowledge across broader regions; prioritize sites and areas for biodiversity conservation; assess and avoid "biodiversity problems," such as invasive species etc.

The health applications of the master program will enable the graduated students to achieve the spatial distribution and ecological niche models of diseases vectors such as the rat *Mastomys natalensis,* animal vector of Lassa virus; chimpanzees, gorillas, fruit bats, monkeys, forest antelope, porcupines etc., animal vectors of Ebola virus; etc. By doing so, the graduated students will contribute to the achievement of the Sustainable Development Goal 3 by facilitating a better understanding and knowledge of the geographic spread (spatial distribution) of the diseases, the identification of the most risky locations to human populations (favorable areas of the distribution of the vectors) and definitely, by favoring a better control and management of the threatening diseases.

The master program in biodiversity informatics went through all processes of validation at the Faculty of Agricultural Sciences and the University of Abomey-Calavi. Thereafter it is created on 19th June 2017 by the Rector of the University of Abomey-Calavi. The coordinator of the master program is Professor GANGLO Cossi Jean and the Deputy Coordinator is Associate Professor AOUDJI K. N. Augustin.

2-Objectives of the training (see also https://youtu.be/4ajSBF1Jdyk)

3.1 General Objective

The training program aims at building capacities so as to provide adequate skills to graduates to collect biodiversity and environmental data, treat and analyze them and then meet the needs of information on biodiversity conservation and sustainable uses.

3.2 Specific objectives and profile of the graduates of the program

At the completion of their studies, students graduated in the program will be capacitated so as to achieve the following innovative objectives to contribute to biodiversity conservation of their respective countries in the context of climate and global changes:

1. Use Geographic Information System to map spatial distribution of species;
2. Model the current and the future ecological niche of species in the context of climate and global changes;
3. Characterize biodiversity on scales ranging from local to global;
4. Assess geographic patterns among suites of species (i.e., communities);
5. Refine the knowledge on particular taxonomic groups;
6. Define priority zones of biodiversity conservation;
7. Develop strategies of species conservation;
8. Implement biodiversity conservation strategies;
9. Predict the risks of propagation of infectious diseases (Lassa fever, Ebola fever etc.) which vectors are living organisms, so as to support preventive actions;

4-Entry Profiles

• This Master is intended for holders of a degree (BAC + 3 years) in agronomy or a Diploma of Agronomy (BAC + 04 years) or a diploma of agricultural engineer or any other recognized diploma equivalents.

• This Master is also open to students holding a bachelor's degree (BAC + 3) or a master's degree (BAC + 4) in geography or any other equivalent recognized diploma.

Because of our partnership with American and Anglophone experts to teach in this program and considering that English-speaking students from Africa or elsewhere can also enroll in this program, the whole program will be taught in English and French according to the teaching and research languages of the trainers. Thus, we encourage learners to take English classes for French speakers and French classes for English speakers and if possible take tests to prove their level of proficiency in these two languages.

5-Admission requirements

Any candidate willing to get enrolled in the Master program should send to the Faculty, his/her application composed of a cover letter with the following attachments: Certified copy of the birth certificate; Certified copy of the school living General Certificate; Certified copies of academic

transcripts of previous training completed; Certified copy of the bachelor or any other equivalent diplomas; English language certificate for French speaking students and French language certificate for English speaking students (lectures are in French and in English); A demand for enrollment duly signed; A curriculum vitae; A certified commitment to pay the tuition fees; Application evaluation fees of FCFA 12 000.