

ANNEX III

APPLICATION FORM INCLUDING THE TRAINING COURSE PROPOSAL

Section 1 - Background On the Training Proposal

Project Title: Course on rapid identification of invasive alien species and species from illegal wildlife trade for environmental enforcement officers

Preamble

Brazilian National Biodiversity Strategy and Action Plan reports that the first diagnosis of the invasive alien species was performed by the Ministry of the Environment in 2006 and revealed more than 400 alien species with invasive potential in the country. On the other side, 3,286 threatened species are officially recognized in Brazil. Direct extraction (hunting, fishing and collection) is a major threat and affects 340 threatened species of fauna (29%) and 272 threatened species of flora (12.9%). The ninth Brazilian national target for Biodiversity 2011-2020 is “By 2020, the National Strategy on Invasive Alien Species is fully implemented, with the participation and commitment of states and the preparation of a National Policy, ensuring the continuous and updated diagnosis of species and the effectiveness of Action Plans for Prevention, Contention and Control”, complementing the Aichi Biodiversity Target 9. The twelfth Brazilian national target for Biodiversity 2011-2020 is “By 2020, the risk of threatened species extinction will have been reduced significantly, getting close to zero, and their conservation status, particularly of those most in decline, will have improved”, complementing the Aichi Biodiversity Target 12. Brazil established the National Strategy on Invasive Alien Species in 2009, however the lack of specialized knowledge about the identification of invasive alien species is an obstacle to achieve the national target. Therefore, Brazil is investing in actions to overcome this lack of knowledge and apply it in mechanisms of early detection and rapid response for invasive alien species to prevent the introduction of species in the country and areas of importance for biological diversity conservation. On the other side, Brazil is working on a National Strategy on Threatened Species, including the development of an intelligence system to law enforcement. This course will potentialize this effort by training specialized environmental enforcement officers to work in the invasive alien species detection network and wildlife trade enforcement besides contributing to the GTI capacity building strategy.

Project Outline

- Expected duration: ten working days / 80 hours of training
 - Expected number of trainees: 20 (02 trainees from Brasília and 18 trainees from other cities)
 - Expected number of instructors and facilitators: 11
- The overall structure of the planned course: 15% presentations, 40% laboratory, 35% computer time, and 10% discussions. The core modules: Samples collection and processing, DNA extraction, PCR and sequencing, post-laboratory informatics, policy. Provide a general estimate of time allocation: Day 1 – Presentations and Lectures; Day 2 – Field Expedition and Lectures; Day 3 – Field Expedition, samples collection, processing and lectures; Day 4 - 6 Lecture and Laboratory Practice Molecular techniques; Day 7 – 10 Bioinformatic practices and discussion.
- The specifics on the composition of each training module, that is consistent with the standard the GTI-DNA tech package:

- Samples collection and processing (field collecting, specimen and samples processing, databasing);
- Molecular analysis (laboratory health and safety, tissue lysis, DNA extraction, PCR amplification, sequencing);
- Informatics (software for assembling DNA sequences, analysis of sequence data, use of online data repositories, introduction to BOLD Systems).
- Presentations and Policy (Relevant international agreements; national priorities, material transfer agreements, invasive alien species, illegal wildlife trade, biological collections).

Post-Project Follow-up Activities

- Establishment of a network of early detection of invasive alien species coordinated by the Ministry of the Environment;
- Supporting new standard operating procedures for field work in protected areas to prevent the introduction of alien species;
- Approaching environmental federal agencies (IBAMA and ICMBio) and laboratories to incorporate DNA-based diagnostic into policies at national and international levels;

Section 2 - Logic Model

Project Objectives

1. To improve invasive alien species identification capacity in Brazil by creating a national early detection network.
2. To support new standard operating procedures to improve species identification from illegal wildlife trade
3. To approach environmental federal agencies (IBAMA and ICMBio) and laboratories to establish cooperation agreement to incorporate DNA-based diagnostic to identify invasive alien species and species from illegal wildlife trade
4. To include DNA information in national invasive alien species database that is in the creation stage.
5. To support new standard operating procedures for field work in protected areas to prevent the introduction of invasive alien species

Expected Project Outcomes

1. Mobilization and training of environmental enforcement officers to establish the network to detect invasive alien species by 2019
2. New standard operating procedures to identify species from illegal wildlife trade by 2020
3. Cooperation agreement between environmental agencies and laboratories to incorporate DNA-based diagnostic to detect invasive alien species by 2020
4. Shared DNA library for identification of alien species of Brazil's concern and information on BOLD system filled with validated DNA sequence to be shared with the public.

5. Database incorporated into federal government systems to support the risk analysis of invasive alien species and ensure the structuring and development of an early detection system by 2021
6. New standard operating procedures for field work in protected areas comprising DNA-based diagnostic approaches to prevent the introduction of alien species by 2022
7. Information on the activities above will be shared with the public.

Performance Indicators

1. Report from Ministry of the Environment about the training with the presence list and photos from activities by 2018
2. Number of records added and shared through BOLD system
3. Database and web pages about invasive alien species hosted by Ministry of the Environment by 2021
4. New standard operating procedures to identify species from illegal wildlife trade by 2020
5. New standard operating procedures for field work in protected areas comprising DNA-based diagnostic approaches to prevent the introduction of alien species by 2022

Section 3 - List of Applicants and Facilitators

Lead Applicant		
Name	Ugo Eichler Vercillo (Ministry of the Environment)	
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Co-Applicants		
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Tatiani Elisa Chapla	Ministry of the Environment	tatiani.chapla@mma.gov.br
Fernando Pacheco Rodrigues	University of Brasília	fprodrigues@unb.br
Renato Caparroz	University of Brasília	renatocz@yahoo.com.br
Luiz Marcelo Brasileiro de Araújo	WWF - Brazil	marcelobrasileiro@wwf.org.br
Team Members		
Name	Institution	Primary Role
Tatiani Elisa Chapla	Ministry of the Environment	Event Coordinator and Training Instructor
Graziele Batista	Brazilian Institute of the Environment and Renewable Natural Resources	Event Coordinator and Training Instructor
Roberta Holmes	Ministry of the Environment	Support staff

Carlos Henrique Targino	Ministry of the Environment	Training Instructor
Tainah Guimarães	Chico Mendes Institute for biodiversity Conservation	Training Instructor
Onildo Marini	Chico Mendes Institute for biodiversity Conservation	Training Instructor
Cassia Alves Lima-Rezende	University of Brasília	Training Instructor
Fernando Pacheco Rodrigues	University of Brasília	Training Instructor
Pedro De Podestá Uchôa de Aquino	University of Brasília	Training Instructor
Renato Caparroz	University of Brasília	Training Instructor
Rosana Tidon	University of Brasília	Training Instructor
Frederico Horst	University of Brasília	Training Instructor
Heraldo Ramos Neto	University of Brasília	Training Instructor
Lilian Gimenes Giugliano	University of Brasília	Training Instructor

Training instructors

Name	Area of Expertise	Instruction Topic
Onildo Marini	Zoology	Collections management
Pedro De Podestá Uchôa de Aquino	Curator of Collection	Collections management
Heraldo Ramos Neto	Ecology	Field Sampling; Invasive alien species impact
Rosana Tidon	Evolutionary Biology	Field Sampling; Invasive alien species impact
Cassia Alves Lima-Rezende	Genetics	Molecular analysis
Fernando Pacheco Rodrigues	Genetics	Molecular analysis
Renato Caparroz	Genetics	Molecular analysis
Lilian Gimenes Giugliano	Genetics	Molecular analysis
Frederico Horst	Biology	Informatics
Tatiani Elisa Chapla	Ecology	Policy: International Agreements
Carlos Henrique Targino	Ecology	Policy: International Agreements
Graziele Batista	Ecology	Policy: National priorities
Tainah Guimarães	Ecology	Policy: National priorities

Section 4 - Background Information on Facilitators and Participants

Background of Applicants and Instructors

- Ugo Eichler Vercillo (lead-applicant) is the Director of the Department of Conservation and Management of Species in the Ministry of the Environment and has competence in relevant policy issues and informing policy decisions at the national and international levels;
- Marília Marques Guimarães Marini (co-applicant) is Master in Ecology and she is the Coordinator of the Department of Conservation and Management of Species in the Ministry of the Environment;
- Tatiani Elisa Chapla (co-applicant, event coordinator and instructor) is PhD in Ecology and she works with invasive alien species in the Ministry of the Environment.

- Fernando Pacheco Rodrigues (co-applicant and instructor) is involved with the National Barcode of Life Network of the hosting country, he is PhD in Genetic Biology and professor at University of Brasilia;
- Renato Caparroz (co-applicant and instructor) is involved with the National Barcode of Life Network of the hosting country, he is PhD in Genetics and professor at University of Brasilia;
- Onildo Joao Marini Filho (instructor) is PhD in Ecology and environmental analyst from Chico Mendes Institute of Biodiversity Conservation;
- Pedro de Podestá Uchoa de Aquino (instructor) is PhD in Ecology and Curator of Collection at University of Brasilia;
- Cassia Alves Lima-Rezende (instructor) is PhD in Zoology and collaborator at University of Brasilia;
- Lilian Gimenes Giugliano (instructor) is PhD in Animal Biology and professor at University of Brasilia;
- Frederico Horst (instructor) is Master in Animal Biology and collaborator at University of Brasilia;
- Heraldo Ramos Neto (instructor) is graduated student in Ecology at University of Brasilia;
- Rosana Tidon (instructor) is PhD in Genetics and professor at University of Brasilia;
- Carlos Henrique Targino (instructor) is Master in Zoology at Federal University of Paraiba and he works with invasive alien species in the Ministry of the Environment;
- Grazielle Batista (event coordinator and instructor) has taken the 2016 GTI training course at Guelph University in Canada, she is Master in Ecology and works on invasive alien species at the Brazilian Institute of the Environment and Renewable Natural Resources;
- Tainah Guimarães (instructor) is Master in Ecology and she works on invasive alien species in Chico Mendes Institute for Biodiversity Conservation;

Partners and Stakeholders

- Ministry of the Environment, University of Brasília and Wildlife World Fund - Brazil;
- Ministry of the Environment, University of Brasília and Wildlife World Fund - Brazil have experience to organize nationally and internationally events and trainings.

Trainees

- Environmental enforcement officers from Brazilian Institute of the Environment and Renewable Natural Resources that work in border areas;
- Environmental enforcement officers from Chico Mendes Institute for Biodiversity Conservation that work in protected areas;
- Scientists and students from universities or laboratories that will work in the invasive alien species detection network.

Trainee Selection Criteria

- Minimal qualification requirements for trainees: environmental analysts graduated in biology or related fields;
- Measures to ensure objectivity and impartiality in applying selection criteria, in line with the ethical standards set by the UN Ethics Office (<http://www.un.org/en/ethics/standvalue.shtml>) and the UN's policy for Gender Equality and the Empowerment of Women (<http://www.unwomen.org>).

Expected Number of Trainees

- 20 trainees with a breakdown by gender (08 trainees from Brazilian Institute of the Environment and Renewable Natural Resources, 08 trainees from Chico Mendes Institute for Biodiversity Conservation and 04 trainees from universities or laboratories).

Section 5 - Training Venue and Logistics

Hosting Institution

- University of Brasília (UnB) will be the hosting institution. UnB is one of most prestigious Brazilian Federal universities. Comprising 26 faculties and schools, with 18 specialised research centres, UnB offers over 105 undergraduate programs, some of which are evening or distance learning-based. UnB also boasts a veterinary hospital and the Fazenda Água Limpa, a farm just outside Brasília, where ecological research is undertaken on the university's behalf.
- Eleven team members, directly and indirectly involved in the proposed training activity, are from Brasília reducing logistics costs;
- The Wildlife World Fund will be directly responsible for project financial management. The institution has a large experience in managing externally-funded projects.
- The Department of Conservation and Management of Species in the Ministry of the Environment will be responsible for project coordination and oversight. The institution has a large experience in managing externally-funded projects by organisms such as the Global Environment Facility ([https://www.thegef.org/projects?f\[\]=field_country:32](https://www.thegef.org/projects?f[]=field_country:32)).

Training Venue

- All activities will be held at the University of Brasilia which has all the necessary infrastructure to undertake the standard GTI-DNA-tech training (classrooms and laboratories).
- The field collection of insects can be carried out on the campus of the university itself. In addition, field-sourced fresh material available at University of Brasilia (mammal, reptiles, birds and fish) can be used; however, participants will be strongly encouraged to take material from their own units for analysis.
- There will be a visit to the collections of plants and animals of UnB, but the material used for the course will be fresh field-sourced.

- The university has microscopes, insect boxes, tissue arrays, as well as software for image processing and databasing, pipettors, incubator, centrifuge, thermocyclers, electrophoresis set-up, gel imaging system, vortex mixer, DNA sequencer, DNA extraction reagents, sample tubes or 96-well plates, PCR reagents, gloves.
- The course will be conducted in the Biodiversity and Genetics Lab (coordinated by Dr. Renato Caparroz and Dr. Fernando P. Rodrigues) which is equipped with laminar flow hood, two pre-PCR stations, four thermocycles, one ABI 3700 sequencer and other equipment to fully address all procedures related to DNA barcode approach. This lab is large enough to fit comfortably around 30 people.

Training Activities

Day-by-day description of the training activities:

Day 1. Introduction of participants, lectures (invasive alien species, illegal wildlife trade, relevant international agreements, national priorities, material transfer agreements, biological collections);

Day 2. Field expedition – installation of traps to sample *Drosophila*, lectures (genetics and species conservation, DNA barcoding, sample collection protocol);

Day 3. Field expedition – sampling of Drosophilidae, lectures (laboratory health and safety, introduction to data spreadsheets and BOLD data submission protocols), laboratory practice (species identification and photographic register);

Day 4 Lectures (laboratory methodologies –96 samples: tissue sampling from Drosophilidae collected and vertebrates samples from UnB collection, DNA extraction and electrophoresis) and laboratory practice (DNA extraction, electrophoresis);

Day 5 Lecture (laboratory methodologies – Overview of PCR and primer design) and laboratory practice (PCR reactions and gel electrophoresis);

Day 6 Lectures (laboratory methodologies – Overview of DNA sequencing and sequencing reactions) and laboratory practice (cycle sequencing and sequencing reactions);

Day 7. Lecture (BOLD system) and Bioinformatic practices;

Day 8. Bioinformatic practices – Sequencing analysis (software for assembling DNA sequences and analysis of sequence data – BioEdit and MEGA, use of online data repositories);

Day 9. Bioinformatic practices (analysis of sequence data and BOLD system);

Day 10. Bioinformatic practices (analysis in BOLD System) and final discussion about the next steps. Evaluation of training by the participants.

Project Logistics

- Communication: e-mail and phone;
- Transportation for eight participants (flights or ground transportation); Transportation for ten facilitators, instructors and participants will be funded by their institutions or MMA and two participants will be from Brasília.
- Accommodation for seven facilitators, instructors, trainees: daily payment for accommodation and meals for trainees/instructors, daily payment for others will be funded by their institutions.
- Computers with internet access will be available for all trainees but the participants will be encouraged to take their own computers.
- End-of-project reporting prepared by the Ministry of the Environment.