

ANNEX III

APPLICATION FORM INCLUDING THE TRAINING COURSE PROPOSAL

Section 1 - Background On the Training Proposal

Project Title

Building technical expertise to enhance species detection for invasive alien species, pests, wildlife trade and biodiversity management

Preamble

- Lack of knowledge of invasive alien species in general and of the identification of especially IAS invertebrates
- Limited capacity to identify pests in agriculture.
- Limited capacity to identify species in wildlife trade.
- Limited capacity to identify species in environmental monitoring (especially aquatic insects, amphibians and reptiles)
- Limited capacity to discover cryptic species

• A specific need is to increase capacity in DNA-based diagnostic approaches to identify IAS, pests in agriculture species and species in wildlife trade and environmental monitoring;

The following targets are included in the NBAPs of Suriname 2012-2016:

- development and approval of (new) laws/regulations with respect to invasive species
- revise list import of hazardous organisms
- intensify control of import of organisms
- establish and use quarantine facilities for suspicious organisms
- inspect and clean-up of hazardous organisms in protected areas
- introduce genetic analysis and registration (barcoding) of organisms

The GTI training project will support all targets concerned with IAS and the import of organisms. In addition, it will provide laboratory services for genetic analysis of organisms.

Project Outline

- Expected duration: 18 days spread over 6 weeks;
- Expected number of trainees: 15 trainees;
- Expected number of instructors and facilitators: 11 instructors or facilitators;

Structure of planned course: 17% presentations, 11% field work, 33% laboratory, 11% workplace visits, 11% discussions and 17% computer time.

The core modules of the training will be divided in an introduction with introductory modules and the hands-on training with live demonstrations comprised of: collection management, molecular analysis, bio informatics and discussions on policy. The estimated time allocation divided into weeks for these modules are: week 1-introductory modules; week 2-collection management; week 3-molecular analysis; week 4-the micro plate tissue samples will be send abroad for sequencing and while waiting for the results visitations will be arranged to work

facilities of participants; week 5-discussions on policy and when the results have arrived in week 6-bio informatics with computer time for interpretation of the results.

The introductory modules are necessary to refresh the participants knowledge to DNA Barcoding. Collection management will focus on field collecting, collection workflow, specimen preparation and imaging. Molecular analysis will focus primarily on tissue lysis, DNA extraction, PCR amplification and E-gel running. The participants will also learn how to perform good laboratory practice and lab technique practicing. While the PCR products are send abroad for sequencing, the work facilities of the participants will be visited to get familiarized with their work and to aid topics for planned discussions on policy. The discussions will cover topics on: Threats to biodiversity in Suriname (e.g. gold mining, forestry, wildlife trade, IAS), Relevant international agreements (e.g., ABS, CITES) and National priorities (e.g., NBSAPs). Bio informatics will focus on the use of software to assemble DNA sequences, analysis of sequence data by using online data repositories such as BOLD for the interpretation of the results.

Post-Project Follow-up Activities

- Establishment of a national and Caribbean IAS network
- Inclusion of a IAS tab in the Caribbean biodiversity portal (Atlas of Living Caribbean, Suriname tab)
- Improvement of the national diagnostic DNA laboratory to perform routine services
- Establishment of an IAS website or Facebook page
- Conceiving funding for the detection of IAS (Suriname Conservation Foundation), for expeditions to unknown areas of Suriname (National Geographic Society, WWF) and making an overview of species in wildlife trade (Conservation International).

Section 2 - Logic Model

Project Objectives

1. Improve national IAS early warning systems by establishing 4 bio-surveillance checkpoints comprising of a coordination mechanism between biodiversity institutes and trained field officers. And creating IAS data sharing portal.
2. Improve pest identification at the Ministry of Agriculture and Husbandry by creating a national database of pests.
3. Improve the detection and identification of species that are traded illegally.
4. Improve and accelerate the identification of new (cryptic) species of flora and fauna.

Expected Project Outcomes

1. Upgrade the capacity to identify organisms as IAS, pests, illegally traded species and new species for science in the relevant institutions.
2. Arrive at a more complete list of introduced and invasive alien species (IAS) in Suriname.
3. IAS will be included in the national biodiversity portal of Suriname (part of the Atlas of Living Caribbean, a BID project of GBIF).
4. Four bio-surveillance checkpoints established in the country and a network of organizations involved with IAS will be established.
5. One national diagnostic laboratory (NZCS) established in the country.

Performance Indicators

1. PowerPoint presentations of training available, as well as photos of events.
2. DNA samples analysed during training and from continued collaboration between NZCS and other bio-surveillance checkpoints will be added to BOLD.
3. Checklist of introduced and invasive alien species published on GBIF.
4. IAS tab present in Atlas of Living Caribbean (section on Suriname).
5. A Website or Facebook page concerning IAS will be established.

Section 3 - List of Applicants and Facilitators

Lead Applicant

Name: Vanessa S. Kadosoe
Institution: National Zoological Collection of Suriname
Address: Leysweg 86, Building 17
Work phone: 465558 ext 2322
Email: vanessa.kadosoe@uvs.edu; vanessakadosoe@gmail.com
Country: Suriname

Co-Applicants

Name	Institution	Email
Prof. Dr. Paul E. Ouboter	National Zoological Collection of Suriname	p.ouboter@uvs.edu
Dorothy Traag MSc	National Herbarium of Suriname	dorothy.traag@uvs.edu

Team Members

Name	Institution	Primary Role
Iwan Molgo	National Herbarium of Suriname	Support staff
Marci Gompers-Small	Coordination Environment, Cabinet of the President of the Republic of Suriname	Stakeholder/sponsor
Natasja Kartodimedjo	National Zoological Collection of Suriname	Event coordinator

Training instructors

Name	Area of Expertise	Instruction Topic
Prof. Dr. Paul Ouboter	Biodiversity expert/Director NZCS	Collection management
Vanessa Kadosoe BSc	Expert in aquatic invertebrates and mammals at NZCS	DNA techniques
Anielkoemar Gangadin BSc	Expert in terrestrial invertebrates at NZCS	Insect preservation
Rawien Jairam MSc	Expert in amphibians & reptiles at NZCS	Amphibians and reptiles preservation
Kenneth Wan Tong You	Expert in fishes at NZCS	Fish preservation
Iwan Molgo PhD	Expert in plant taxonomy at National Herbarium of Suriname	DNA techniques
Gisla Jairam-Doerga MSc	Expert in aquatic and terrestrial plants at National Herbarium of Suriname	Plant preservation
Joelle Kartopawiro PhD	Expert in molecular biology	Molecular biology
Thomas Kerkhove MSc	Expert in marine ecology, fisheries and molecular ecology at the University of Ghent, Belgium (foreign expert)	DNA techniques
Foreign expert	Bioinformatics	Bioinformatics
Marci Gompers -Small	Coordination Environment, Cabinet of the President of the Republic of Suriname	Environmental conventions and policy

Section 4 - Background Information on Facilitators and Participants

Background of Applicants and Instructors

Vanessa Kadosoe, participated in the GTI training course in 2016 and will coordinate the training in Suriname. NZCS has already added data to BOLD, but the data is yet to be published. Currently, we do not have a national Barcode of Life Network in Suriname but we have partnered with GBIF to publish our collection database online.

Vanessa Kadosoe, has a BSc in Environmental science and is completing her MSc in Conservation biology and has 4 years of experience in museum collection, and a publication record of 8 papers and posters; Paul Ouboter, has an MSc and PhD in animal taxonomy and ecology and is director of the NZCS since 1987. He has 102 publications. Dorothy Traag has a MSc in environmental science and is head of the National Herbarium since 2009. Iwan Molgo has a PhD in Plant taxonomy and has experience in DNA analysis.

- During the GTI training in 2016 we have analysed amphibians and reptiles tissue samples to identify new species. Paul Ouboter was involved in research using DNA barcoding to identify new species of amphibians (2 publications).
- NZCS was in the working groups designing the NBSAPs. Paul Ouboter is a member of the Animals Committee of CITES. Vanessa Kadosoe and Rawien Jairam are advisors for taxonomy to the Coordination Environment of the Cabinet of the President of Suriname.
- NZCS has organized several workshops in the past. Presently we are executing a regional GBIF project including several training workshops.

Partners and Stakeholders

The national CBD Focal Point supports the training event (see endorsement letter).

In-kind support will come from:

- NZCS (salaries, laboratory, equipment)
- National Herbarium (salaries)

Trainees

Trainees that will be invited to participate in the training should have expertise in biology, environmental sciences or agriculture and should be working for one of the institutes/organizations that will be invited to nominate trainees for the workshop or be a student studying in one of the above-mentioned topics.

Organizations invited to nominate trainees are:

- National Zoological Collection of Suriname
- National Herbarium
- Centre for Agricultural Research in Suriname (CELOS)
- Ministry of Agriculture
- Nature Conservation Division of the Ministry of Spatial Planning and Forest Management
- Department of Public Health of the Ministry of Health
- National Institute for Environment and Development (NIMOS)
- Conservation International Suriname
- Institute for Graduate Studies and Research
- Students interested in the subject

Trainee Selection Criteria

Minimal qualification requirements for trainees are BSc or MSc or the equivalent in biology, agriculture or environmental science with understanding of fundamental principles or some knowledge of molecular biology.

The selection within Suriname will be primarily based on the availability of trainees, because of the limited human capacity in the country.

Expected Number of Trainees

Expected number of trainees: 15. This is based on the number of relevant institutions and the limited human capacity in the country. A balanced gender representation will be aimed for.

Section 5 - Training Venue and Logistics

Hosting Institution

The National Zoological Collection of Suriname (NZCS) is an institute of the Anton de Kom University of Suriname. NZCS has collection rooms, preparation room, a library and environmental laboratory. Research is focused on zoological diversity, including invasive alien species.

6 staff members will be directly involved in the GTI training. Vanessa Kadosoe will be the coordinator of the project with support from the institutes administration. The collection management training will be held in the preparation room, the molecular training in the laboratory.

In the last 7 years NZCS has executed more than 15 projects. At present, it is coordinating a regional GBIF BID project. The annual budget is approx. \$ 30,000.

Co-funding will be provided for extending the laboratory and buying additional equipment. In-kind support will be provided by use of space, equipment and staff salaries. Overhead costs are administered by the central university and are not known to us.

Training Venue

The collection management and molecular analysis modules will be held at NZCS. For the collection management module, there will be demonstrations in the collections of NZCS and the Herbarium. The field part of the collection management will be held at Brownsberg Nature Park.

Lectures for the introduction and discussions will be held in a lecture room of the Institute for Graduate Studies and Research (IGSR) and Bio-informatics in a computer room of the University Computer Centre (UCC) both at the university campus.

For the collection management module, there are plant and animal collections and collection database (Specify). The trainees will be trained in preparing specimens. NZCS has stereo microscopes and other preparation instruments available. Specimens imaging will be performed using DSLR cameras, both with macro lenses. During the field part trainees will be trained in photographing, collecting, taking GPS locations, labelling, taking tissue samples and preliminary identification.

The molecular module will be held in the extended laboratory of NZCS. Available equipment: PCR, E-GEL, Vortex, Incubator, pipettors.

Chemicals will be bought for this training. Here the samples collected during the field work as well as samples considered useful by the participants can be used. Sequencing will be done abroad.

The bio-informatics module will be held at a computer room of UCC with 15 computers with internet access. CodonCode Aligner software will be purchased.

Training Activities

Introduction

- Week 1: Introductory modules to DNA Barcoding: day 1-3

Hands-on training

- Week 2: Collection management: day 1-2 field collecting, day 3 collection workflow, day 4 specimen preparation and imaging;
- Week 3: Molecular analysis: day 1 good laboratory practice and tissue lysis, day 2 DNA extraction, day 3-4 lab technique practicing, PCR amplification and E-gel running
- Week 4: Sending PCR product for sequencing, day 1-2 Visiting work facilities of participants
- Week 5: Waiting for sequencing results; day 1-2 Discussion on topics concerning threats to biodiversity, policy – both general and specific:
 - o Threats to biodiversity in Suriname (e.g. gold mining, forestry, wildlife trade, IAS)
 - o Relevant international agreements (e.g., ABS, CITES);
 - o National priorities (e.g., NBSAP's);
- Week 6: day 1-3 Bio informatics

The training will not cover all work days of the week to give the trainees the opportunity to still be present at their regular jobs.

Some trainees may have a limited background in molecular biology and DNA Barcoding, therefore, a thorough introduction is needed.

Project Logistics

Communication: Potential participants will be invited directly and through the CBD focal point, usually through their respective superior by email. In addition, the course will be advertised among students through bulletin boards.

During and after the training communication will be mostly through e-mail as well.

During the course bus transportation is arranged for the field work and the visits to work facilities. To arrive and leave the training venue trainees depend on their own transportation, mostly because most if not all trainees live in the same district.

All facilitators, instructors and trainees most likely live in Paramaribo and surrounding, so no lodging facilities are required for them. At the venue lunch will be provided.

Venue charges are included in the budget. Before the training the possibility to launch a website and use this also for communication will be investigated.