

2019 NF-POGO Visiting Fellowship for
Ship-board Training

Fellowship Report

Name of Trainee: Vanessa Fernández Rodríguez

Name of Supervisor (Parent Institution): Dr. Mario H. Londoño Mesa. Assistant Professor in
Universidad de Antioquia (Medellín, Colombia)

Supervisor (Host Institution): Dr. Brian Bett, Ocean Biogeochemistry & Ecosystems, National
Oceanography Centre, UK.

Dates of Training: 21 June – 9 July of 2019; Royal Research Ship *Discovery* cruise 103

Section A

(To be completed by the fellow and returned to the POGO Secretariat)

Please note that this form will be passed on to the host and parent supervisor and when complete will
be made publicly available on the [OTP](#) website;

1) Please provide a brief description of activities during the training period:

The main goal of the cruise was to continue various time-series observations of the surface ocean, water column, and seafloor in the area of the Porcupine Abyssal Plain Sustained Observatory (PAP-SO). In this training, I had the opportunity to be part of the benthic biology team and actively participate in seafloor sampling activities.

The benthic sampling activities included the follow-up protocols for the extraction of deep-sea macrofauna and megafauna. For macrofauna and sediment samples a Megacorer was used. This equipment was typically deployed and recovered twice per night in PAP central area. The core samples were then processed for a broad range of subsequent analyses that included metazoan meiofauna, eDNA, bacteria, biogeochemistry, microplastics, phospholipids and fatty acids. For megafauna, an otter trawl was deployed on two occasions. On recovery to deck, the trawl catches were spilled into boxes and the mud was removed from the animals with seawater washing. After that, animals were identified and classified into relevant taxa and properly labelled and preserved for the *Discovery Collections* (<https://noc.ac.uk/facilities/discovery-collections>). 'Garbage' pieces of anthropogenic origin were also collected, washed, and classified. It is important to highlight that plastics from remote areas were found at PAP, which suggest the ubiquitous nature of this kind of contamination. Finally, a seafloor photographic survey was also undertaken using the HyBIS vehicle (<https://noc.ac.uk/facilities/marine-autonomous-robotic-systems/deep-platforms>). The camera captures images every five seconds during the seafloor transect, and also allows the observation of the seafloor in real time, giving biological information like presence of phytodetritus, trawl marks, rubbish and common megafauna (e.g. *Psychropotes longicauda*).

Apart from the benthic sampling activities, I had the opportunity to learn the essential steps in the programming of a sediment trap carousel sampling system, which is used to study short- and long-term variations in carbon fluxes from the surface to the ocean depths. Other additional activities included the observation of the recovery and deployment of three different mooring systems: PAP1 (major multi-sensor system), Bathysnap (seafloor time-lapse camera system), and an amphipod trap (multiple baited traps). For the amphipod trap and Bathysnap operations I was an active participant,

e.g. processing samples and setting-up new deployments. In particular, for the Bathysnap operation this involved a recolonization experiment using different substrata and the use of larval traps.

2) What applications of the training received do you envision at your parent institution?

From the skills acquired in this training, the following points have been derived as application of knowledge at the University of Antioquia (Medellín - Colombia):

- i. Proposing a short course on the basics of deep-sea biology. This course is now under development, once this process is finished, the course will be offered to students / academics. It is expected that this course will generate in the participants a desire and motivation to study the Colombian deep-sea.
- ii. As part of the scientific divulgation program of Limnabase and Biotamar research group, a public talk will be held on August 29th where the key aspects of the onboard experience, the fauna encountered, and their adaptations to the deep-sea environment will be explained.
- iii. When possible, it is intended to participate in scientific calls from which research projects for the deep Colombian fund can be generated.

3) Please provide your comments on the Fellowship Programme.

For researchers from developing countries and economies in transition, the Shipboard Fellowship Programme is a great chance for building capacity. The exchange of knowledge with senior scientists about the classic and new methods for the study of ocean ecosystems represents an opportunity to create new networks that can be used in the future to establish partnership in research projects and the formation of new studentships. Having young trained scientists in developing countries and economies in transition will improve the development of science in fields like ocean observations, the sustainable use and conservation of marine resources.

PRINT NAME

Date: 20- July- 2019

Section B

(To be completed by host supervisor and returned to the POGO Secretariat)

Please note that this form will be passed on to the parent supervisor and trainee and when complete will be made publicly available on the [QTP](#) website;

1) Please provide your comments on the performance of the trainee.

Vanessa was an excellent candidate for the NF-POGO Visiting Fellowship for Ship-board Training placement. Indeed, she very usefully engaged with my research team immediately prior to the start of the cruise by assisting in the curation of polychaete, and other macrofaunal, specimen material as it was being prepared for accession to the *Discovery Collections*. Aboard ship, she was a valued member of the benthic team, providing much-needed assistance in many different tasks as described in her own account above (Section A 1). My own observations and those of other NOC staff aboard suggest that she is an effective, diligent, and conscientious researcher who proactively engaged with those aboard to further her own skills and examine future opportunities.

2) Is this exchange likely to lead to future collaboration with the trainee's parent institution? If so please give example(s) of how this collaboration may be pursued.

As noted above (Section B 1), Vanessa was proactive in immediately establishing some legacy from the Fellowship by beginning the development of deep-sea biology course components while at sea. My team and I are more than happy to assist Vanessa's in that effort and her planned public lecture. Since completing the cruise Vanessa has identified at least two options for potential institutional and / or other Columbia-UK collaboration mechanisms.

3) Please provide your comments on the Fellowship Programme.

I will continue to recommend the NF-POGO Visiting Fellowship for Ship-board Training scheme to fellow senior scientists and principal scientists. My experience with this, and previous, placements has been very good. The process is effective and efficient, and very well supported by the team in Plymouth.

PRINT NAME

Dr. Brian J. Bett

Date: 10 August 2019

SECTION C

(To be completed by parent supervisor and returned to the POGO Secretariat)

Please note that this form will be passed on to the host supervisor and trainee and when complete will be made publicly available on the [OTP](#) website;

1) Do you agree with the above comments and do you have any additional feedback you wish to provide?

I am complete agree with the statements above mentioned by both, Miss Vanessa and Dr Brian. Once I recommended Miss Vanessa Fernandez, I considered that this was not only an opportunity for her staying in close relationship with scientists aboard, but also with the methods by itself. Our research group has needed people trained on these subjects in order to replicate all this knowledge to everybody in the University. Now, Vanessa has the opportunity for communicating and divulgating all her learned on board. Not too many people from our university has this excellent opportunity; now, with her oral presentation about how the trip was, as well as with the courses about deep sea biodiversity, she will replicate and show to students from bachelor and postgraduate programs, how that kind of science is being done in other countries and seas.

As an additional feedback, I consider connections she did a beginning of networks, because due to her good develop and role there, we have open doors for collaborations between, not only both sides of the Atlantic, but also in other initiatives that Colombia just began recently, such as the Colombian Expeditions to Antarctica. Now, we are planning to take advantages on Newton-Caldas initiative in order to reinforce these networks and have future proposals for developing.

PRINT NAME

Mario H. Londoño-Mesa

Date: 12 August 2019