

**2019 Special POGO Visiting Fellowship for
Shipboard Training on a British Antarctic Survey operated Cruise**

REPORT

Name of Trainee: Rodrigo Hernández Moresino

Name of Supervisor (Parent Institution): Pedro José Barón

Name of Supervisor (Host Institution): Sophie Fielding

Dates of Training: from 14/10/2019 to 20/01/2020

Section A

(To be completed by the fellow)

It is the responsibility of the trainee to forward this form to the host and parent supervisor, and to submit a fully completed version to the POGO Secretariat. Please note that the complete report will be made public on the POGO website; Private comments should be included in the separate confidential form.

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

My fellowship consisted of acoustic training, at the British Antarctic Survey in Cambridge, and aboard the RRS James Clark Ross (cruise JR19001).

One month previous to the start of the cruise, I worked at BAS learning acoustic data interpretation and processing, using data from early cruises, with the possibility to be included in future scientific work. During this period I participated in a scientific meeting where we discussed different aspects related to the future of the area under study (Western Core Box in South Georgia) and I was also invited to several seminars in the Institute.

The next 40 days I was aboard the JCR. This cruise had basically three purposes: 1) loading food, fuel, equipment, and carrying people to the British Antarctic Scientific Bases, 2) maintain the time-series of mesoscale distribution and abundance of macro-zooplankton and micronekton, and the physical environment monitoring within South Georgia, and 3) maintain moorings both on the South Georgia shelf and in the open ocean region of the Scotia Sea. My activities on-board were related to acoustic surveys, monitoring and pre-processing the acoustic data, and also a variety of tasks. I helped in the ship deck, assembling and deploying the net gears, I participated in scientific meetings, in the calibration of echosounders to be deployed on the CTD and moorings and in the calibration of the ships echosounders. I also participated in lab activities like sieving samples from nets, classification of groups or species, weight/preservation of samples for further analysis (taxonomy, ecology, DNA analysis, etc.). Moreover, all scientific staff was involved in cargo activities during our stay in the scientific bases. Another task I carried out, and based in my expertise, was to classify krill in stage/maturity, using digital photographs and free software that use morphometric algorithms for semi-automatic classification of plankton (ZooImage). This software also provides several tools to analyze the size structure of the population and to estimate biomass, ultimate aspects to monitoring the population state. The results of this work were written in a Technical Report that will be published in the cruise report.

Finally and during the last month after the cruise, I processed and analyzed acoustic data from the cruise and moorings, planning and discussing with my supervisor preliminary results to be used in a future scientific research manuscript.

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

One of my main interests as a Researcher in my parent institution is referred to the meso-zooplankton ecology and its dependence on the environmental conditions. Acoustics are a useful set of tools to infer qualitative information about zooplankton obtaining a huge amount of information with high spatial-temporal coverage using a non-invasive technique. To have worked with Dr. Fielding gave me the opportunity to improve my knowledge related to the study of the spatial-temporal dynamics of the Antarctic Krill using acoustic techniques that could be applied in the study of different species of zooplankton in the area of my interest. Besides, I met some valuable scientists with whom I plan to establish a collaboration in the future.

3) Please provide your comments on the Fellowship Programme.

I think that the idea to have one month previous to the cruise is brilliant. To have learned and read selective lectures about acoustic and to have met the colleagues and supervisor before the cruise made me feel self-confident when boarding the vessel. Also was very useful to have an extra month post-cruise, to discuss and analyze results that are difficult to accomplish via mail or Skype. All the Programme was carefully organized and the POGO staff was always there to solve any inconvenient or responding to every single inquiry.

PRINT NAME: Rodrigo Hernández Moresino

Date: 05/02/2020

Section B

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

Please note that the complete report will be made public on the POGO website; Private comments should be included in the separate confidential form.

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

Rodrigo was a pleasant and valuable member of the team undertaking our annual survey this year on cruise JR19001. The month spent prior to the cruise was incredibly useful for Rodrigo to familiarise himself with acoustic techniques and I was impressed in the way that he applied himself to this task. Once on the cruise Rodrigo rapidly picked up what needed to be done and did it, and became a valued and trusted member of the team. He has both practical and scientific skills, combined with a positive attitude, that make him an asset to any cruise. Through discussion, we also identified where his existing skills could expand our work (image analysis) and I look forward to seeing where this may lead. Once back in Cambridge he continued to process and analyse data, again applying himself in a very professional manner and I agree that this period after also allowed the full context of the cruise to be understood. I look forward to keeping in contact and perhaps working with Rodrigo in the future.

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.

Rodrigo applied his existing skills as well as his learnt acoustic skills to several areas of our data. I hope these areas will go on and be published and I would expect that he will be involved in that in some way. In addition, we identified where techniques used during his stay here could be applied in his own geographic area. I would happily look to other opportunities (e.g. SCAR fellowships) to continue to work with Rodrigo on the right topic.

3) Please provide your comments on the Fellowship Programme.

From the BAS perspective, the fellowship worked very well. We gained a valuable team member to help deliver our Polar Ocean Ecosystem Time-Series Western Core Box (POETS-WCB) cruise, an annual time-series cruise focussing on the pelagic marine ecosystem. The cruise combines physical and biological oceanography and uses techniques that require teamwork to deliver them. As a result, I believe the fellow gets immersed in multi-disciplinary science, how to apply good pelagic biology fieldwork practises and a dynamic mix of BAS and collaborator scientists and students. They can take that capacity development back to their institute.

The period before the cruise was valuable for training in techniques that were then applied on the ship, and integration with the science team. The cruise offers the perfect space to take that training and apply it in practise. I don't think it would have worked as well or been as rewarding if both training and application occurred just during the cruise. The month after pulled training and application together and started to result in scientifically usable products. I fully endorse this format and I look forward to taking more fellows with us in the future.

PRINT NAME

Sophie Fielding
Date: 06/02/2020

SECTION C

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

Please note that the complete report will be made public on the POGO website; Private comments should be included in the separate confidential form.

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

Yes, I agree. I have no additional feedback.

PRINT NAME

Pedro José Barón
Date: 18/02/2020