

## Whale fall project in Barkley Canyon

Dear ONC Barkley Canyon user community,

We are here to notify you as main stakeholders of the instrumentation assets located in ONC's Barkley Canyon observatory site, and to ask your expert input in a proposed project that will, without precedent, impact the research activities in that particular site with potential for doubling the number of research users (in terms of seafloor ecology) and therefore the overall scientific outcome of the observatory.

As you probably know, since last year we have been working with Craig Smith from University of Hawaii and BBC to deploy a whale carcass in Barkley Canyon for the purpose of a high-resolution scientific colonization and succession experiment as well as to be featured in a landmark film documentary, *Oceans*, the sequel of the acclaimed Blue Planet series. BBC would gather footage for two of their planned seven episodes, one dealing with the new technologies used to study the oceans (portraying ONCs ability to deliver 365/24/7 oceanographic data in near real time), and the second to highlight ephemeral deep-sea habitats and biodiversity, such as whale falls, methane seeps and hydrothermal vents, and others like submarine canyons and abyssal plains.

The choice of Barkley Canyon had to be a compromise that considered many factors, including the current infrastructure available for monitoring the whale carcass; which at the end translated into hardware, operational and logistics costs. In summary, Barkley seemed the best choice as it is relatively close to shore (faster access), relatively shallow (faster ROV turn-around), and has a great deal of instrumentation already available, including the crawler Wally, which would ultimately be used to perform monitoring excursions around the whale carcass. The Barkley Hydrates was then selected as an optimal site within Barkley Canyon as the crawler Wally is already servicing the location and thus 'familiarized' with the seafloor terrain. A potential tentative location for the whalefall experiment has been selected (southeast of the main instrument platform) after preliminary assessments by ONC staff jointly with Laurenz Thomsen and Autun Purser. However, we welcome any further input in the selection of an optimal site if you have any concerns about the one that has been pre-selected. Please see figure attached.

BBC is committing to fund this initial (2-year) phase of the whale fall project, which entails sourcing, transporting and sinking a whale carcass within range of Wally at the Barkley Hydrates site. Additionally, BBC is working with Laurenz Thomsen, Autun Purser and the Helmholtz-Alliance Robotics team in Germany, to fund a new high-definition 4K camera, additional LED lights, and a pan and tilt system to be installed on Wally, and all the software drivers required for

connectivity with this new hardware. BBC would also pay for ship/ROV time during our maintenance cruises in 2015-2016 to collect video footage and take samples at and near the whale carcass.

As you are most surely aware, a large skeletonized whale carcass (an adult grey whale should be most likely utilized in this experiment as from evaluating historic regional stranding data) will last much longer than two years in the seafloor. More than 10 years according to the scientific literature. Therefore, a proposal is under preparation, led by Craig Smith (UH) and co-led by Tina Treude (UCLA), Laurenz Thomsen (Jacobs University), and myself at ONC, to be submitted to the Paul Allen Foundation initially (but to other funding agencies as well), to try securing funds for the long-term monitoring and sampling of the carcass and nearby seafloor communities, specifically for the bulk of ship and ROV time. Individual research groups will then apply to multiple funding agencies to secure additional resources for laboratorial analysis and salaries that will include coverage for PhD students and post-docs. We believe there will be many opportunities for the current Barkley Canyon user community to benefit and take part on this experiment, and to propose additional ideas as how to make the most out of this potentially incredible data set.

We have received earlier positive feedback on the deployment of such an experiment in Barkley Canyon, but we would like to make sure that there is no strong opposition in moving this project forward. Particularly now that BBC seems ready to commit the initial funds and is already willing to draft a partnership contract. One currently deployed experiment (wood and shell degradation experiment led by Mairi Best) is located near the optimal site where a whale carcass could be deployed. However, after recent contact made with Mairi, the experiment is planned to be recovered during our next maintenance expedition in September.

We at ONC believe this project has a great potential not only to produce extremely valuable new information about how large carcasses work in controlling processes related to biodiversity and ecosystem functioning of deep-sea benthic communities. It will also, by providing a great deal of exposure associated with the release of the BBC 'Oceans' documentary film (BBC Blue planet reached 500 million people worldwide), stimulate the general public to engage with current and future science projects and experiments carried out by a state of the art cabled observatory infrastructure. Those outcomes will in turn be highly beneficial to both ONC and its science user community.

Thanks very much for your attention. We are looking forward to further hear your feedback on this proposed project.

Kind regards,  
Fabio De Leo