Researcher in Residence: Craig Smith on whale falls

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Ocean Network Canada’s (ONC) new researcher in residence program invites global researchers across basic and applied science to advance interdisciplinary research using our ocean observatory systems and 14 years of archived data.

Craig Smith, from the University of Hawaii, is a researcher in residence at ONC until June 2020 where he will focus his research on benthic ecology using whale falls.

In May 2014, at Barkley Canyon—a site on ONC’s deep sea observatory—Craig, Lisa Levin from Scripps, and ONC’s senior staff scientist, Fabio De Leo, began a whalebone colonization experiment that would use cameras to observe the changes in the seafloor communities (invertebrates and fish) triggered by implanting whale bones.
(Left) Craig Smith in 2014 processing humpback whale bones, removing flesh and sinew, for deployment at Barkley Canyon and (right) the whale bones on the seafloor. Read more about this experiment and whale bones on the seafloor.

During Craig’s residency he is working closely with Fabio to write a paper on the findings from this research started in 2014 and to apply for a grant to set up a whole whale-carcass experiment at this site in the future.

“The opportunity to monitor a whole whale carcass 24/7 on the seafloor using Ocean Networks Canada’s seafloor cameras and sensors, would be unprecedented and could help to uncover many new aspects of the decomposition and colonization process and provide amazing educational and outreach opportunities” says, Craig Smith.
Computer rendering of what a deep-sea whale fall experiment would look like near the ONC observatory node and instrument platforms in Barkley Canyon.

Whale falls pass through a series of successional stages, including consumption of soft tissue by scavenging fish and invertebrates, partial decomposition of bones by bone-eating worms, and a sulfide-rich stage which attracts a distinct benthic fauna that resembles communities living in the extreme environments of hydrothermal vents and cold methane seeps.

Whale-fall experiments shed light into how organisms utilize the sparse food resources available in deep-sea settings. Craig and his colleagues postulate that whale falls can be important energy sources and biodiversity hotspots in the deep sea.

Craig, is a Professor of Oceanography at the University of Hawai‘i at Manoa whose research focuses on marine biodiversity, disturbance ecology, and human impacts in seafloor ecosystems. He has conducted research in Antarctica, mangroves, submarine canyons, organic-fall communities, cold seeps, continental slopes, and abyssal plains to obtain a broad perspective of natural and stressed marine ecosystems. Find out more on his website and watch BBC's Blue Planet video of sharks feasting on a whale carcass.

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