

## Fort Conger: A Virtual Museum and Virtual Interactive World for Exploring Science in the 19th Century

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**Abstract :** Ft. Conger, located in the Canadian Arctic was one of the most remote 19th-century scientific stations. Established in 1881 on Ellesmere Island, a wood framed structure established a permanent base from which to conduct scientific research. Under the charge of Lt. Greely, Ft. Conger was one of 14 expeditions conducted during the First International Polar Year (FIPY). Our research project "From Science to Survival: Using Virtual Exhibits to Communicate the Significance of Polar Heritage Sites in the Canadian Arctic" focused on the creation of a virtual museum website dedicated to one of the most important polar heritage site in the Canadian Arctic. This website was developed under a grant from Virtual Museum of Canada and enables visitors to explore the fort's site from 1875 to the present, <http://fortconger.org>. Heritage sites are often viewed as static places. A goal of this project was to present the change that occurred over time as each new group of explorers adapted the site to their needs. The site was first visited by British explorer George Nares in 1875 - 76. Only later did the United States government select this site for the Lady Franklin Bay Expedition (1881-84) with research to be conducted under the FIPY (1882 - 83). Still later Robert Peary and Matthew Henson attempted to reach the North Pole from Ft. Conger in 1899, 1905 and 1908. A central focus of this research is on the virtual reconstruction of the Ft. Conger. In the summer of 2010, a Zoller+Fröhlich Imager 5006i and Minolta Vivid 910 laser scanner were used to scan terrain and artifacts. Once the scanning was completed, the point clouds were registered and edited to form the basis of a virtual reconstruction. A goal of this project has been to allow visitors to step back in time and explore the interior of these buildings with all of its artifacts. Links to text, historic documents, animations, panorama images, computer games and virtual labs provide explanations of how science was conducted during the 19th century. A major feature of this virtual world is the timeline. Visitors to the website can begin to explore the site when George Nares, in his ship the HMS Discovery, appeared in the harbor in 1875. With the emergence of Lt Greely's expedition in 1881, we can track the progress made in establishing a scientific outpost. Still later in 1901, with Peary's presence, the site is transformed again, with the huts having been built from materials salvaged from Greely's main building. Still later in 2010, we can visit the site during its present state of deterioration and learn about the laser scanning technology which was used to document the site. The Science and Survival at Fort Conger project represents one of the first attempts to use virtual worlds to communicate the historical and scientific significance of polar heritage sites where opportunities for first-hand visitor experiences are not possible because of remote location.

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