

{rokbox title=|Examples of habitats and fauna on hydrothermal vents :: Image: Authors|
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[Deep-sea ecosystems of the North Atlantic Ocean: discovery, status, function and future challenges](#)

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Abstract: The North Atlantic is an ocean basin with a diversity of deep-sea ecosystems. Here we provide a summary of the topography and oceanography of the North Atlantic including the Gulf of Mexico and Caribbean Sea, provide a brief overview of the history of scientific research therein, and review the current status of knowledge of each of 18 pelagic and benthic deep-sea ecosystems, with a particular focus on knowledge gaps. We analyse biodiversity data records across the North Atlantic and highlight spatial data gaps that could provide important foci for future expeditions. We note particular data gaps in EEZs of nations within and bordering the Caribbean Sea. Our data provide a baseline against which progress can be tracked into the future. We review human impacts caused by fishing, shipping, mineral extraction, introduction of substances, and climate change, and provide an overview of international, regional and national measures to protect ecosystems. We recommend that scientific research in the deep sea should focus on increasing knowledge of the distribution and the connectivity of key species and

habitats, and increasing our understanding of the processes leading to the delivery of ecosystem services. These three pillars - distribution, connectivity, ecosystem function - will provide the knowledge required to implement conservation and management measures to ensure that any deep-sea development in the future is sustainable. Infrastructure and capacity are unevenly distributed and implementation of strategies that will lead to more equitable deep-sea science is required to ensure that essential science can be delivered.

Keywords: North Atlantic, Deep sea, Ecosystem services, Connectivity, Marine policy.