Smithsonian
National Museum of Natural History

News

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Fact Sheet
Marine Science in the Sant Ocean Hall

The National Museum of Natural History is a collections based research institution, the largest in the world, with more than 126 million natural history specimens in its vast collection. Smithsonian research and collections provide the foundation for the extraordinary presentation that unfolds in the Sant Ocean Hall. Throughout the hall, in every exhibit, the work of Smithsonian scientists is on display.

Exploration:

Although the ocean represents some 95 percent of Earth's living space, exploring the sunless depths of the ocean is fraught with almost as many challenges as exploring outer space. As a result, only about 5 percent of the ocean has been adequately studied. Only through the use of specially designed research diving vessels like Alvin can scientists explore the deep ocean and its remarkably varied animal and microbial life.

The Census of Marine Life represents a ten-year effort to catalogue the enormous diversity of life in the ocean. Seventeen research projects are investigating six ocean realms that will be reported in the first Census of Marine Life in October 2010. Support for the Census of Marine Life comes from various government agencies concerned with environment, fisheries, and science in a growing list of nations as well as from private foundations and companies.

Collections:

Much of what we know about the diversity and evolution of life in the ocean is based on collections of specimens. These specimens provide the principal source of information on the tremendous variety of life in the ocean. Museums house and preserve these and many other collections and make them accessible for research, exhibits, and education.

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Technology:

Scientists use satellites not only to track changes in ocean currents and temperature but also to follow the migrations of large fish and whales to which small transmitters have been attached. The satellite feedback provides precise data on the animals' whereabouts, which are key to understanding their mode of life and to plan appropriate conservation measures.

The Integrated Ocean Drilling Program is an international effort that unites research partners, drilling platforms, and research ships from numerous countries to explore the ocean floor. The Japanese ocean drill ship, Chikyu, is used to drill several kilometers below the ocean's surface and deep into the ocean floor. This drilling effort provides critical information on the structure of the ocean floor. Microfossils and rocks from the ocean floor contain clues to past climates and to the motion of the great tectonic plates that make up Earth's crust.

Monitoring:

Blue crabs comprise the most valuable remaining commercial fishery in Chesapeake Bay, but their stock has declined by 85% since 1990. These crabs have a complex life cycle with life stages that shift among habitats based on preferred water salinity. Scientists at the Smithsonian Environmental Research Center are examining the ecology of blue crabs to improve management of blue crab fishery and to learn more about the associated marine life of the Chesapeake Bay.

Although legally protected since 1931, the right whale – the species that includes Phoenix – remains critically endangered. Although it is no longer hunted, collisions with ships, entanglement in fishing nets, and pollution have taken their toll on this species. Best estimates place its numbers at only 300-350 individuals in the North Atlantic. (There are still some 3,000-4,000 right whales living in the Southern Hemisphere.) Many research agencies and organizations around the globe now closely monitor the surviving populations of the right whale and other large whales.

The Smithsonian Marine Science Network:

The Smithsonian operates a unique network of coastal laboratories and long-term research sites on the east coast of North and Central America that extends along the Atlantic Ocean and bridges the Panamanian isthmus from the Caribbean Sea to the Pacific Ocean:

- The Smithsonian Environmental Research Center, Edgewater, Md.
- The Smithsonian Marine Station, Fort Pierce, Fl.

- The Caribbean Coral Reef Ecosystems Program, Belize
- The Smithsonian Tropical Research Institute, Panama

Collectively known as the Smithsonian Marine Science Network, their mission is to understand the rich biodiversity and complex ecosystem dynamics that sustain coastal processes and productivity. The network focuses on four main unifying disciplinary themes to Smithsonian marine research: systematics, evolutionary biology, ecology, and geology.

The Smithsonian's marine education programs consist of public outreach and professional training. A series of these activities are aimed at promoting awareness and conservation of marine environments, and communicating the Smithsonian's research findings to the general public. By integrating research with education, the Smithsonian produces tomorrow's discoverers while pursuing today's discoveries. The public is engaged with interactive exhibits, symposia, popular books, lectures, and films about the marine environment.

The Smithsonian Marine Science Network contributes to the public interest by disseminating environmental information around the globe. Its research helps build a solid foundation for informed decisions about environmental policy, natural resource management, and conservation.

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