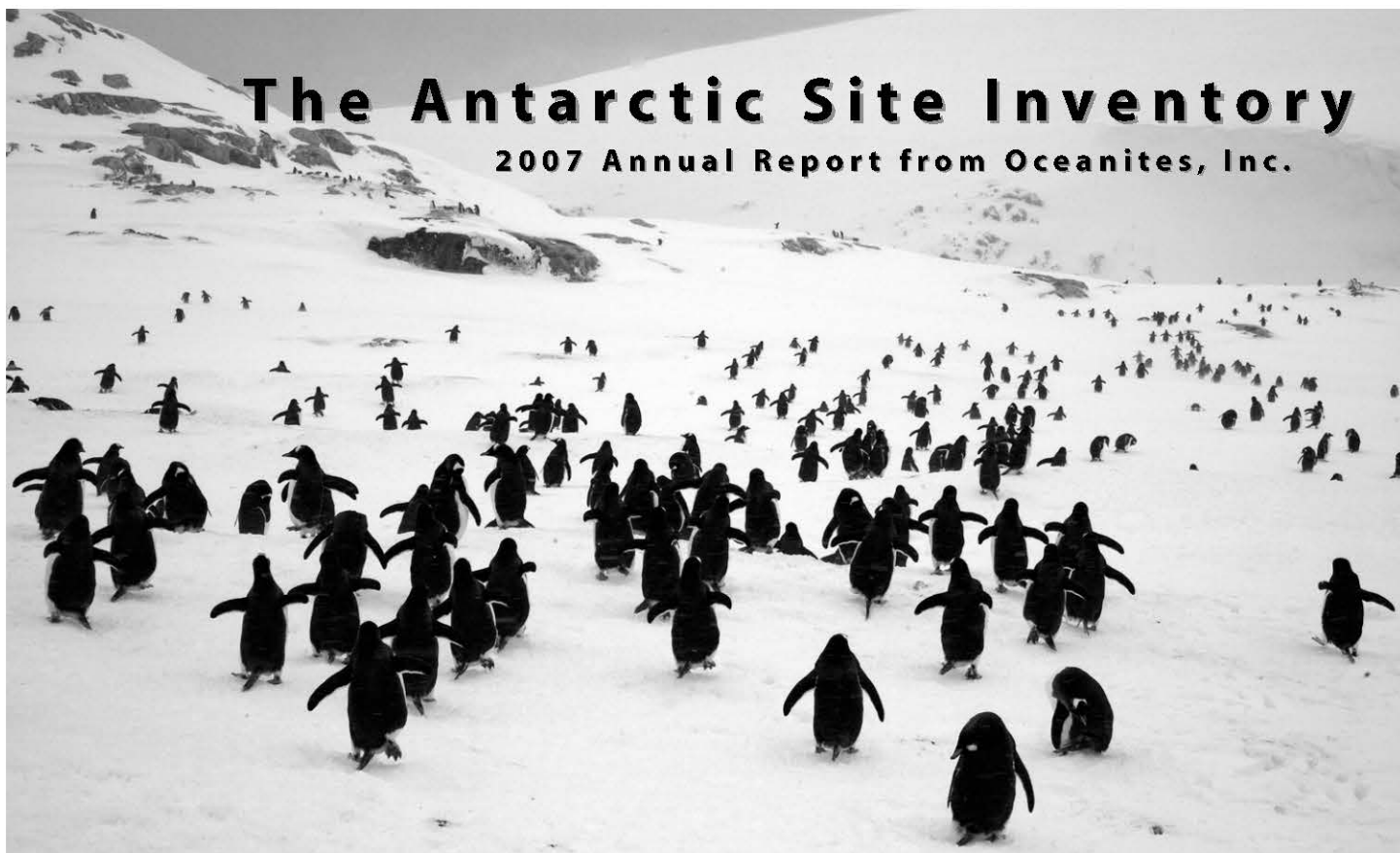


# The Antarctic Site Inventory

2007 Annual Report from Oceanites, Inc.



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**To all Oceanites supporters and friends —**

Amazingly, 2007 is Oceanites' 20th anniversary and, while I'm feeling older, any fragile feelings are assuaged by knowing that the Antarctic Site Inventory has endured and, truly, is helping to set the table for long-term Antarctic conservation.

Our collaboration with Dr. William Fagan's Conservation Biology, Community Ecology, and Theoretical Ecology Lab at the University Of Maryland is blossoming. For this issue, I've asked Dr. Heather Lynch, who's spearheading the lab's efforts, to describe the seminal analyses that have just begun.

Another field season is underway — the Inventory's 14th, with Oceanites teams again working from Lindblad Expeditions' *National Geographic Endeavour* and at our Petermann Island field camp.

Lots of stories to tell — and hopefully, this year's report will fully inform you of our progress. Again, many thanks from all of us in the Oceanites community for your ongoing support and assistance. Without you, we wouldn't have so much to celebrate.

With all best wishes,

Ron Naveen

President, Oceanites, Inc.  
December 1, 2007

### **Penguin Populations in the Antarctic Peninsula**

As described in our previous reports, the Antarctic Peninsula is warming as fast, if not faster, than any other location on the planet. In the last 58 years, temperatures have increased by 5°F. (2.8°C.) year-round and 9°F. (5°C.) in winter.

Peninsula Adélie penguin populations have declined by 50-60% and Peninsula chinstrap penguin populations have declined by a third to a half. Peninsula gentoos, by contrast, are increasing exponentially and expanding their range southward. However, on the eastern side of Antarctica, it's gotten slightly colder and Adélies appear to be holding their own.

The message for those of us in temperate latitudes, of course, is that future decades will be problematic and uncertain. Many of us will suffer and some of us won't.

### **Antarctic Site Inventory News**

During the recently concluded 2006-07 field season, the Inventory made 80 visits and collected data at 41 sites, including 10 sites not previously visited by Inventory researchers.

In 13 seasons from November 1994 through February 2007, the Inventory now has made 784 visits and collected data at 115 Antarctic Peninsula locations, including all sites that exhibit the most species diversity and which are most prone to potential environmental disturbance from human visitors.

Inventory results again were summarized and updated in an Information Paper presented by the US and the UK at the 2007 Antarctic Treaty Consultative Meeting in Delhi, India. And the Treaty's Committee On Environmental Protection (CEP) once more acknowledged and specifically welcomed the work of Oceanites in these regards.

We continue to be honored that our work is given such prominent attention.

The Inventory database is critical to ongoing efforts by Treaty nations to fulfill their responsibilities under the Antarctic Treaty, and is the cornerstone reference for the development of site visitation guidelines at key Antarctic Peninsula visitor locations. Two more site guidelines were adopted in Delhi, a total of 14 now

have been adopted over the last two Consultative Meetings, and all will be made available through the Oceanites website.

### **The 2007-08 Field Season**

The Antarctic Site Inventory's 14th field season — including our Petermann Island field camp and our shipboard surveys from the *National Geographic Endeavour* — began in November 2007.

Our roster of researchers for the new season includes: Ron Naveen, Steven Forrest, Rosemary Dagit, Ian Bullock, Megan McOsker, John Carlson, Iris Saxer, Mike Polito, Heather Lynch, Melissa Rider, Thomas Mueller, Holly Martinson, and Katie Schneider.



### **The Charcot Centenary**

Petermann Island, where the Inventory has its field camp, is historically prominent because the French explorer Jean-Baptiste Charcot overwintered here in 1909 on his second Antarctic expedition aboard the vessel *Pourquoi Pas?*, and scientifically important because this is one of the major global warming "hotspots" on the planet.

The forthcoming, 100th anniversary of Charcot's visit offers an unprecedented scientific opportunity. Charcot and his men were among the first to describe and study penguin breeding biology and, consequently, Petermann Island is one of the very rare locations with data sets spanning

a hundred year time frame.

Petermann's penguins were great curiosities to Charcot and his men and, today, on a more sobering note, they occupy center stage as proverbial "canaries in the cage" foreboding future changes on the planet, and they're a major focal point of our analyses now underway with The Fagan Lab.

By examining Charcot's voluminous records in context with ours and with other long-term biological and physical data sets collected in the Antarctic Peninsula, we intend to present the first, century-long analysis of change at a single Antarctic location, hopefully unraveling the precise mechanisms for the differences we've detected in the Petermann Island penguin populations.



## Meet The Fagan Lab

by Dr. Heather Lynch

My colleagues at The Fagan Lab at the University Of Maryland and I integrate field research with theoretical models to address critical questions in community ecology and conservation biology. The lab's projects cast a wide geographical net, from the regeneration of the Mt. St. Helens ecosystem, Jamaican songbird migration, and nomadism in Mongolian gazelles, to the macroecology of West Virginia cave ecosystems and arthropod foodwebs in marsh ecosystems.

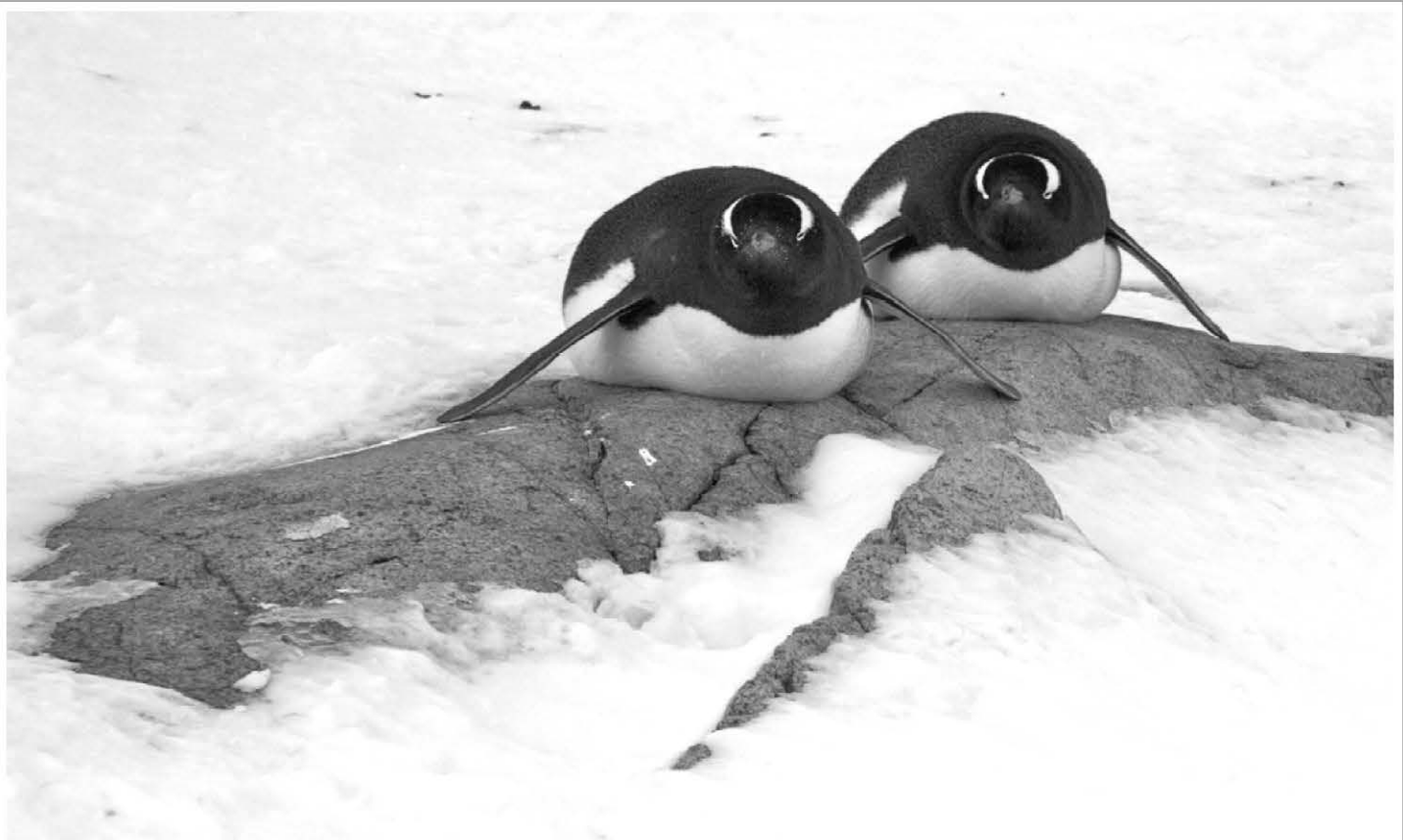
Plant and animal populations are constantly in flux and the state of affairs at one moment is only a snapshot of the unseen struggle for survival. Although year-to-year fluctuations in population size are virtually guaranteed, long-term trends in population size signal changes that ecologists seek to understand.

In collaboration with Oceanites, we seek to characterize decadal scale changes in penguin and seabird populations throughout the Antarctic Peninsula. Discerning how these species are changing in relative abundance and spatial distribution, and more importantly, identifying factors driving these long-term changes, are key steps to a better understanding of the Antarctic Peninsula ecosystem.

Using hierarchical Bayesian analysis and related statistical approaches, we will quantify long-term changes in penguin populations, both at individual sites and in different subareas of the entire Antarctic Peninsula. Together with data on climate, ice conditions, krill, and tourism, these approaches will help us understand which factors are actually contributing to these changes.

The inherent difficulty of collecting long-term datasets is only exacerbated in field sites as remote as Antarctica. Fortunately, our hierarchical modeling is well equipped to deal with different sources of data, missing data, and various sources of error, and has produced novel and interesting results when applied in other ecosystems.

We're excited to have the opportunity to analyze Antarctic Site Inventory data using these cutting-edge methods, which will enable us to fill data gaps, to identify what changes are occurring, precisely where they are occurring, and, hopefully, why. It's an unparalleled opportunity to understand and conserve one of the most inaccessible ecosystems on the planet, which may be remote, but which also lies at the heart of our concern about a warming climate.



### **The Oceanites Website, Videos**

The educational Oceanites website launched in late October 2006 — [www.oceanites.org](http://www.oceanites.org) — and will be our primary vehicle for disseminating a large volume of data and information, maps, and photography to the large, international community interested in Antarctica.

Please visit to see the videos about our project that have been produced and so graciously shared by the skilled film team at Lindblad Expeditions. The videos show our researchers “in action” and provide an excellent overview of the data collection we’re pursuing and how it ties to the issue of global warming.

Over time, more interactive materials will appear, including a unique, multilingual educational component — a virtual classroom that allows interested adults and children from all countries and of all ages to access a wealth of presentations, videos, and downloadable materials about key Antarctic subjects.

### **Contact Information**

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### **Photo credits:**

All photos by Ron Naveen, (c) 2007 Oceanites, Inc.

Cover — Hordes of gentoo penguins returning in the evening to Petermann Island.

p. 2 — Adélie penguin at Petermann Island.

p. 3 — Heather Lynch checking one of her gentoo penguin study groups on Petermann Island. Visible in the background to the south are the refugio constructed by Argentina in 1955 and, across ice-filled Penola Strait, Mt. Mill, Lumiere Peak, Mt. Demaria and Cape Tuxen.

p. 4 — Courting gentoo penguins at Petermann Island.