

# INTERNATIONAL USER CONFERENCE ON ARGOS WILDLIFE APPLICATIONS IUCAWA | 2014



# INTERNATIONAL USER CONFERENCE ON ARGOS WILDLIFE APPLICATIONS

The International User Conference on Argos Wildlife Applications is a forum for Argos Wildlife Users to present their cutting-edge science and demonstrate how it can be applied in valuable ways to wildlife conservation, economics and society. It will showcase the incredible breadth of wildlife science that the international Argos satellite tracking system has enabled for decades; examine the evolving technology and capabilities of the Argos system; and explore the endless possibilities for wildlife monitoring that are within our reach for the future. ——— [clsamerica.com/#!argos-wildlife-users-conference/c9bl](http://clsamerica.com/#!argos-wildlife-users-conference/c9bl) ———

## AT A GLANCE

### Daily Breakfast with Sodexo

**7:00-8:30 AM** | NATIONAL AQUARIUM

Harbor Overlook

PLEASE NOTE: For already registered attendees, VIPs, speakers and panelists, please allow yourself enough time to pass through the National Aquarium main entrance security checkpoint BEFORE the morning sessions commence.

THE PLenary SESSIONS WILL BEGIN PROMPTLY AT 8:30 AM EACH DAY.

### Daily Morning Plenary Sessions

**8:30-11:30 AM** | NATIONAL AQUARIUM

Lyn P. Meyerhoff Auditorium

### Daily Afternoon Plenary Sessions and Panel Discussions

**1-5 PM** | PIER 5 HOTEL

### Monday Evening Meet & Greet

for VIPs, speakers and panelists

**5-7 PM** | PIER 5 HOTEL

McCormick & Schmick's Seafood Restaurant

### Tuesday Speaker Book Signing

Wallace "J." Nichols

**12 PM** | NATIONAL AQUARIUM

Aqua Shop

### Tuesday Evening Reception

for all registrants

**6:30-9:30 PM** | NATIONAL AQUARIUM

Harbor Overlook

### Wednesday Evening Icebreaker

for speakers and panelists

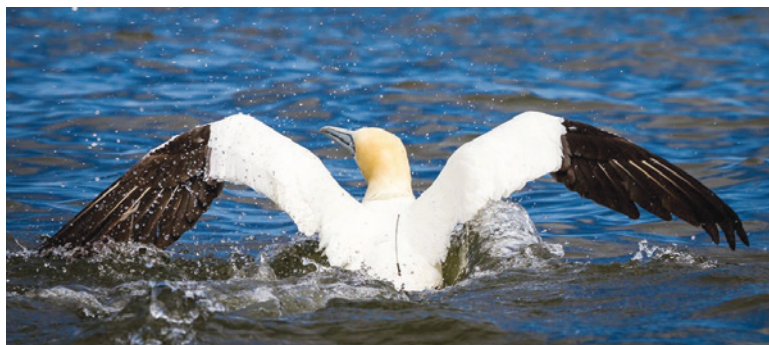
**7-9 PM** | PAZO RESTAURANT

### Thursday Speaker Book Signing

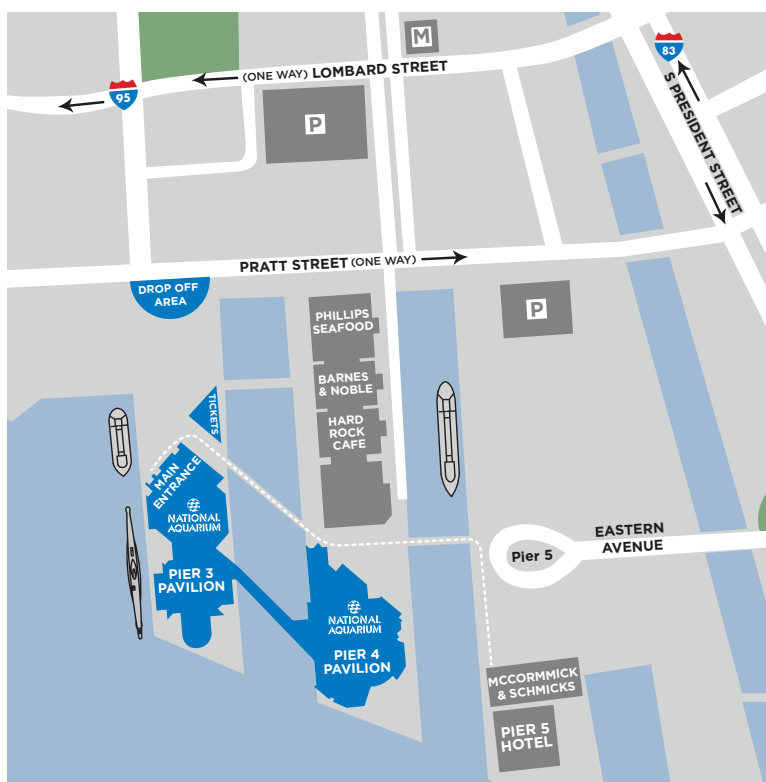
P. Dee Boersma

**12 PM** | NATIONAL AQUARIUM

Aqua Shop



Northern Gannet by Jonathan Fiely



#### NATIONAL AQUARIUM

501 East Pratt Street  
Baltimore, MD 21202

[aqua.org](http://aqua.org)

#### PIER 5 HOTEL

711 Eastern Avenue  
Baltimore, MD 21202

[thepier5.com](http://thepier5.com)

[mccormickandschmicks.com](http://mccormickandschmicks.com)

#### PAZO

1425 Aliceanna Street  
Baltimore, MD 21231

[pazorestaurant.com](http://pazorestaurant.com)

(not included on map)





**Bill Woodward**  
Vice President of  
Environmental Monitoring  
CLS America



**Eric Schwaab**  
Chief Conservation Officer  
National Aquarium

## EDITORIAL

In the late 1970s the Argos Data Collection and Location System was conceived by engineers at the French government space agency after its successful operation of a similar experimental data relay satellite for acquiring and relaying telemetered data from meteorological balloons. Dedicated to the environment and begun as a cooperative program among CNES, NOAA and NASA (joined later with JAXA and now with EUMETSAT and ISRO as well), the Argos success story has spanned more than three decades and has had an enormous positive impact on our ever-evolving capabilities for Earth-based biological and physical sciences research.

In particular, Argos has enabled the wildlife community to continuously rewrite its textbooks on the migration patterns and habits of an increasingly wide variety of land, marine and avian animal species. This essential science-based data help to guide global conservation policy-making through informed management, economic and political decisions. At a time when field scientists were able to, at best, track animals at distances only marginally greater than line of sight, Argos allowed visionary biologists to begin dreaming beyond the horizon and think about wildlife tracking on global scales. As Argos capabilities have grown, the vital simplicity and very low power of the system essential for wildlife tracking has remained.

The spirit of Argos is captured in the innovative and breathtaking scientific efforts of the global wildlife community, a large portion of which will be showcased here at our conference. We are thrilled that you have joined us at the National Aquarium to celebrate the extraordinary 35-year-long combination of the science, the success and the system, and to assist your community in shaping the future of wildlife tracking with Argos.

## ORGANIZING PARTNERS

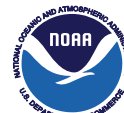


Photo by Dee Boersma | penguinstudies.org



Green Sea Turtle by Helen Bailey

## THE HISTORY OF ARGOS

The Argos system was born in the late 1970s following the success of the CNES project Eole, which tracked 500-plus stratospheric balloons via satellite. The early collaboration among CNES, NASA and NOAA demonstrated the feasibility of tracking and collecting data from various terrestrial, maritime and airborne beacons via satellite.

The outstanding results from this demonstration generated the incentive to build an operational satellite-based system that would fulfill the environmental study and protection requirements of the global international scientific community. Thus, Argos was created. The first experimental satellite carrying an Argos instrument, called TIROS-N, was launched on October 13, 1978. The first satellite with an operational Argos instrument aboard was named NOAA-6 and was launched in June 1979. The Argos system has been operational on NOAA satellites since 1979 with 16 instruments of first, second and third generation.

Beginning in the late 1990s, CNES began expanding the Argos collaboration with other agencies (i.e., EUMETSAT, JAXA and ISRO) while at the same time continuing to increase Argos technical capabilities. Two third-generation instruments (Argos-3) were launched on the EUMETSAT Metop-A satellite at the end of 2006 and on the NOAA-19 satellite in February 2009. Additional Argos-3 instruments have since been launched on Metop-B and the ISRO satellite SARAL. The first fourth-generation (Argos-4) instrument is targeted for launch in the 2018 time frame.

The CNES agent CLS operates the Argos system, while CNES is in charge of the technical development, the delivery of Argos instruments on the satellites, the system performances, the integration of the instruments onboard the satellites, the operations and the ground segment activities (data processing).

The associated costs of flying the Argos instruments on the satellites (e.g., integration of the instruments, antennas, launch and data acquisition by global ground stations) are the responsibility of NOAA, EUMETSAT for the Metop satellites, and ISRO for the SARAL satellite. This is organized in accordance with an international memorandum of agreement signed by each of the agencies.



**Helen Bailey**  
*Research Assistant Professor*  
Chesapeake Biological Laboratory,  
University of Maryland Center for  
Environmental Science



**Holly Fowler**  
*Manager of Conservation Programs*  
National Aquarium



**Gillian Lichota**  
*Scientific Support Associate*  
Environmental Monitoring,  
CLS America



**Eric Locklear**  
*Division Chief*  
Administrative Services Division,  
NOAA, Climate Program Office



**Marianna Childress-Poli**  
*Writer and Editor*  
Communications, CLS Group



**Seema Owen**  
*Controller*  
Administrative and Financial  
Group, CLS America



**Scott Rogerson**  
*Argos DCS Program Manager*  
NOAA/NESDIS



**Eric Schwaab**  
*Chief Conservation Officer*  
National Aquarium



**Deborah Stakem**  
*Manager of*  
*Argos User Services*  
CLS America



**Bill Woodward**  
*Vice President of*  
*Environmental Monitoring*  
CLS America

## ORGANIZING COMMITTEE





**Wallace "J." Nichols**  
*Research Associate and Author*  
California Academy of Sciences and  
Cofounder of OceanRevolution.org

## KEYNOTE ADDRESS

### ABOUT DR. WALLACE "J." NICHOLS

Dr. Wallace "J." Nichols is a scientist, wild water advocate and *New York Times* best-selling author of the newly published "Blue Mind: The Surprising Science That Shows How Being Near, In, On, or Under Water Can Make You Happier, Healthier, More Connected, and Better at What You Do."

Nichols takes a slow, collaborative approach with leaders in businesses, government, nonprofits and academia to inspire a deeper connection with nature and inventive solutions to pressing issues. He knows that what really moves people is feeling part of and touching something bigger than ourselves.

Nichols is a research associate at California Academy of Sciences and cofounder of oceanrevolution.org, an international network of young ocean advocates; seethewild.org, a conservation travel network; grupotortuguero.org, an international sea turtle conservation network; and livblue.org, a global campaign to reconnect us to our water planet.

He has authored and co-authored more than 50 scientific papers and reports, and his work has been broadcast on NPR, BBC, PBS, National Geographic and Animal Planet, and featured in *Time*, *Newsweek*, *GQ*, *Outside Magazine*, *Fast Company*, *Scientific American* and *New Scientist*, among others.

Nichols earned his bachelor's degree in biology and Spanish from DePauw University; his master's of environmental management in environmental policy and economics from Duke University's Nicholas School of the Environment; and his doctorate in wildlife ecology from the University of Arizona's School of Renewable Natural Resources, where he received both a Marshall Fellowship and a Fulbright Fellowship. In 2010, Nichols delivered the commencement address at DePauw University, where he also received an honorary doctorate in science. In May 2014, Nichols received the University of Arizona's Global Achievement Award.

He advises a motivated group of international graduate students and serves as an adviser to numerous nonprofit boards and committees as part of his commitment to building a stronger, more progressive and connected environmental community.

Nichols and his team are working on the Blue Mind Collective, merging the fields of cognitive science and aquatic exploration, and sharing their findings across many diverse sectors of society with the goal of increasing appreciation for healthy oceans and waterways.



Photo by Dee Boersma | penguinstudies.org



Fin Whale by Craig Hayslip | Oregon State University Marine Mammal Institute







Adult male bottlenose dolphin in Sarasota Bay, Florida, with Wildlife Computers Splash tag, May 2012 by Sarasota Dolphin Research Program | NMFS Scientific Research Permit No. 15543 | Provided by Randall Wells

# HONORABLE MENTION

## 2014 INDIANAPOLIS PRIZE

The Indianapolis Prize is given every other year to an individual who has made extraordinary contributions to conservation efforts involving a single animal species or multiple species. The professional wildlife conservation community frequently refers to it as the world's leading award for animal conservation.



*TOP 6 FINALIST*

**Gerardo Ceballos**

*Scientist*

Instituto de Ecologia, Universidad Nacional Autonoma de Mexico

Champion for jaguars in Mexico, conducting the first country-level jaguar census and the most comprehensive jaguar study to date.



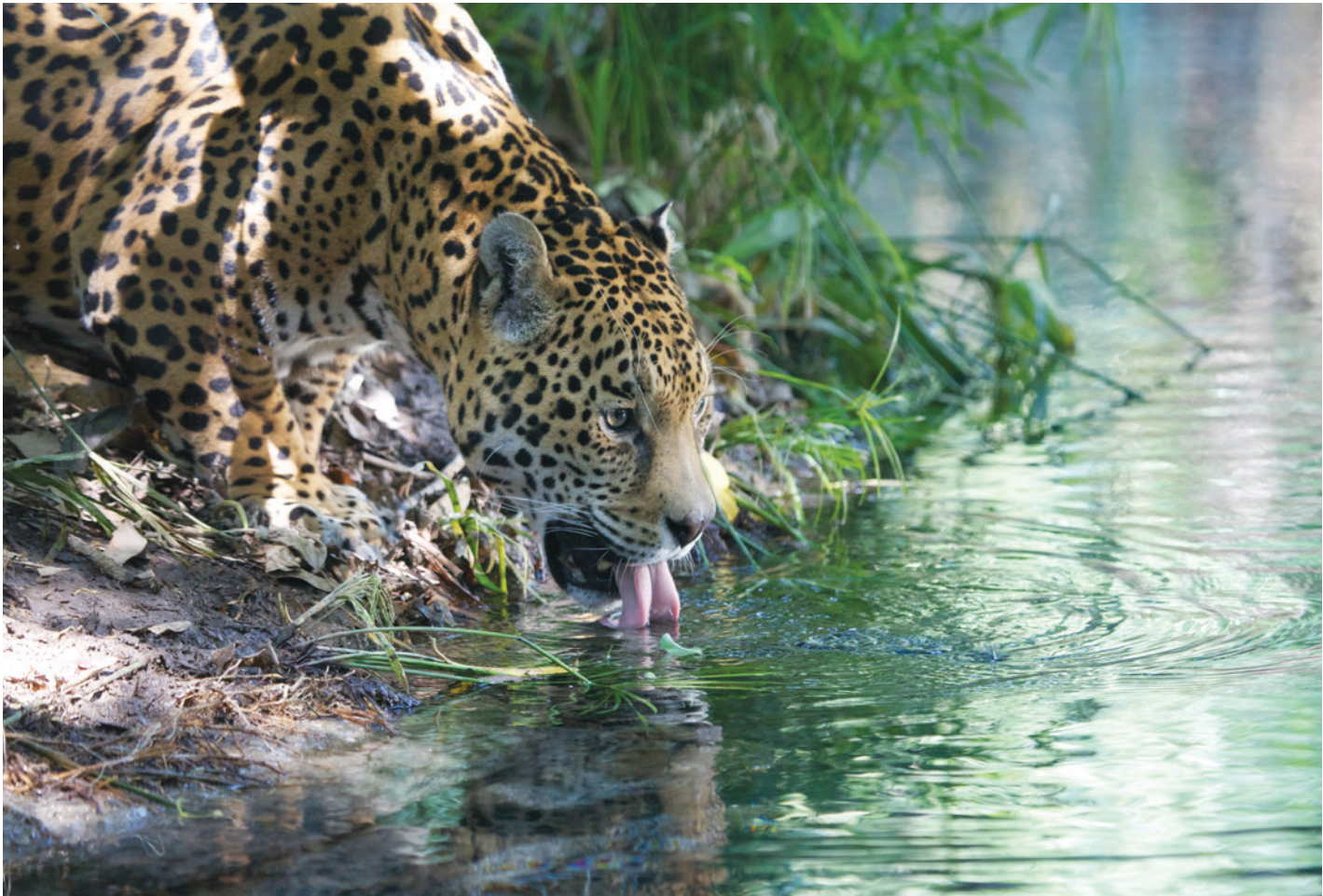
*NOMINEE*

**Randall Wells**

*Program Director*

Sarasota Dolphin Research Program, Chicago Zoological Society

Wells directs the Sarasota Dolphin Research Program, the world's longest-running study of a wild dolphin population.



Jaguar, Mexico by Gerardo Ceballos

# PROGRAM SCHEDULE

## MONDAY, NOVEMBER 17

### WELCOME

**5 pm to 7 pm** | Meet and Greet for VIPs, Speakers and Panelists  
**Pier 5 Hotel | McCormick & Schmick's Seafood Restaurant**

## TUESDAY, NOVEMBER 18

### PLENARY 1

**8:30 am to 10:10 am** | Opening Session  
**National Aquarium | Lyn P. Meyerhoff Auditorium**  
Moderator | Bill Woodward

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**Welcoming Remarks** | John Racanelli, National Aquarium

**Jean-Yves Le Gall** | *President*, Centre National d'Etudes Spatiales

**Marc Cohen** | *Associate Director for LEO Programmes*, European Organisation for the Exploitation of Meteorological Satellites

**Francisco Werner** | *Science and Research Director*, National Oceanic and Atmospheric Administration, Southwest Fisheries Science Center

**Frédéric Doré** | *Deputy of Mission*, French Embassy

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**Keynote Address** | **Dr. Wallace "J." Nichols**

**10:10 am to 10:30 am** | **COFFEE BREAK**  
**National Aquarium | Lyn P. Meyerhoff Auditorium**

### PLENARY 2A

**10:30 am to 11:30 am** | Diversity and Ecology of Species Tracked by Argos  
**National Aquarium | Lyn P. Meyerhoff Auditorium**  
Moderator | George Durner

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**The Wired Ocean: Using Biologging Technology to Track Wildlife and Predict the Impacts of Climate Change**

**Barbara Block** | *Charles and Elizabeth Prothro Chair in Marine Sciences*, Hopkins Marine Station, Stanford University

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**21 Years' Satellite Tracking of Raptors—Some Highlights**

**Bernd Meyburg** | *Professor Dr.*, World Working Group on Birds of Prey and Chairman of the Raptor Working Group of BirdLife Germany

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**Use of Protected Areas by Marine Turtles Tagged in Dry Tortugas National Park, Florida, USA**

**Kristen Hart** | *Research Ecologist*, USGS

**11:30 am to 1:00 pm** | **LUNCH BREAK**  
*On your own*

### PLENARY 2B

**1 pm to 2 pm** | Diversity and Ecology of Species Tracked by Argos  
**Pier 5 Hotel | Harbor West Ballroom**  
Moderator | George Durner

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**Avian Tracking Studies by the U.S. Geological Survey**

**David C. Douglas** | *Research Wildlife Biologist*, USGS Alaska Science Center

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**Tracking Tropical Manatees; Use of Argos Tags on Antillean Manatees from the Bahamas to Brazil**

**James Reid** | *Biologist*, USGS

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**Use of Solar-Powered Satellite Transmitters in Assessing Migration Patterns of Burrowing Owls in Western North America**

**David Johnson** | *Wildlife Biologist*, Idaho Cooperative Fish and Wildlife Research Unit

### PLENARY 3A

**2 pm to 2:40 pm** | Wildlife Tracking Applications Using Argos  
Moderator | Greg Skomal

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**Satellite Tracking Migratory Birds from the United Arab Emirates—Opportunities for Species and Site Conservation**

**Salim Javed** | *Section Head*, Terrestrial Assessment and Conservation, Terrestrial and Marine Biodiversity

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**Learning the Spatial Distribution of Sea Turtles in the Gulf of Mexico for Conservation and Management Strategies**

**Eduardo Amir Cuevas Flores** | *Scientist*, Pronatura Peninsula de Yucatan

**2:40 pm to 3 pm** | **COFFEE BREAK**  
**Pier 5 Hotel | Harbor Club**

### PLENARY 3B

**3 pm to 4:40 pm** | Wildlife Tracking Applications Using Argos  
Moderator | Greg Skomal

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**From Jaguars to Bison: Ecology and Conservation Science in Mexico**

**Gerardo Ceballos** | *Scientist*, Instituto de Ecología, Universidad Nacional Autónoma de México, 2014 Indianapolis Prize Finalist

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**Satellite-Linked Tagging of Small Cetaceans: A Crucial Tool for Conservation**

**Randall Wells** | *Director*, Chicago Zoological Society's Sarasota Dolphin Research Program, 2014 Indianapolis Prize Nominee





## TUESDAY, NOVEMBER 18 CONTINUED

### Use of Argos-Linked GPS Technology to Study Florida Manatee Ecology and Behavior: Discoveries from the Past 12 Years of Tracking for Conservation

Charles “Chip” Deutsch | *Associate Research Scientist, Florida Fish and Wildlife Conservation Commission*

### The Monitoring of the Long-Term Movements and Diving Behavior of Released Rehabilitated Marine Turtles in New Zealand Waters

Chris Andrews | *Senior Curator, Sea Life US*

### Migration Ecology and Population Delineation of Pacific Barrow’s Goldeneye

Walter “Sean” Boyd | *Research Scientist, Environment Canada*

## AN EVENING RECEPTION

6:30 pm to  
9:30 pm

With Author Dr. Wallace J. Nichols

**National Aquarium | Harbor Overlook  
(enter at the main entrance)**

To Include: VIPs, speakers, panelists and conference registrants (additional information to follow)

### Blue Mind: The Surprising Science That Shows How Being Near, In, On, or Under Water Can Make you Happier, Healthier, More Connected, and Better at What You Do

Wallace “J.” Nichols | *Research Associate and Author, California Academy of Sciences and Cofounder of oceanrevolution.org*

## WEDNESDAY, NOVEMBER 19

### PLENARY 4

8:30 am to  
10:10 am

Using Argos to Understand Protected Habitats and Species

**National Aquarium | Lyn P. Meyerhoff Auditorium**

Moderator | P. Dee Boersma

### Using Argos to Understand Protected Habitats and Species—From Single Animals to Animal Telemetry Networks

Richard Merrick | *Chief Science Advisor and Director of Scientific Programs, NOAA Fisheries*

### Broad and Fine-Scale Movements of White Sharks in the Western North Atlantic Derived from Multiple Technologies

Greg Skomal | *Program Manager, Senior Marine Fisheries Biologist, Energy and Environmental Affairs, Massachusetts Marine Fisheries*

### Identification of Whale Migratory Routes and High-Use Areas from Argos Satellite Telemetry Data

Helen Bailey | *Research Assistant Professor, Chesapeake Biological Laboratory, University of Maryland Center for Environmental Sciences*

### The Use of Argos Tags as a Tool for Understanding Large Whale Ecology and Management

Amy Kennedy | *Research Scientist, National Marine Mammal Laboratory, NOAA*

10:10 am to  
10:30 am

### COFFEE BREAK

**National Aquarium | Lyn P. Meyerhoff Auditorium**

### PLENARY 5A

10:30 am to  
11:30 am

Argos as a Tool to Advance Global Conservation and Improve Environmental Policy, Economics and Society

**National Aquarium | Lyn P. Meyerhoff Auditorium**

Moderator | David Douglas

### Sushi and Satellites: Using Satellite Technology as a Conservation Tool for Protecting Marine Fishes and Ecosystems

Barbara Block | *Charles and Elizabeth Prothro Chair in Marine Sciences, Hopkins Marine Station, Stanford University*

### Satellite Tracking Red-Breasted Geese

Meenakshi “Mini” Nagendran | *Wildlife Biologist, U.S. Fish and Wildlife Service*

### Satellite Telemetry and The Conservation Ecology of Imperiled Raptors and Water Birds

Ken Meyer | *Executive Director, Avian Research and Conservation Institute*

11:30 am  
to 1 pm

### LUNCH BREAK

*On your own*

### PLENARY 5B

1 pm to  
2 pm

Argos as a Tool to Advance Global Conservation and Improve Environmental Policy, Economics and Society

**Pier 5 Hotel | Harbor West Ballroom**

Moderator | David Douglas

### How Satellite Tracking Has Helped Advance Marine Vertebrate Conservation Science

Matthew Witt | *Scientist, Marine Turtle Research Group, Centre for Ecology and Conservation, University of Exeter in Cornwall*

### Satellite Telemetry of Intra-Amazonian Migrant Birds: What We Know and Where We Are Going

Lisa Davenport | *Research Associate, Duke University Center for Tropical Conservation*

### Golden Eagles` Use of the North American Landscape from Natal to Adult Breeding Territories

John “Dave” Bittner | *Executive Director, Wildlife Research Institute*



## WEDNESDAY, NOVEMBER 19 CONTINUED

**2 pm to 2:40 pm** | **POSTER SESSION**  
**Pier 5 Hotel | Harbor Club**

**2:40 pm to 3 pm** | **COFFEE BREAK**  
**Pier 5 Hotel | Harbor Club**

### PANEL DISCUSSION 1

**3 pm to 4 pm** | **How Results and Conclusions are Effectively Communicated to the General Public**

**Pier 5 Hotel | Harbor West Ballroom**

Moderator | Barbara Block

**Eric Schwaab** | *Chief Conservation Officer*, Conservation and Science Division, National Aquarium

**Wallace "J." Nichols** | *Research Associate and Author*, California Academy of Sciences and Cofounder of oceanrevolution.org

**Richard Merrick** | *Chief Science Advisor and Director of Scientific Programs*, NOAA Fisheries

**Nan Hauser** | *President and Director*, Center for Cetacean Research and Conservation

### PANEL DISCUSSION 2A

**3 pm to 4 pm** | **Advances in Argos Wildlife Tracking Tools**

**Pier 5 Hotel | Harbor East D**

Moderator | Matthew Witt

#### Argos Data Access

**Debbie Stakem** | *Manager of Argos User Services*, CLS America

#### Movebank as a Free and Flexible Web-Based Interface for Analyzing Argos Wildlife Tracking Data

**John Wilson** | *Postdoctoral Researcher*, Department of Civil, Environmental and Geodetic Engineering, The Ohio State University

#### STAT: Building Capacity to Manage, Analyze and Share Animal Tracking Data

**Michael Coyne** | *Executive Director*, seaturtle.org

### PANEL DISCUSSION 2B

**4 pm to 5 pm** | **Argos Data Access and Advances in Argos Wildlife Tracking Tools (Interactive)**

**Pier 5 Hotel | Harbor East D**

Moderator | Matthew Witt

**Debbie Stakem** | *Manager of Argos User Services*, CLS America

**John Wilson** | *Postdoctoral Researcher*, Department of Civil, Environmental and Geodetic Engineering, The Ohio State University

**Michael Coyne** | *Executive Director*, seaturtle.org

### PANEL DISCUSSION 3

**4 pm to 5 pm** | **Conservation and Policy Applications of the Argos System—A Success Story**

**Pier 5 Hotel | Harbor West Ballroom**

Moderator | Helen Bailey

#### Tracking Marine Diving Birds in the Mid-Atlantic

**James Woehr** | *Avian Biologist*, Bureau of Ocean Energy Management

#### Determining Offshore Use of Seaduck Species in Federal Waters of the Mid-Atlantic United States Using Satellite Tracking

**Alicia Berlin** | *Research Wildlife Biologist*, USGS

#### Determining Wintering Areas and Migration Routes of Red-Throated Loons in Atlantic Offshore Waters Using Satellite Tracking

**Iain Stenhouse** | *Marine Bird Program Director*, Biodiversity Research Institute

#### Satellite Tracking of Northern Gannet (*Morus bassanus*) Activity in U.S. Mid-Atlantic Waters

**Bill Montevecchi** | *University Research Professor*, Memorial University of Newfoundland

### EVENING ICEBREAKER EVENT

**7 pm to 9 pm** | **By Invitation Only; Includes All Conference Speakers and Panelists**

**Pazo Restaurant**

## THURSDAY, NOVEMBER 20

### PLENARY 6

**8:30 am to 10:10 am** | **Using Argos Tracking to Assess the Impacts of Climate Change on Wildlife**

**National Aquarium | Lyn P. Meyerhoff Auditorium**

Moderator | Helen Bailey

#### Use of Argos Data to Design a Marine Protected Area for the Largest Penguin Colony in the World

**P. Dee Boersma** | *Wadsworth Endowed Chair in Conservation*, University of Washington

#### Using Argos to Assess the Response of Polar Bears and Pacific Walruses to Arctic Sea Ice Loss

**George Durner** | *Research Zoologist*, USGS Alaska Science Center

#### Penguins and Climate Variability: Foraging Responses of King Penguins in the South Indian Ocean

**Charles-Andre Bost** | *Scientist*, Centre d'Etudes Biologiques de Chize/Le Centre National de la Recherche Scientifique (CEBC-CNRS)



## THURSDAY, NOVEMBER 20 CONTINUED

### Fish Futures: Observation, Adaptation and Response to Climate Change

**Kevin Weng** | *Assistant Professor*, Virginia Institute of Marine Science, College of William and Mary

10:20 am to  
10:50 am

#### COFFEE BREAK

**National Aquarium** | *Lyn P. Meyerhoff Auditorium*

#### PLENARY 7

10:50 am to  
11:30 am

### The Argos System

**National Aquarium** | *Lyn P. Meyerhoff Auditorium*

Moderator | Bill Woodward

#### An Overview: The Argos System

**Michel Guigue** | *Data Collection Missions Manager*, CLS Group

#### Improving Argos Location and Data Collection for Low Power Platforms

**Remy Lopez** | *Scientist*, System Activities and Radiolocalisation, CLS Group

11:30 am  
to 1 pm

#### LUNCH BREAK

*On your own*

#### PLENARY 8

1 pm to  
2:40 pm

### Argos Tracking—Best Practices and Lessons Learned

**Pier 5 Hotel** | *Harbor West Ballroom*

Moderator | Randall Wells

#### Considering the Fate of Satellite Tags: Interactions With Stakeholders and User Responsibility When Encountering Tagged Animals

**Neil Hammerschlag** | *Research Assistant Professor*, Department of Marine Ecosystems and Society, Rosenstiel School of Marine and Atmospheric Science, University of Miami

#### Satellite Telemetry Gives Endangered Whales a Voice to Solve Conservation Challenges and Mitigate Anthropogenic Risks

**Bruce Mate** | *Director and Endowed Chair*, Marine Mammal Institute, Oregon State University

#### Techniques For Implant Surgery of Satellite Transmitters in Seaducks

**Glenn Olsen** | *DMV*, USGS Patuxent Wildlife Research Center

#### The Way Forward For Tagging Marine Pelagic Animals With Pop-Up Satellite Archival Tags—Lessons Learnt and Perspectives For Future Studies

**Molly Lutcavage** | *Director of Large Pelagics Research Center and Research Professor*, UMass Amherst

### Defining Loggerhead Sea Turtle (*Caretta caretta*) Intensive Use Areas: A Cumulative Analysis of Seasonal Utilization Distributions

**Gwendolyn Lockhart** | *GIS/Research Specialist*, Virginia Aquarium and Marine Science Center

2:40 pm  
to 3 pm

#### COFFEE BREAK

**Pier 5 Hotel** | *Harbor Club*

#### PLENARY 9

3 pm to  
3:30 pm

### How Must Argos Evolve in Order to Keep Pace With the Increasingly Complex Wildlife Tracking Requirements?

**Pier 5 Hotel** | *Harbor West Ballroom*

Moderator | Greg Skomal

#### Prospects for the Argos System: Getting More With Less

**David Douglas** | *Research Wildlife Biologist*, USGS Alaska Science Center

#### PANEL DISCUSSION 4

3:30 pm to  
4:15 pm

### Sustaining the Future of Argos Wildlife Tracking

**Pier 5 Hotel** | *Harbor West Ballroom*

Moderator | Bill Woodward

**Jeremy Weirich** | *Subcommittee Staff Director*, U.S. Senate Committee on Appropriations, Subcommittee on Commerce, Justice and Science

**Eric Schwaab** | *Chief Conservation Officer*, Conservation and Science Division, National Aquarium

**Philippe Gaspar** | *Scientific Coordinator*, Satellite Oceanography Division, CLS Group

**Richard Spinrad** | *Chief Scientist*, NOAA

**Jim Hanlon** | *Chief Executive Officer*, Institute for Ocean Research Enterprise, Dalhousie University

#### PLENARY 10

4:15 pm to  
4:30 pm

### Closing Remarks

**Pier 5 Hotel** | *Harbor West Ballroom*

**Bill Woodward** | *Vice President of Environmental Monitoring*, CLS America



# GUEST SPEAKERS

\* Denotes Invited Speakers



**Chris Andrews**  
*Senior Curator,  
Sea Life US*



**Gerardo Ceballos\***  
*Scientist, Instituto de Ecologia,  
Universidad Nacional Autonoma  
de Mexico, 2014 Indianapolis  
Prize Finalist*



**Michel Guigue\***  
*Data Collection Missions  
Manager, CLS Group*



**Helen Bailey\***  
*Research Assistant Professor,  
Chesapeake Biological Laboratory,  
University of Maryland Center for  
Environmental Sciences*



**Michael Coyne**  
*Executive Director,  
seaturtle.org*



**Neil Hammerschlag\***  
*Research Assistant Professor,  
Department of Marine Eco-  
systems and Society, Rosenstiel  
School of Marine and Atmosph-  
eric Science, University of Miami*



**Alicia Berlin\***  
*Research Wildlife Biologist,  
USGS*



**Eduardo Amir Cuevas Flores**  
*Scientist, Pronatura Peninsula  
de Yucatan*



**Jim Hanlon\***  
*Chief Executive Officer,  
Institute for Ocean Research  
Enterprise, Dalhousie University*



**John "Dave" Bittner**  
*Executive Director,  
Wildlife Research Institute*



**Lisa Davenport**  
*Research Associate,  
Duke University Center  
for Tropical Conservation*



**Kristen Hart**  
*Research Ecologist,  
USGS*



**Barbara Block\***  
*Charles and Elizabeth Prothro  
Chair in Marine Sciences,  
Hopkins Marine Station,  
Stanford University*



**Charles "Chip" Deutsch**  
*Associate Research Scientist,  
Florida Fish and Wildlife  
Conservation Commission*



**Nan Hauser\***  
*President and Director,  
Center for Cetacean  
Research and Conservation*



**P. Dee Boersma\***  
*Wadsworth Endowed  
Chair in Conservation,  
University of Washington*



**David C. Douglas\***  
*Research Wildlife Biologist,  
USGS Alaska Science Center*



**Salim Javed\***  
*Section Head,  
Terrestrial Assessment and  
Conservation, Terrestrial  
and Marine Biodiversity*



**Charles-Andre Bost\***  
*Scientist, Centre d'Etudes  
Biologiques de Chize/Le  
Centre National de la  
Recherche Scientifique*



**George Durner\***  
*Research Zoologist,  
USGS Alaska Science Center*



**David Johnson\***  
*Wildlife Biologist,  
Idaho Cooperative Fish  
and Wildlife Research Unit*



**Walter "Sean" Boyd**  
*Research Scientist,  
Environment Canada*



**Philippe Gaspar\***  
*Scientific Coordinator,  
Satellite Oceanography  
Division, CLS Group*



**Amy Kennedy**  
*Research Scientist,  
National Marine Mammal  
Laboratory, NOAA Fisheries*

## GUEST SPEAKERS CONTINUED



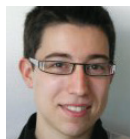
**Gwen Lockhart**  
*GIS/Research Specialist,*  
Virginia Aquarium and Marine  
Science Center



**Meenakshi "Mini" Nagendran**  
*Wildlife Biologist,*  
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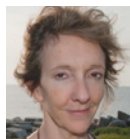
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of Sciences and Cofounder  
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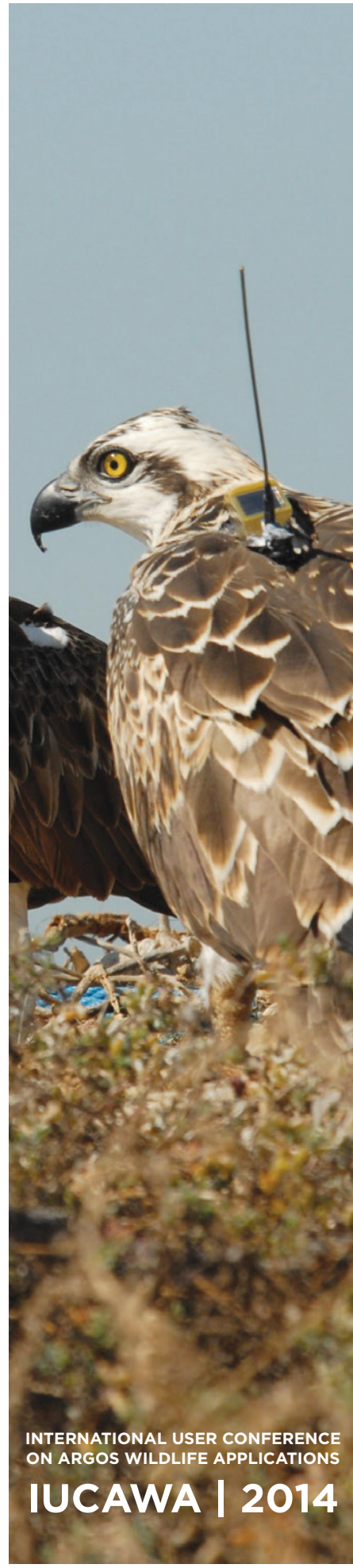
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*Manager of Argos*  
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*\* Denotes Invited Speakers*





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