RIGHT WHALE NEWS

An independent forum for right whale conservation and recovery,
published four times a year in February, May, August, and November

Volume 18 Number 3 ***September 2010***

Roger Payne: Same Voice, New Mission

Jim Hain, Editor

Roger Payne on the sidesprit of the R/V *Odyssey*, with sperm whales in the background. He is currently engaged in "the most important research of my life."

The 1972 *National Geographic* article by Roger Payne caused right whales to surface and swim into our collective consciousness. The Argentine Península Valdés study, is now in its 40th year (his former student, Victoria Rowntree, now directs the study). Early on, Roger established that right whales were individually identifiable by the markings on their heads. This pioneering research was central to work with other cetacean populations and is the basis for many subsequent studies and publications. For species other than right whales, the highlights of Roger's career include the 1967 discovery (with co-author Scott McVay) of songs in humpback whales; the 1970 LP "Songs of the Humpback Whale," which sparked the "save the whales" movement that sought to end commercial whaling; the humpback whale songs included among the messages aboard the *Voyager* spacecraft (launched in 1977) sent on a journey deep into the solar system and beyond; and (with co-author Doug Webb) the 1971 pivotal publication describing long-range communication in fin and blue whales.

Roger Payne stands with folks like Jane Goodall and E.O. Wilson, all of whom began with species-focused studies, and over the years have continued to evolve into articulate spokespersons for environmental awareness and action. Roger is a global thinker, visionary, and collaborator. In recent years, this has translated into a new and important endeavor—studying and publicizing the pollution of the world's oceans; which he describes as "the most important research of my life." On 17 September 2010, *Right Whale News* met with Roger at his home in South Woodstock, Vermont, for an update. Other collaborators were contacted and resources accessed to prepare an article that describes vision, stamina, the evolving nature of science, and the benefits of broad collaboration.

Península Valdés. The first year of the study was 1970. In the early years, this right whale population was estimated at 450-600, and today, in the 40th year, the program follows the lives of more than 2,600 known individuals. Noteworthy is that this is the longest continuous field study of any whale species based on recognizable individuals. In recent years, this study of right whales has expanded to include molecular biology and toxicity studies (described below). Collaborators include the Instituto de Conservaciòn de Ballenas (ICB) in Argentina; the Seger laboratory at the University of Utah, and the Wise Laboratory of Environmental and Genetic Toxicology at the University of Southern Maine, Portland, Maine.

Voyage of the Odyssey. After 13 years of fundraising, the 93-ft ketch and its 12-member crew departed San Diego, California, in March 2000, on a 5 ½ year voyage to sample ocean pollution on a global scale. The choice of sperm whales as indicators of ocean health was two-fold: 1) it was felt that the world would likely pay attention to a whale (rather than a mullet for example), and 2) logistically—sampling in the equatorial region would collect from that region's more resident females and from the males who migrate there for mating. For the males, the blubber and skin is laid down in polar regions, and the polar sample is thus brought by the whales to the boat without both vessel and crew having to experience the "roaring forties" and "screaming sixties." A total of 955 sperm whale tissue biopsies was collected for toxicological analysis, and to establish a baseline for future comparative studies.

The results to date demonstrate that the oceans are more polluted than generally thought, including some of the most remote oceanic areas (*e.g.*, Kiribati (formerly the Gilbert Islands) in the middle of the Pacific proved to be one of the most polluted areas). The most important finding to date has been the detection of the presence of chromium (used in paints and stainless steel; recall the Erin Brockovich film). There is uncertainty as to where the chromium is coming from and why it is accumulating in the whales. Toxicologist John Wise feels it is possible the whales may be inhaling it. Because chromium can induce adverse chromosomal and reproductive effects, there is concern. Next most significant are the polybrominated flame retardants. From there, the contaminants include other toxic metals (*e.g.*, mercury, aluminum,

selenium, arsenic, and lead); nanoparticles (including silver, gold, and titanium); and the organohalogens (PCBs, DDT, and HCB).

Cell Lines and the Odyssey *Laboratory*. A collaboration between Ocean Alliance and the Wise Laboratory of Environmental Toxicology at the University of Southern Maine includes a new and important dimension—the development of cetacean (currently sperm, fin, and humpback whale) cell lines. A cell line is a renewable population of species-specific cells grown in culture, which can be experimentally controlled and manipulated to study toxicology and other health issues. In controlled toxicological experiments, the cells can be exposed to various levels of a specific toxicant, and the effects on the cells and their DNA observed. In this regard, the *Odyssey* is noteworthy. It is not only a sailboat, or research vessel, but a floating laboratory—it is equipped with the first state-of-the-art cetacean cell-culture laboratory.

Deepwater Horizon and the Gulf of Mexico. The 20 April 2010 *Deepwater Horizon* oil rig explosion has been well-reported. Less well-known is the resident population of about 1,600 sperm whales in the Gulf of Mexico. In mid-July of this year, the *Odyssey* departed Portland, Maine, for the Gulf. As of this date, the *Odyssey* crew has collected biopsies from 45 sperm, 4 humpback, and 2 fin whales. A next step is to sample from the small population of Bryde's whales, followed by the development of a cell line from that species.

John Wise, collaborator and toxicologist describes, "We'll take the cell lines on sperm whales and other species and treat them with dispersants to learn whether or not they break DNA." His laboratory will also expose the cell lines to crude oil and a combination of crude and dispersants. Studies will also examine skin samples to see if a signal from the oil spill makes its way into the tissues. Iain Kerr, vice-president and CEO of Ocean Alliance, describes that, for this year's samples, it is unlikely that contaminants from the spill and dispersants have had time to pass up the food chain, so these samples may be a "before" picture, with samples in subsequent years providing the "after."

Península Valdés 2010. Observational biology has now joined with modern analytical capabilities and molecular biology for the ongoing studies of the Península Valdés right whale population. Variation in carbon stable isotope ratios in baleen has been used to infer foraging ecology (Rowntree *et al*. 2001), and global climate events were linked to southern right whale breeding success (Leaper *et al*. 2006). Currently, risk assessment studies (with cell line data as a key component) will link the long-standing right whale population study in Argentina with examination of contaminant levels in known individual whales for their potential effects on behavior and reproduction. Related to this topic is the search for an explanation of the die-offs in Argentina and Brazil (*e.g.,* the die-off of the 189 mostly female right whale calves in 2007 and 2008)

The Future. Near the close of our conversation with Roger Payne, he brought forward an additional concern. A recent study (Boyce *et al*. 2010) showed a global phytoplankton decline for eight of ten ocean regions during the past century. The long-term declining trends seem to be related to increasing sea-surface temperatures, and will have implications for marine ecosystem health and fisheries (more than 15% of the world's people depend on food from the sea as their principal source of animal protein). With the reports of ocean contaminants, global warming, and decreasing phytoplankton production, the future looms ominously before us. Roger worries that toxic contaminants pose a danger that may be as serious as the fatal harpoon. Further, such pollution is reaching far beyond whales to the global human population through the fish and seafood we consume. Roger Payne, indefatigable cetacean biologist, pioneer, and visionary, is continuing on a mission (along with colleagues and collaborators) to create an informed public, change minds, inspire action, and restore the health of the world's oceans. In his words, "the environmental crisis we face provides our generation with the most singular opportunity for greatness ever offered to any generation in any civilization. If we are aware of what was occurring but do nothing, we will be vilified, but IF we seize the opportunity, and take the necessary steps, we can become the most heroic generation in history and take our place among the stars."

For further information:

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Websites:
www.oceanalliance.org
www.usm.maine.edu/toxicology

2010: An Unusual Season in the Bay of Fundy

Contributed by Amy Knowlton

The New England Aquarium conducted its 31st year of surveys in the Bay of Fundy (BOF) this past summer. A total of 17 surveys were conducted between August 2nd and September 19th on the *R/V Nereid* with a second vessel, the *R/V Callisto* expanding the survey coverage on five of those days. Poor weather in the latter part of September prevented any surveys after 19 September.

Despite extensive coverage for much of the season, especially in August, the number of right whales was extremely sparse. Only 106 sightings were collected by the two vessels, considerably fewer than the 863 sightings collected in the BOF by NEAq in 2009 and the lowest sightings tally for the entire 31-year period. Preliminary findings show only 35 identifications to the catalog plus five calves of the year. This is in stark contrast to the 168 individuals seen in the Bay in 2009. Of the 13 other (non-sighted) mother-calf pairs reported from the SEUS, only two of the mothers were so-named "non-Fundy" females who typically do not bring their calves to the Bay—so the absence or non-sighting of 11 mother-calf pairs in the 2010 BOF season is unexplained. Of the 30 non-cow identifications, over two-thirds were adult or juvenile males, which is unusual. Also notable were the observed behaviors. Very few surface-active groups were seen. Those we did see usually involved two males engaged in head pushing behavior, a behavior usually associated with "gunshot" vocalizations. Single animals were typically moving fast—they would be at the surface for 2-3 breaths, dive for around 8-10 minutes and surface quite a distance away. Many of the animals had mud on their heads indicating contact with the bottom, yet most of the individuals were seen on only one day during the season suggesting that they were not taking up residency in the Bay to feed.

We did receive photographed sightings from other collaborators in the Bay that boosted the tally of individuals by around 5-8 animals but no one found a notable aggregation of right whales in the Bay. What was quite surprising was the presence of sperm whales for the entire field season. The sperm whales were first sighted by whale-watch boats in early August, and by the NEAq team beginning on August 14th. They remained in the Bay through our last survey day. Although we didn't always see them, using a hydrophone, we could easily hear their echolocation clicks. We don't yet know how many unique individuals were seen during the season, but we estimate that at least six were in the Bay. We have only seen sperm whales in the Bay on one prior occasion over the 31 years—a sighting of one individual in the company of three white-sided dolphins on 22 September 1991. In addition to sperm whales, other more atypical species we saw this year included pilot whales, white-beaked dolphins, and ocean sunfish, as well as a lot of unusual jellyfish. The presence of several species that are squid eaters and the lack of right whales suggest that something had shifted in the food resource. Oceanographically, the surface water temperature was warmer than normal and there are indications that warm slope water may have infiltrated into the Gulf of Maine this spring and summer. This pattern tends to diminish the copepod plankton resource. We will be conferring with oceanographers and others to investigate what changes they have documented in the currents and the food resources in the Gulf of Maine and the potential impacts on right whales and other species.

Although there were a handful of right whale sightings over the course of the summer off southern Jeffreys Ledge; Mt. Desert Island; southwest of Yarmouth, Nova Scotia on Lurcher Shoal (~15 right whales); and on Roseway Basin (~30 right whales). The latter two sightings were made by a second NEAq survey effort in late August. In summary, the majority of the population remained unaccounted for in the summer and fall of 2010. Hopefully many of them have found an adequate food resource outside of the typical feeding areas.

FY2010 Right Whale Spending Plan (Continued)

As has been the practice in recent years, the May issue of *Right Whale News* reported the NMFS right whale spending plan for the current fiscal year. In this issue, an update on several topics is provided.

Prescott Grants for FY 2010 Awarded

The John H. Prescott Marine Mammal Rescue Assistance Grant Program, or Prescott Grant Program, provides grants or cooperative agreements to eligible stranding network participants for: 1) recovery and treatment (*i.e.*, rehabilitation) of stranded marine mammals, 2) data collection from living or dead stranded marine mammals, and 3) facility upgrades, operation

costs, and staffing needs directly related to the recovery and treatment of stranded marine mammals and collection of data from living or dead stranded marine mammals. Operational support for stranding network personnel allows local networks to support response to all strandings, including large whales. However, unpredictable costs for heavy equipment, towing, tissue and other analyses, and disposal make budgeting difficult. Susan Barco, Stranding Response Coordinator, Virginia Aquarium and Marine Science Center, reports that at present, funding is currently available for both response and training for large whale necropsies.

For Fiscal Year (FY) 2010 funds, 76 proposals were received by the National Oceanic and Atmospheric Administration (NOAA) for Prescott Grants. Of these, 42 were funded. Of the 42, 15 may be wholly or partially related to large whales and specifically, right whales (Table 1).

Table 1. FY10 Prescott Grants awarded by NOAA that are relevant to North Atlantic right whale strandings and necropsies. (Source: NMFS Office of Protected Resources, Silver Spring, Maryland)

State	Applicant	Project Title	Award Number	Federal Funding
CT	Sea Research Foundation, Inc.	Support and Enhancement for the Marine Mammal Stranding Program at Sea Research Foundation's Mystic Aquarium	NA10NMF4390265	99,983
FL	Hubbs-SeaWorld Research Institute	Enhancing marine mammal stranding response, public education, and stranding network preparedness along the central east coast of Florida	NA10NMF4390253	99,978
FL	Mote Marine Laboratory	Rapid detection and response to cetacean mortalities and environmental monitoring in west central Florida	NA10NMF4390254	97,378
GA	Georgia Department of Natural Resources	Enhance the Georgia Marine Mammal Stranding Network	NA10NMF4390252	30,000
MA	New England Aquarium Corporation	Enhancing efficiency; quantity of data and samples collected; and documentation in the fringes of the New England Aquarium's response range through training, equipment and outreach	NA10NMF4390231	57,139
MA	International Fund for Animal Welfare	Advancing Live and Dead Marine Mammal Stranding Response and Investigation on Cape Cod and Southeastern, Massachusetts	NA10NMF4390245	100,000
MD	Maryland Department of Natural Resources	Enhancing Marine Mammal Sample Collection, Diagnostic Testing, and Outreach in Maryland	NA10NMF4390258	71,128
ME	College of the Atlantic	Maintenance and Enhancement of the Marine Mammal Stranding Response Program (MMSRP) for the Midcoast/Downeast Region of Maine, 2010-2011	NA10NMF4390256	99,978
ME	Maine Department of Marine Resources	Enhancing Marine Mammal Stranding Response, Data Collection and Outreach in Maine	NA10NMF4390264	100,000
ME	University of New England	Operational Support and Otitis Media Investigation for the UNE Marine Animal Rehabilitation Center	NA10NMF4390266	99,745
NC	North Carolina Department of Environment and Natural Resources	Transitioning to a new stranding response program in central North Carolina through the North Carolina Division of Marine Fisheries	NA10NMF4390238	92,117
NC	University of North Carolina Wilmington	Response to and Necropsy of Stranded Large Whales in North Carolina and Virginia	NA10NMF4390250	99,980
NC	University of North	Enhancing Stranding Response in Northern North	NA10NMF4390251	99,890

	Carolina Wilmington	Carolina		
NY	Riverhead Foundation for Marine Research and Preservation	Maximizing data collection from marine mammals stranded in New York State.	NA10NMF4390257	100,000
VA	Virginia Aquarium & Marine Science Center Foundation, Inc.	Supporting Expert Response to Stranded Marine Mammals in Virginia in 2011	NA10NMF4390259	99,927

Prescott grant information (and information on grants that pertain to right whales) can be found at: www.nmfs.noaa.gov/pr/health/prescott/

FY10 Cooperative Agreements with States

State management and research agencies are closely involved in right whale management and research. The NMFS Office of Protected Resources, Silver Spring, Maryland, reports that the Northeast Regional Office/NMFS provided $600K to the Massachusetts Division of Marine Fisheries for the state's large whale conservation program, and $549.5K of congressional-interest funding to the Maine Department of Marine Resources for its project to determine fishing gear density and the potential overlap with endangered large whales in Maine.

Other Funding News

The New England Aquarium received congressional-interest funding ($1.2M) for the Consortium for Wildlife Bycatch Reduction, which includes projects to reduce entanglement risks to right whales. The University of Florida received Sea Grant funding from the Southeast Regional Office/NMFS ($246K) for a two-year study to map recreational boating traffic patterns in the northeast Florida area.

Right Whale Critical Habitat to be Revised

On 5 October 2010, NOAA's National Marine Fisheries Service announced that it is reviewing and revising the critical habitat for the North Atlantic right whale. (The full announcement is in the Federal Register 75(193): 61690-61691, 6 October 2010.) In October 2009, NOAA received a petition (from the Center for Biological Diversity, Defenders of Wildlife, Humane Society of the United States, Ocean Conservancy, and the Whale and Dolphin Conservation Society) to enlarge existing and designate new critical habitat. The petition sought to expand the areas designated as critical feeding and calving habitat areas, and to include a migratory corridor. According to NMFS, the agency found that the petition included scientific information indicating

that a revision may be warranted. Proposed changes will follow a 12-month determination and are expected in the latter half of 2011.

Draft Stock Assessment Reports for Review

As part of Marine Mammal Protection Act (MMPA) section 117 requirements, NMFS prepares annual marine mammal stock assessment reports (SARs). These reports are prepared in consultation with regional Scientific Review Groups (SRGs) and are available for public review. Of interest to the right whale community, the draft 2010 SARs are available at: www.nmfs.noaa.gov/pr/sars. Individual sections can be downloaded (saves having to download the entire document). Right whales are included in the "large whales" section. Comments are due by 2 November 2010, and may be emailed to: mmsar.2010@noaa.gov.

Changes

Kristin Koyama, former NERO ship-strike coordinator has taken a new position with NOAA's Office of International Affairs in Washington, D.C. **Michael Asaro** is the new point of contact for right whale ship-strike related issues in the Northeast Region, including notifications for Dynamic Management Areas. **Michael A. Simpkins** is the new Branch Chief for the Protected Species Branch at the Northeast Fisheries Science Center, Woods Hole, Massachusetts. Mike was formerly with the NMFS Office of International Affairs in Silver Spring, Maryland, and prior to that was the Assistant Scientific Program Director with the Marine Mammal Commission in Bethesda, Maryland. The former Branch Chief, **Richard Merrick**, is now the NEFSC Division Chief for the Resource Evaluation and Assessment Division. **Robert Gisiner** is now Branch Chief, Marine Sciences Branch, Navy Energy and Environmental Readiness Division, Arlington, Virginia. Bob was formerly the Scientific Program Director at the Marine Mammal Commission.

Calendar

3-4 November 2010. North Atlantic Right Whale Consortium Annual Meeting, New Bedford Whaling Museum, New Bedford, Massachusetts. Early Registration deadline: 8 October; Registration deadline: 29 October. Website: www.rightwhaleweb.org.

16 November 2010. Southeast U.S. Right Whale Forum (evolved from the former SE U.S. Implementation Team meetings), Jacksonville Zoo, Jacksonville, Florida. For additional information: tom.pitchford@myfwc.com. On the following day, 17 November, the re-organized SE U.S. Implementation Team will meet at the same location. For additional information: barb.zoodsma@noaa.gov.

20 November 2010. The 2nd Annual Right Whale Festival, 10am–4pm, Seawalk Pavilion, Jacksonville Beach, Florida. The Right Whale Festival will coincide with the arrival of right whales off the coast of Georgia and Florida. This one-day festival will feature a beach cleanup, activities for children, music, food, and displays geared toward informing and inspiring the community about right whales, their habitat, and their conservation. Website: www.rightwhalefestival.org.

Scientific Literature and Reports

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Wade, P.R., A. Kennedy, R. LeDuc, J. Barlow, J. Carretta, K. Shelden, W. Perryman, R. Pitman, K. Robertson, B. Rone, J.C. Salinas, A. Zerbini, R.L. Brownell, Jr., and P.J. Clapham. 2010. The world's smallest whale population? Biology Letters. Published online, 30 June 2010. Digital Object Identifier: 10.1098/rsbl.2010.0477. The paper reports 30 whales in the eastern population of the North Pacific right whale, *Eubalaena japonica*.

Right Whale News

Right Whale News is a publication of Associated Scientists at Woods Hole. It is disseminated online through the courtesy of the North Atlantic Right Whale Consortium. The Editor is Jim Hain. The editorial board consists of Julie Albert, Mark Dittrick, Tim Frasier, Robert Kenney, Scott Kraus, Bill McWeeny, Hans Neuhauser, Susan Parks, and Melissa Patrician.

Current and back issues of *Right Whale News* published between 1994 and 2010 are available at the North Atlantic Right Whale Consortium website, www.rightwhaleweb.org—select the *Right Whale News* tab.

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