

**IMPLEMENTATION OF MERCHANT MARINER
EDUCATION MODULES TITLED**

**“VOYAGE PLANNING AND MARINE ENVIRONMENTAL
PROTECTION MEASURES TO AVOID COLLISIONS
WITH THE NORTH ATLANTIC RIGHT WHALE”**

AT U.S. MARITIME ACADEMIES

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Final Report to the
National Marine Fisheries Service
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INTRODUCTION

The North Atlantic right whale (*Eubalaena glacialis*) remains severely endangered, after centuries of whaling, despite a cessation in hunting of this species in 1935. In recent history, it has been determined that vessel strikes are the leading cause of documented mortality in this struggling population resulting in reduced population growth and a failure of the species to rebound. Since 1970, 28 of 75 documented mortalities are known to have been the result of vessel strikes. Approximately, 50% of these vessel struck whales have been documented in the last 10 years indicating either an increase in vessel strikes or possibly increased awareness and reporting of the dead whales. In an effort to mitigate this unsustainable level of vessel strike mortality, the National Marine Fisheries Service (NMFS) has undertaken several efforts to reach out to and educate mariners. This educational outreach has taken many forms including the inclusion of information about right whales and precautionary measures in the U.S. Coast Pilots, the implementation of two Right Whale Mandatory Ship Reporting Systems, the development of informational videos and placards geared towards mariners, distributing information about right whale sightings and locations to ships, attending shipping industry meetings, briefing the industry on right whale issues, and seeking input from the maritime industry to reduce the whale and ship collisions. Despite these numerous efforts at education and outreach, vessel collisions with right whales remain at a level that is unsustainable for this population.

To further this education and outreach endeavor, NMFS, Northeast Region, contracted the New England Aquarium in June 2003 to develop an education module to be utilized for training students in merchant mariner academies. Two modules were developed to allow academy professors full teaching flexibility- the long module is approximately a full class length in duration, or about 50 minutes; and the short module, approximately 20 minutes in duration. The initial version of these education modules was completed in March 2005. In August 2005, the New England Aquarium was contracted to work with seven maritime academies primarily along the eastern seaboard of the U.S (including the Coast Guard and the Navy) to incorporate the education modules into their respective curricula. This report details this implementation process and provides a suite of recommendations for next steps.

MODULE UPDATES

After completion of the initial contract to develop the module, module Version 2.0 was in hand. However the module still needed some further refinement to ensure that it flowed well and contained concise information and necessary references. Upon receiving this contract, effort was initially focused on these revisions resulting in Version 2.1. After pilot testing this version with Maine Maritime Academy in April 2006 and receiving

additional feedback, further minor changes were made. This process was undertaken and completed before approaching the remaining schools with Version 2.2.

SCHEDULING

P. Gerrior took the lead on contacting and scheduling meetings with each school. Initially a letter from the New England Aquarium was sent out to each school during the summer of 2006 to make each school aware of the existence of the module and to offer the opportunity for us to visit their school for implementation purposes. During the late summer and early fall, scheduling was initiated. Scheduling proved to be a fairly onerous task as it took time to ascertain the appropriate contact and then it took repeated phone calls and emails to this appropriate person to engage them in a dialog about the education modules and to schedule a meeting with relevant staff. Through tremendous effort, scheduling and implementation occurred at 6 of the 7 schools defined in the statement of work: U.S. Coast Guard Academy, Maine Maritime Academy, Massachusetts Maritime Academy, Texas A&M University at Galveston, SUNY Maritime College, and the US Merchant Marine Academy.

The only entity where we were not able to implement the program was the U.S. Navy's Surface Warfare Officer's School (SWOS). This occurred despite repeated attempts on Gerrior and Knowlton's part to reach the appropriate contact. Tom Fetherston of the Navy provided us with a SWOS contact named David Monroe. It was subsequently learned that Monroe had retired in early 2006 long before the letter was sent introducing the training and seeking a meeting. A new contact, Lt. JG Megan Field was provided by Fetherston in November 2006 but she was unable to provide an appropriate SWOS contact. Knowlton spoke to a Lt. Cdr. Rick Hughes in January 2007 about the nature of the program (he initiated this contact at Megan Field's request) and he said he would have to run the idea by his "higher ups". After several attempts to reach him again, once contacted he stated that things move slowly in the government and he did not have an answer. Knowlton asked Tom Fetherston of the Navy to contact Lt. Cdr. Hughes but no word was received from Fetherston about this effort. Fetherston did note that one of the earlier points of contact (Lt. JG Megan Field) had been deployed to Iraq in early January.

IMPLEMENTATION

A summary of the implementation process at each of the six schools visited is provided below in the order of dates visited:

Maine Maritime Academy

Date visited:

April 3-4, 2006

Who visited by:

Knowlton, Gerrior, McWeeny

List of persons in attendance

Captain Dan Parrott - professor

Captain Larry Wade – captain of academy’s training vessel

2 class groups in Terrestrial Navigation course

Implementation Process

The long module was presented to two Terrestrial Navigation classes and responded to questions afterwards. On the first day, McWeeny presented the module to the class and on the second day, Captain Dan Parrott presented the module. On both days, the students asked numerous questions about the presentation. A survey was provided at the end of each day to the students to seek feedback on the module. The comments received from the survey were mostly positive with some minor criticisms. No major changes were necessary to the Modules based on the surveys indicating that the Modules are effective for classroom use.

Implementation plan

Captain Parrott intends to utilize the long module in his Terrestrial Navigation courses, a course aimed at juniors and seniors. Captain Wade will also integrate right whale information further into the training voyages on the *M/V State of Maine*.

U.S. Coast Guard Academy

Date visited:

November 15, 2006

Who visited by:

Knowlton, Gerrior

List of persons in attendance

Captain Kurt Colella, Dean of Academics
CDR William Meese, Chief, Cadet Professional Development
Lt. Commander Pat Dougan
Lt. Commander Riley Gatewood
Professor Karina Mrakovcich
BMC John Wright
Lt. Commander Dale Bateman

Implementation Process

Commander William Meese organized the meeting. The short module was presented informally with a lot of back and forth conversation about both modules and ideas of how to implement into the Coast Guard system. The attendees realized the importance of this module to their efforts.

Implementation Plan

Chief Meese sent a follow-up letter (see Appendix 1) as to their plans for implementation. They noted that they would 1) include right whale training in a Saturday morning military training schedule for the Spring 2007 semester and may request NMFS support for an instructor for the training event; and 2) place right whale voyage planning information into the broader voyage planning section of their Nautical Science course (taken by all sophomores). They also strongly recommended that we provide the curriculum package to the Commander, Coast Guard Atlantic Area to ensure that all shore side and bridge watch standers have this information available. Note: we did forward a copy of the binder and CD to Katie Moore at the CG Atlantic Area to follow-up on his suggestion.

Massachusetts Maritime Academy

Date visited:

January 9, 2007

Who visited by:

Knowlton, Gerrior

List of persons in attendance

Captain Tim Brady

Professor Malcolm MacGregor

Lucy Vliestra

Captain Jim Quinn

Rich Yazbek, professor of law

Implementation Process

The long module was presented informally to the group with questions back and forth and ideas about implementation. Interestingly, some members of this group (the non-ship operators) were very confused about the Mandatory Ship Reporting System and thought that ships were being requested to provide whale sighting information when reporting in. Although we clarified it for them, this is something that should be carefully reviewed when updating the next version to make it very clear what this MSR system is for.

Professor MacGregor requested a second binder since the first binder was going to be put onto the training ship that was heading out to sea within days after our meeting. A second binder was sent to Professor MacGregor.

Implementation Plan

The implementation plan was not clearly defined at this meeting. Captain Quinn reported he taught the module and used the video in the Voyage Planning course done on the ship during the sea term. Further follow-up is needed to determine how they intend to use the curriculum package at Mass Maritime.

Texas A&M University at Galveston

Date visited:

February 13, 2007

Who visited by:

Knowlton, Gerrior

List of persons in attendance

Captain August Roth

Captain Buddy Blackburn, Captain of the training ship, *M/V Texas Clipper*

Captain Jack Smith

Implementation Process

The long module was presented informally to the group with questions back and forth and ideas about implementation. This group provided some very useful feedback about other avenues of getting information out to mariners including the SafetyNET system of GMDSS.

Implementation Plan

Captain Roth will utilize the curriculum package in her Seamanship I (freshmen course), Terrestrial Navigation and Voyage Planning courses. Capt. Blackburn will use the short module for senior review and refresher training; and Capt. Jack Smith will incorporate the training in his Seamanship II and Ship Handling courses.

US Merchant Maritime Academy (USMMA)

Date visited:

February 20, 2007

Who visited by:

Gerrior, McWeeny

List of persons in attendance

Captain Brian Hall - Acting Head of Marine Transportation Department

Implementation Process

Presented the long module informally to Captain Hall at the Kings Point US Merchant Marine Academy. McWeeny presented the introductory and biological sections of the module with Gerrior presenting the legal mandates, regulatory, voyage planning, watchkeeping and proposed regulation sections. Capt. Hall was quite engaged in the training and posed many questions throughout the three-hour meeting. We provided Capt. Hall with the training binder, a pilot package with video, a right whale model, and reviewed the reference section included on the CD and in the binder. The CD rom was sent in the fall 2006 to the Dean of Academics, Dr. Gary Lombardo, as a follow up to the July 2006 training introduction letter.

Implementation plan

Captain Hall expected that this training would be incorporated into the curriculum in the 2007/2008 academic year, if not sooner. Hall proposed that the training modules would lend themselves to the Academy's Sea Project (training at sea in both the sophomore and junior years) and to the Terrestrial Navigation, Seamanship, and Licensing Preparation courses. Capt. Hall felt that students would be exposed to the right whale training approximately three times during their four year studies at the USMMA.

The US Merchant Maritime Academy is a federal higher education institution operated by the US Maritime Administration (MARAD). We briefed Capt Hall on the cooperating role MARAD has taken with educating their ship operators about the right whale issues and encouraged incorporation of the training as soon as possible.

State University of New (SUNY) Maritime College

Date visited:

February 21, 2007

Who visited by:

Gerrior, McWeeny

List of persons in attendance

Mr. Anthony Palmiotti, Head of Marine Transportation Department
Captain Walter Nadolny - Professor Marine Transportation, Global Business & Transportation
Peter Vecchio- Professor of Navigation
2 class groups

Implementation Process

Presented the long module to Palmiotti, Nadolny and Vecchio and approximately 50 students (freshmen and seniors) at the Fort Schuyler SUNY Maritime College. The presentation format was actually a lecture to two classes that had been combined for this lecture only. The freshmen attending were taking a navigation class and the seniors were in a licensing preparation seminar. McWeeny presented the introductory and biological sections of the module with Gerrior presenting the legal mandates, regulatory, voyage planning, watchkeeping and proposed regulation sections. The broad spectrum of students in attendance provided some interesting discussion and questions. We furnished the department head with the training binder, two pilot packages with videos, a right whale model, and reviewed the reference section included on the CD and in the binder with the professors. The CD rom was sent in the fall 2006 to the new provost and vice president of Academics, Dr. Joseph Hoffman, as a follow up to the July 2006 training introduction letter. After reviewing the CD, Dr. Hoffman suggested Mr. Palmiotti as the SUNY contact.

Implementation plan

Captain Nadolny related the training would be included in the Environmental Law and Policy, Environmental Management, Terrestrial Navigation and Voyage Planning courses. Mr. Vecchio expected to use the training in the license preparation class and the summer Sea Term aboard the training ship. The latter course was deemed most appropriate due to the direct and hands on applications of this training on the vessel. Full incorporation in the curriculum would be expected in the 2007/2008 academic year.

U.S. Navy Surface Warfare Officers' School, Newport , RI

Unable to secure a visit to the school despite numerous attempts to schedule a meeting.

RECOMMENDATIONS

The final development of the Merchant Mariner Right Whale Shipstrike Avoidance Curriculum Package and implementation of the Package into six maritime institutions has been completed successfully. The developers consider the Curriculum Package and first implementation efforts a good start. There are, however, three aspects of the effort that must be addressed in the future to ensure optimal mariner education.

First, the Package must be kept up to date reflecting the current laws, rules, regulations and prudent practices and the amendments communicated efficiently to the institutions and individuals currently using the Package. A convenient web presence of all the materials in the Curriculum Package is very important. In addition, institutions using the Package should receive telephone and e-mail follow-up inquiries offering further implementation help and perhaps technical assistance for at least twelve months. Follow-up inquiries are known to be a critical, make or break aspect of successful implementation attempts throughout the education community.

Second, expand the implementation of the Curriculum Package to maritime training, certification and licensing schools. This effort would educate another important component of the maritime industry, i.e., existing working mariners. Implementation of the Curriculum Package at six maritime schools is an important first step but there are hundreds of additional maritime schools and training institutions in the United States that educate working mariners who attend primarily for recertification and licensing training. The Curriculum Package is clearly presented, easily managed and flexible enough to fit into most of these instructional situations.

Third, the effort encompassed in the current contract reached only a small percentage of future mariners (academy students) who may transit right whale rich waters off the east coast of the United States and Canada. Concurrent with updating the Curriculum Package and implementing for current mariners, an effort should be made to implement the Package in foreign and international maritime schools since the majority of the vessel traffic on the east coast involves foreign flagged vessels.

Below is a list of specific recommendations:

Package Updates and Implementation Follow-up

- 1) Incorporate regulation and rule changes as finalized (both U.S. and Atlantic Canada).
- 2) Update and revise both PowerPoint modules as protective measures and rules change. Those presently needed include:
 - a. Recommended routes (text and graphics) for Cape Cod Bay and off Southeast US ports.
 - b. Changes to Boston TSS (text and graphics).
 - c. Changes available (routing and TSS) on electronic NOAA charts (text).

- d. Revised MSR messages for WHALESNORTH and WHALESSOUTH including recommended speed reduction (text and graphics).
- 3) Maintain a spreadsheet document listing all institutions and educators that have received implementation training and listing information about follow-up inquiries (see Appendix 2).
- 4) Contact each institution where the Curriculum Package was implemented at 6 months and 12 months from the training date to offer further assistance and to obtain specific implementation information (i.e. assistance requested, suggested improvements to the Package, classes taught, instructors, parts of Package used, etc.)
- 5) Update the Curriculum Package Assessments test bank items to include questions about revised protective measures and rules and delete test items that are out of date.
- 6) Send out an alert to shipping interests lists any time changes are made to the modules.
- 7) Add all maritime academy contacts established to NER's shipping interests list so they are kept apprised of rulemaking changes.
- 8) Update NER and PR websites with two training modules and all associated items (references, binder cover, spine insert, pilot package availability), thus, providing for others to create their own CD rom and binder.
- 9) Create a clear system on the websites noting which pages or sections are new; revised pages to be inserted; pages to be removed; and date of change annotated on same.

Implementation in Certification and Licensing Schools and Outreach

- 10) Continue implementation of the right whale/ship strike training into additional maritime training, certification and licensing schools.
- 11) NMFS work with US Navy to 'encourage' the incorporation of the right whale/ship strike Curriculum Package and training modules in the Surface Warfare Officer's School (SWOS).
- 12) Notify all shipping interests of the availability of the training modules and reference materials via press releases, e-mails, and even more traditional methods like mail and journal articles.
- 13) Discuss with the US Coast Guard the inclusion of right whale/ship strike testing questions in the licensing exams.
- 14) NMFS follow up with Coast Guard regarding the provision of this training to all Atlantic Area shore side and bridge watch standers.
- 15) Distribute right whale sighting reports through additional media as suggested by personnel at the training academies, such as SafetyNET part of the GMDSS, which "utilizes geographic area addressing technique to direct messages to ships within a defined boundary".
- 16) Investigate the feasibility of distributing right whale sighting reports via the NOAA Port Meteorological Officers (PMOs) who work with the Voluntary Observing Ship Programs (VOMs).

Implementation in Foreign and International Maritime Schools

- 17) Support implementation of the Curriculum Package into Canadian Maritime schools.

- 18) Support the implementation of the Curriculum Package sent to Neil Bellefontaine (previously of Canadian DFO), a professor at World Maritime University in Sweden either in person, by a significant e-mail presence or training the instructor when he is in New England next. This university was established in 1983 by the International Maritime Organization.
- 19) Identify Foreign and International Maritime schools that are likely to train mariners who transit the east coast of the United States and Canada. Develop a strategy to implement the Curriculum Package in identified schools that would be effective and feasible.
- 20) Research the possibility, based on the findings in recommendation # 19, of translating the Curriculum Package into relevant foreign languages if necessary.

Appendix 1

U.S. Department of
Homeland Security
United States
Coast Guard



Superintendent
United States Coast Guard Academy

15 Mohegan Ave.
New London, CT 06320
Staff Symbol: 42
Phone: (860) 444-8495
Fax: (860) 701-6813
Email: william.r.meese@uscg.mil

16214
20 Nov 2006

Ms. Amy Knowlton
New England Aquarium
Central Wharf
Boston, MA 02110-3399

Dear Madam:

This is a follow up letter to a meeting held 15 November between National Marine Fisheries Service (NMFS) representatives Amy Knowlton (New England Aquarium) and Pat Gerrior with members of the Coast Guard Academy Professional Development and Science staffs.

First, I'd like to thank Ms. Knowlton and Ms. Gerrior for taking the time to visit the Coast Guard Academy in New London, Connecticut. The information we exchanged was interesting and professionally rewarding. We have the following feedback for NMFS concerning the meeting.

a. We plan to include Right Whale training in the Saturday morning military training schedule for the Spring semester 2007. The information and training environment are in keeping with the Commandant of Cadets' desire to bring in people from the field to provide insight and connection to what the cadets are learning. We will most likely request NMFS support in terms of an instructor for the training event. We will contact Pat Gerrior for scheduling.

b. Cadet Professional Development will seek to place the Right Whale voyage planning information into the broader voyage planning module of our Nautical Science II course (all sophomores take this class).

c. We strongly recommend NMFS provide this training module to Commander, Coast Guard Atlantic Area, so that all shore side and bridge watch standers have this information available for training purposes. It is our belief the most critical audience for your effort are the people that are currently in the field supporting the Right Whale project in terms of mandatory reporting, etc. I have taken the liberty of sending a separate letter to the Coast Guard Atlantic Area commander recommending the NMFS training module.

Again, we sincerely appreciate the effort and time you put into improving the knowledge of Coast Guard cadets.

Sincerely,

A handwritten signature in blue ink, appearing to read "W. R. Meese".

W. R. MEESE
Chief, Cadet Professional Development
U. S. Coast Guard
By direction

Appendix 2

Recipients of Merchant Mariner binders and CD's (noted with *) and other contacts

Recipient Name	Email address	School	Address	Last version of binder provided	Last version of CD provided	Meeting date
Dan Parrott*	dparrott@mma.edu	Maine Maritime Academy	Pleasant St.	2.1	2.1	3 and 4 April 2006
Dean John Barlow	jbarlow@mma.edu		Castine, ME 04420	2.2	2.2	
William Meese, LCDR*	william.r.meese@uscg.mil	Coast Guard Academy	15 Mohegan Ave.	2.2	2.2	15-Nov-2006
Dean Kurt Colella	kurt.j.colella@uscg.mil		New London, CT 0632			
Capt. Tim Brady*	tbrady@maritime.edu	Mass Maritime Academy	101 Academy Drive	2.2	2.2	9-Jan-2007
Malcolm MacGregor*	mmacgregor@maritime.edu		Buzzards Bay, MA 02532			
Dean Brad Lima	blima@maritime.edu					
Capt. Augusta Roth*	rotha@tamug.edu	Texas A&M	PO Box 1675 Galveston, TX 77553	2.2	2.2	13-Feb-2007
Capt. Brian Hall*	hallb@usmma.edu	US Merchant Marine Academy	300 Steamboat Road	2.2	2.2	20-Feb-2007
Dean Kumar	kumars@usmma.edu		Kings Point, NY 11204			
Anthony Palmiotti*	apalmiotti@sunymaritime.edu	SUNY Merchant Marine Academy	6 Pennyfield Ave.	2.2	2.2	21-Feb-2007
Capt. Walt Nadolny,	wnadolny@sunymaritime.edu		Bronx, NY 10465-4127			
Peter Vecchio	pvecchio@sunymaritime.edu					
Lt Cmdr Rick Hughes		US Navy Surface Warfare Officer's School	446 Cushing Rd. Newport , RI 02841	None	None	Not able to schedule
Neil Bellefontaine	nab@wmu.se	World Maritime University	Citadellsvagen 29 PO Box 500, S-201 24 Malmo, Sweden	2.2	2.2	None

