

Cherry Point (CHPT) Firing Exercise (FIREX) with Integrated Maritime Portable Acoustic Scoring and Simulator (IMPASS)

Marine Species Monitoring

AERIAL MONITORING SURVEYS

TRIP REPORT



29-30 November 2011

ACRONYMS AND ABBREVIATIONS

CHPT	Cherry Point Range Complex
ft	feet/foot
FIREX	Firing Exercise
ICMP	Integrated Comprehensive Monitoring Program
IMPASS	Integrated Maritime Portable Acoustic Scoring and Simulator
in	inches
km	kilometer(s)
km ²	square kilometers
m	meter(s)
NEPM	Non-Explosive Practice Munition
NM	nautical mile(s)
OPAREA	operating area

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Section 1 Introduction

Aerial marine species monitoring occurred over 29 and 30 November 2011 for a Firing Exercise (FIREX) with Integrated Maritime Portable Acoustic Scoring and Simulator (IMPASS) Exercise that occurred in the Cherry Point Range Complex (CHPT) off the eastern coast of North Carolina within the U.S. Navy's range box W-122 (14). These types of events occur periodically throughout the year and allow the U.S. Navy to fulfill essential training requirements.

As part of the compliance requirements of the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973, the U.S. Navy developed the Integrated Comprehensive Monitoring Program (ICMP). The ICMP applies by regulation to those activities on U.S. Navy training ranges and operating areas (OPAREAs) for which the U.S. Navy sought and received incidental take authorizations. In order to support the U.S. Navy in meeting regulatory requirements for monitoring established under the Final Rules and to provide a mechanism to assist with coordination of program objectives under the ICMP, monitoring of marine mammals and sea turtles during this exercise included visual surveys from a fixed-wing aircraft.

The results of marine mammal monitoring reported here are part of a long-term monitoring effort under the U.S. Navy's Marine Species Monitoring Program (Contract # N62470-10-D-3011) issued to HDR.

Section 2 Methods

Study Area

The U.S. Navy's CHPT OPAREA lies off the eastern coast of North Carolina. Protected marine species monitoring conducted during the CHPT FIREX training event was focused on the W-122 (14) box (see **Figure 1**). This area is approximately 120 to 180 kilometers (km) (65 to 98 nautical miles [NM]) offshore, covers an area approximately 3,700 square kilometers (km²) in size, and ranges in bottom depth from 2,700 to 3,800 meters (m).

The FIREX event commenced 29 November 2011 in area W-122 (14) and a total of 20 Non-Explosive Practice Munition (NEPM) rounds of 5 inch (in) Blind Loaded and Plugged were fired. Due to poor weather conditions, firing was stopped before the completion of the event. The FIREX event recommenced at 0750 on 30 November 2011 in area W-122 (14) and a total of 47 NEPM rounds of 5-in Blind Loaded and Plugged and 5 rounds of 5-in Illumination were fired, which resulted in a successful training mission. The event finished at 1300. No live explosive rounds were used during the FIREX training; therefore, no animals were exposed during this CHPT FIREX with IMPASS training event.

Aerial-Based Monitoring

Aerial-based monitoring effort was attempted during the FIREX with IMPASS within the CHPT OPAREA from 29 to 30 November 2011 (see **Figure 1, Table 1**). Survey methods were consistent with currently accepted Distance Sampling theory (Buckland et al. 2001) and followed

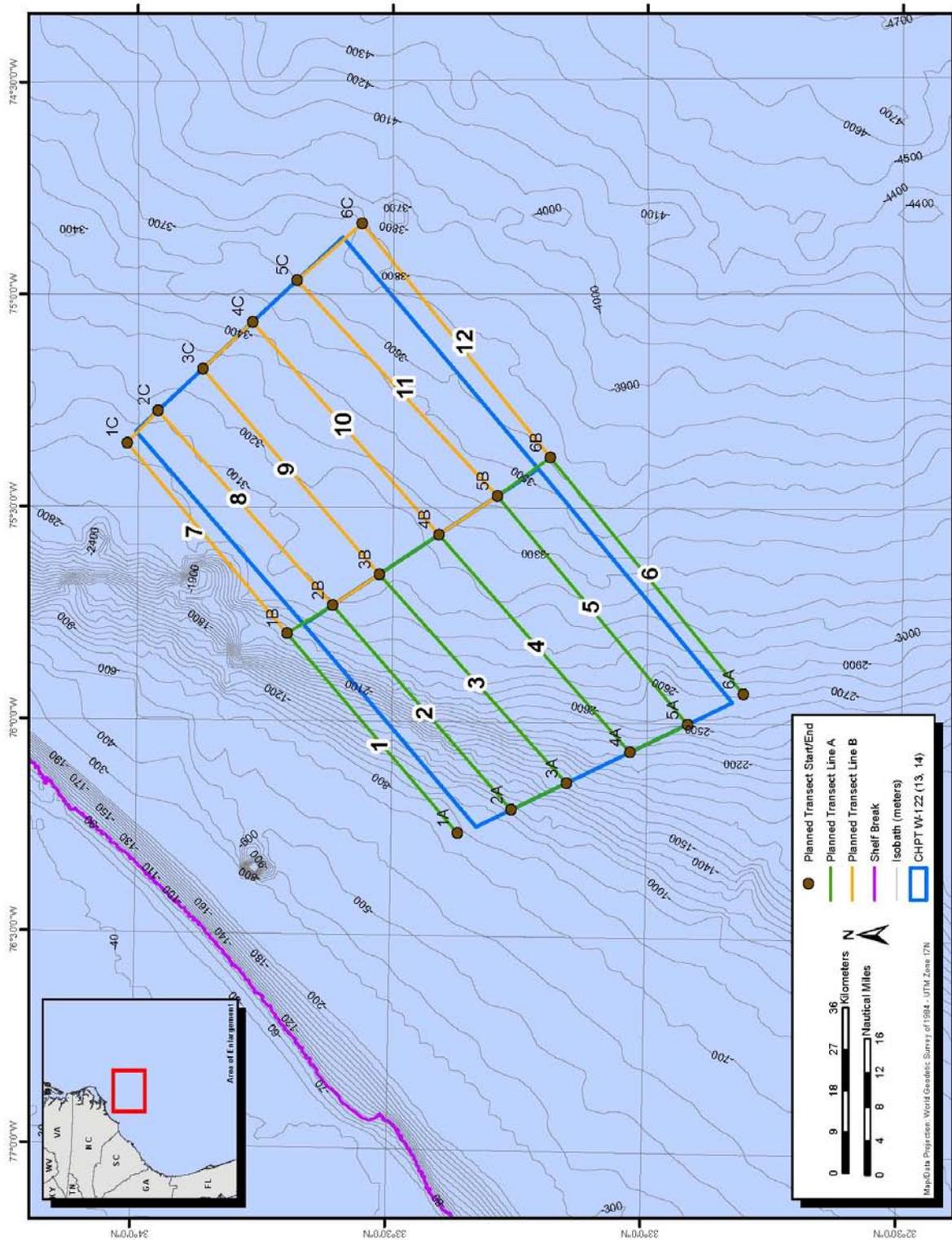


Figure 1. Pre-planned Tracklines for the Survey Effort for CHPT FIREX Monitoring.

a well-established protocol used for aerial surveys throughout all Navy Range Complexes (Smultea et al. 2009). A survey altitude of approximately 1,000 feet (ft) at 100 knots was maintained while on-effort, but might have varied slightly based on weather conditions in the area. Once a marine mammal sighting was made, a focal follow session was initiated at 1,000 ft or higher if conditions were appropriate (Smultea et al. 2009; refer to the survey methods on page 4 of this document). A lower altitude of approximately 700 to 800 ft was established after focal follow sessions for photography purposes to provide sharper images required for species identification.

Table 1. Summary of Monitoring Effort for the CHPT FIREX Training.

Date	Description	Start Time	Stop Time	Total Survey Minutes*	Total On-Effort Minutes	Trackline On-Effort Distance (km)
29 November	Transect survey (Pre-Event)	Cancelled – Poor Weather				
30 November	Transect survey (During Event)	0911	1034	83	60	207
Total				83 (≈1.4 hrs)	60 (≈1.0 hrs)	207 km

Note: * Total Survey Minutes reflect minutes occupied in the range/area of interest and include both on-effort (systematic) and off-effort (connector/circling) total minutes.

The observation platform was a Cessna T337H Turbo Skymaster aircraft operating out of Beaufort-Morehead City Airport in Beaufort, North Carolina. One survey on 30 November was conducted following pre-planned transect lines covering and extending approximately 2-4 km beyond the boundaries of the W-122 (14) box (see **Figure 1, Table 1**). Each survey was limited to a 5-hour maximum flight time window. The pre-FIREX survey planned for 29 November was not executed due to poor weather conditions and a low cloud ceiling.

Both aerial observers (see **Table 2**) were experienced with line-transect survey methodology, had experience in identification of Atlantic marine mammal and sea turtle species, and were knowledgeable of marine mammal biology and behavior.

Table 2. Observers and Roles.

Observer	Role(s)
Lenisa Blair	Chief Scientist/Observer
Brad Dawe	Observer

Survey effort attempted to cover the entirety of the W-122 (14) box (approximately 3,700 km²). Six parallel tracklines running from southwest to northeast, measuring 56 km long and spaced approximately 12.5 km apart were to be flown during “systematic” efforts throughout the monitoring period and were designed to provide a total survey coverage area of approximately 4,340 km² (see **Figure 1**). Planned lines were followed when possible, but exact transects flown for each survey day were subject to modifications as a result of range exclusion by live-fire U.S.

Navy exercises in the area, unfavorable weather conditions on the range or hourly contact with naval flight operations requiring an increase in the plane's altitude (see **Figure 2, Table 1**).

The following describe the general survey approach:

1. Pre-planned transect lines and waypoints were followed using methods described by Smultea et al. (2009) until a marine mammal/sea turtle group was sighted. Variables such as sea state, glare, and visibility were recorded for each transect flown.
2. Upon sighting a marine mammal/sea turtle group, basic sighting information was recorded per established protocol (see Smultea et al. 2009). As outlined in the CHPT Range Complex Monitoring Plan February 2009, information included (1) species identification and group size; (2) location and relative distance from the IMPASS site if available; (3) the behavior of marine mammals and sea turtles, including standard environmental and oceanographic parameters; (4) date, time, and visual conditions associated with each observation; (5) direction of travel relative to true North; and (6) duration of the observation.
3. If the species appeared suitable for a focal follow, the aircraft increased altitude to approximately 365 to 455 m, and radial distance increased approximately 0.5 to 1.0 km. Then, the aircraft circled the sighting to obtain detailed behavior information as long as possible and logistically feasible. Focal follows occurred for a minimum of 5 minutes, including an observer taking video and digital photographs when possible.
4. If the sighting was not selected for a focal follow, and species and group size were unknown, the aircraft circled the sighting to obtain digital photographs for species identification confirmation and to estimate group size/composition.

Section 3 Results

Survey Effort

Observers visually surveyed approximately 207 km of on-effort trackline and an additional 84 km off-effort (connector lines) during one survey day for approximately 1 hour of on-effort status (see **Table 1**). Beaufort Sea State ranged from 5 to 6, which significantly contributed to the lack of sightings in the area (see **Table 3**). **Appendix A** contains a detailed description of environmental, oceanographic, and sighting conditions.

Sightings

No sightings of cetaceans or sea turtles were recorded during 1.4 hours of total survey flight time (includes on-effort and off-effort intervals) within the survey area covering a 1-day period (see **Figure 2, Table 3**). On 30 November, one large unidentified whale was briefly seen approximately 18 km south of Lookout Bight, North Carolina (approximately 100 km outside of the survey area) on the transit back to the airport (see **Figure 2, Table 3**). Attempts to relocate and confirm species ID in the poor sea state was unsuccessful. As a result of the survey plane's restricted access during the live-fire exercise, no U.S. Naval vessels were seen within the area.

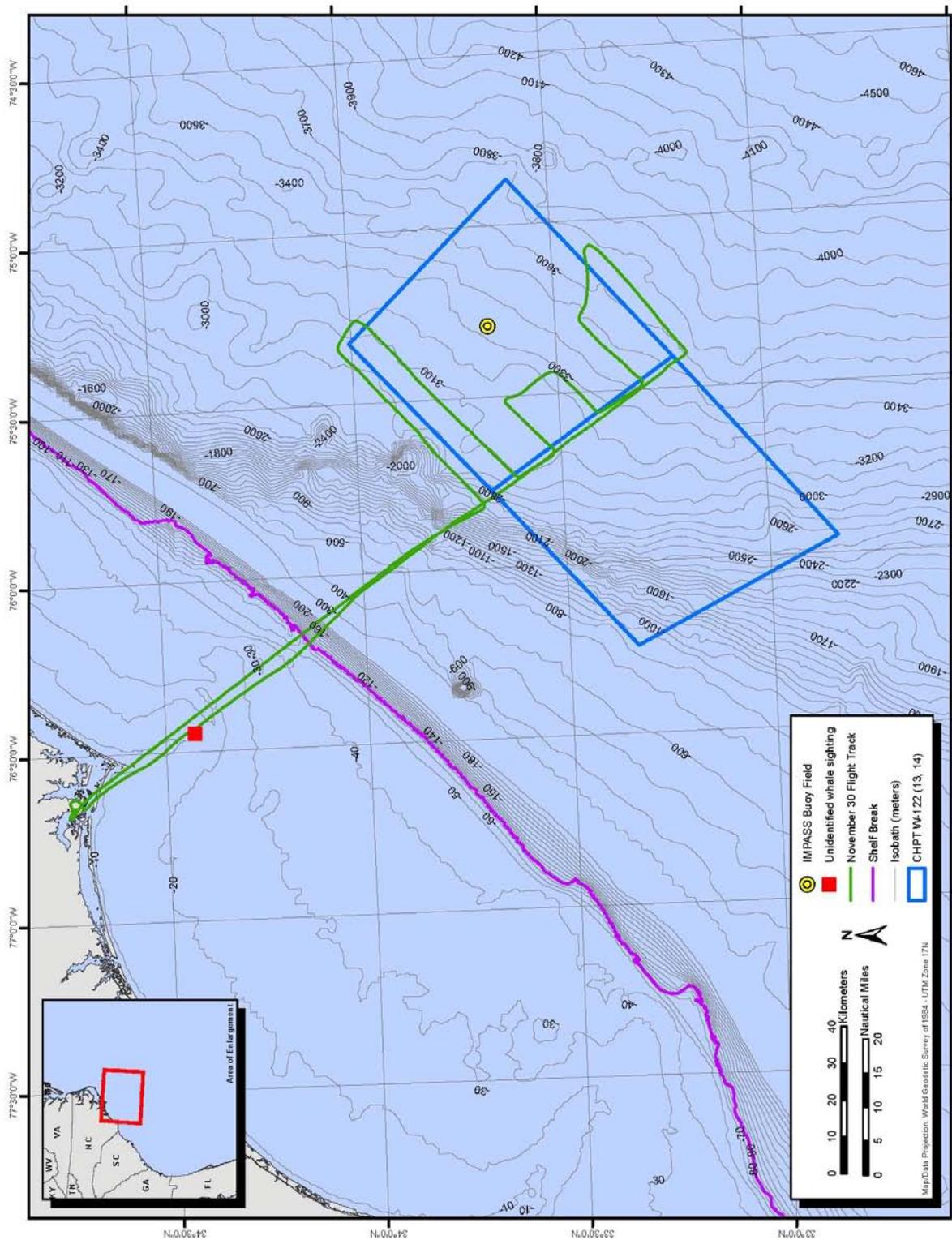


Figure 2. Locations of All Cetacean and Sea Turtle Sightings Seen During CHPT FIREX Monitoring (30 November).

Table 3. Summary of Sightings.

Sighting No.	Date	Species	Group Size Best/High/Low			Calves	Start Time	Stop Time	Beaufort Sea State	Latitude	Longitude	Vert. Angle	Distance off Track (km)	Heading	Bottom Depth (m)	Behavioral Summary
Pre-FIREX Sightings on 29 November 2011																
Cancelled – Poor Weather, Low Ceiling																
During-FIREX Sightings on 30 November 2011																
No Sightings Seen Within Survey Area																
1	11/30/11	Unid Whale	1	1	1	-	11:16	-	5	34.432	-76.441	-	-	-	10-20	One large unidentified whale briefly seen <u>100 km outside of survey area</u> on transit route back to airport. Repeated circling attempts to re-locate animal in poor sea state were unsuccessful.

Key:

Unid Whale = Unidentified whale

Section 4 Acknowledgements

We would like to thank Orion Aviation's Director Ed Coffman and pilots Stan and Dave Huddle. These data were obtained under National Marine Fisheries Service permit no. 14451 issued to Joseph R. Mobley, Jr.

Section 5 References

- Buckland et al. 2001 Buckland, S.T., D.R. Anderson, K.P. Burnham, J.L. Laake, D.L. Borchers, and L. Thomas. 2001. *Introduction to distance sampling: Estimating abundance of biological populations*. Oxford University Press.
- Smultea et al. 2009 Smultea, M.A., J.R. Mobley, Jr., and K. Lomac-MacNair. 2009. *Aerial Survey Monitoring for Marine Mammals and Sea Turtles in Conjunction with US Navy Major Training Events off San Diego, California, 15-21 October and 15-18 November 2008, Final Report*. Prepared by Marine Mammal Research Consultants, Honolulu, HI, and Smultea Environmental Sciences, LLC., Issaquah, WA, under Contract No. N62742-08-P-1936 and N62742-08-P-1938 for NAVFAC Pacific, EV2 Environmental Planning, Pearl Harbor, HI.

APPENDIX A

Environmental, Oceanographic, and Sighting Conditions

Table A-1 shows the environmental, oceanographic, and sighting conditions encountered during FIREX monitoring efforts.

Time	Beaufort Left MMO	Glare Left MMO (%)	Visibility Distance Left MMO (km)	Beaufort Right MMO	Glare Right MMO (%)	Visibility Distance Right MMO (km)	Cloud Cover (%)
During-FIREX Survey Effort on 30 November 2011							
9:11	5	70	0.5	5	30	1	100
9:30	5	70	0.5	5	50	1	100
9:36	6	70	0.5	6	50	1	100
9:52	6	60	0.5	6	0	0.5	100
10:01	5	60	0.5	5	20	0.5	100
10:10	5	80	0.5	5	20	0.5	100
10:22	5	60	0.5	5	40	0.5	100