Thermal-Imaging Camera System Compared with MMOs and PAM for Mitigation Monitoring of Cetaceans During a Seismic Survey

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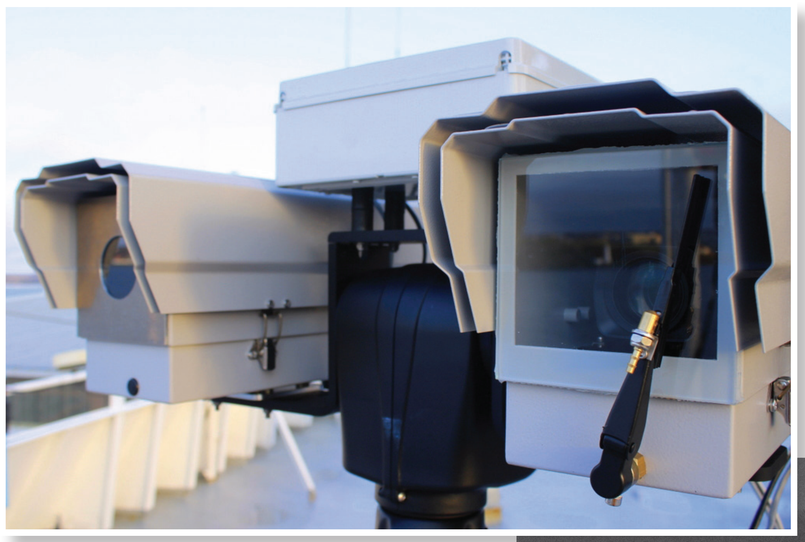
INTRODUCTION

A dual camera system – High Definition/Infra-Red (HD/IR) was installed aboard a seismic vessel to trial as a marine mammal monitoring technique. The camera system collected video data for offline analysis post-survey. Monitoring of performance focused on its ability to detect marine mammals with comparison made against known visual sightings in daytime and PAM detections at night.



METHODOLOGY

Technical performance of the dual camera system was excellent and data was obtained for a 70-day duration of deployment. For the analysis, data was selected (due to time constraints) from the entire dataset of over 1,703 hours. Three days were chosen to allow performance assessment over whole 24-hour periods. These three days were selected for analysis as they had sea states of mostly 4 or lower. Video analysis was conducted independently of visual and acoustic monitoring. All analysts had experience of marine mammal surveys in the field.

RESULTS

Detection Rate in Daylight

	Effort (hh:mm)	Detections	Average Hours/ Detections
IR	46:40	11	4h 14m
HD	46:40	7	6h 40m
HD/IR	46:40	14	3h 20m
MMO	46:40	15	3h 06m

Detection Rate for all Data (non-overlapping)

	Effort (hh:mm)	Detections	Average Hours/ Detections
HD	49:03	11	4h 27m
IR	71:11	25	2h 50m
MMO	1466:09	252	5h 49m
PAM	978:18	275	3h 33m
HD/IR	49:03	17	2h 53m

Detection Rate at Night

	Effort (hh:mm)	Detections	Average Hours/ Detections
IR	26:45	13	2h 03m
PAM	26:45	14	1h 54m

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CONCLUSIONS

- The comparable detection rates by the dual camera system against MMO and PAM respectively provide firm “proof of concept”
- Results indicate a future for IR/HD as a supplementary method to existing marine mammal monitoring techniques