

**Aerial surveys to study cetaceans:
implications for integrated conservation management and sustainable maritime development**

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Both long and short term marine conservation strategies are best implemented as part of effectively integrated maritime management. These strategies and management benefit from research and monitoring of mobile and vulnerable marine species, like cetaceans. A research area of 120,000 km² around the Maltese Islands has been and still is the subject of year-round marine research since 1997 (Vella 1998, 2000, 2001, 2002, 2005, 2006, 2008, 2009, 2010, Vella & Vella 2011, Vella & Vella 2012). All cetacean species in the area have been studied and are monitored annually using aerial strip-transect survey techniques (side-by-side with marine surveys) allowing for various aspects of cetacean species spatial-temporal associations to be analysed.

This unique long-term aerial research effort and scientific data analyses for the Central Mediterranean, has developed a cost-effective monitoring system useful for assessment and modelling requirements. Abundance measures for *Tursiops truncatus*, *Delphinus delphis*, *Stenella coeruleoalba*, *Grampus griseus* and other cetacean species obtained using distance software too, show how year-round aerial surveys form an essential tool for building the knowledge required for these species which show different degrees of local site-fidelity and migration at different times of the year, life-history stages and anthropogenic activities.

Abundance patterns and trends that would not be easily understood without year-round long-term research efforts. For example, the spatial-temporal climate change effects on cetacean abundance, distributions and survival would need to be monitored closely to measure shifts in behaviours and distributions. Aerial research efficiently provides for a local to regional wide-encompassing investigative set-up that caters for urgent considerations of new environmental changes causing deleterious synergistic effects on these marine mammals. Such sustained but concomitantly adaptable research method should be accessible to researchers around the Mediterranean to allow for effective and timely national to international conservation actions of cetaceans found both close to shore and offshore.

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