

ABSTRACT

. O'DOR, R.K., ANDRADE, Y., WEBBER, D.M., SAUER, W.H.H., ROBERTS, M.J., SMALE, M.J. and VOEGELI, F.M. (1998)

Applications and performance of radio-acoustic positioning and telemetry (RAPT) systems.

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RAPT was developed to use systems of semi-autonomous buoys with hydrophones and radio transmitters to continuously monitor the positions and performance of multiple objects, animals and/or people tagged with miniature acoustic transmitters under water. Buoys communicate signal arrival times to shore, ship or aircraft based computers which triangulate positions in three dimensions and decode telemetered information such as heart rate, respiration rate, temperature, salinity and light encoded in pulse intervals. It is the only way of tracking with high resolution (meters) at intermediate ranges (10's – 1000's of meters) in seawater and the most accurate in freshwater. The technique is powerful and flexible with wide application, but is constrained by tradeoffs between electrical power and signal accuracy under extreme conditions. Technological solutions to some of these constraints are possible, but optimization of information gathering, in many cases, simply requires more experience which can be achieved by software, information sharing and a cadre of trained personnel.