

Summary of questionnaire answers

Prior and during the Vemco/acoustic telemetry workshop, participants were asked to complete a questionnaire to gauge their current usage and satisfaction with Vemco and acoustic telemetry technology. A summary of the results are presented below:

23 questionnaires were filled prior or during the workshop.

Area covered by arrays or curtains range 1–250 km and 1–7 km², and is used to monitor marine organisms from 2 months to 5 years.

According to the questionnaires, in Australia, acoustic telemetry is used to investigate:

Behaviour	10
Migration	8
Home range	8
Site fidelity	7
Habitat utilisation	5
Movement	4
Spawning activity	3
Ecology	2
Body temperature	1
Diving behaviour	1
Density dependence movements	1
Post release mortality	1
Mortality	1
Response to environment	1
Conservation	1

Deployment designs are as:

Curtain	4
Grid/arrays	8
Independent units	5
Line in riverine environment	3
Combination of arrays and curtains	1

Data is mostly managed by Access (11) and Excel (4) but also through flat files, Matlab, ESRI shapefiles, and customised software.

Softwares used to analyse data are:

Excel	7
Arcview, GIS	6
SPSS	3
Matlab	2
R	2
Home Ranger	2
Customised software	2
Vue	1
Access	1

SigmaPlot	1
Statistica	1
Systat	1
S-Plus	1
Mapinfo	1
Surfer	1
Origin	1

Softwares used to visualise data are:

ArcView, GIS	8
Customised program	3
Animation program	2
Google earth	1
Excel	1
R	1
Matlab	1
MapInfo	1
Surfer	1
Eon Fusion	1

Users were all satisfied (4) or very satisfied (5) with both Vemco tags and receivers. However, the following limitations and potential improvements were identified:

Problems/limitations (number in brackets indicates how many times the issue was mentioned):

- Lack of standard data analysis techniques (5),
- Large data output and difficulty to manage such large amount of data (5);
- Transmitter magnet stuck (3);
- Lack of small tags; major implications as has forced to work with Sonotronics as Vemco do not produce small enough tags (2);
- Limited memory in VR2 units to extreme deployments for longer than 1 year (2);
- Biofouling has been an issue, but is unavoidable; fouling, particularly of the communication key download holes (1);
- Breakage of the receiver (the red top on the VR2) following movement against the reef (1);
- Leakage in grey VR2 (1);
- False detections (1);
- Variability of equipment detection ranges with environmental conditions (1);
- VRAP: Buoy positioning is user defined (lat, long) and has now way of incorporating error correction when buoys "move" off station. Incorporation of GPS receivers into each buoy would help rectify error in VRAP data sets and negate the need for a large amount of post-processing of tracking data (1);
- Restriction of single channel receivers prohibits tracking of continuous transmitters. This would be beneficial when combining VRAP and VR2 arrays in our recent studies (1);
- Limitations involve the current VR100 manual tracking approach. Instead to tracking one animal continuously. I track 10s of animals locating their position once every 0.5–1 h. I need accurate positioning which I can only get audially. For this approach I currently use Sonotronics equipment (1);

- Could not view unresolved tag history using software 5.14. This is important in areas where there is a large interference rate (1);
- Software issues, experienced a number of glitches (1);

Possible enhancements (number in brackets indicates how many times the issue was mentioned):

- New data download options (6):
 - Underwater Bluetooth so that receivers would not have to be brought to the surface for data downloads (3);
 - Need PDA software for VUE (1);
 - Ability to download data onto a Windows CE data pad (1);
 - Alternative downloading options where the requirement for a communication key hole is removed (1).
- Small tags with high hit rates are most useful to us (eg V6). Compatability between detection systems would be important here, but tag longevity not important (ie 5 days to a month suitable); V6 at 69KHz (2);
- Ability to get signal strength data on the reception to relate to distance from the receiver (1);
- Development of new VRAP system with inbuilt GPS receivers and removing the reliance on a base station. Improvements in power supplies to the buoys via solar panels (1);
- Intergration of archival capabilities for depth and temperature to return data at download (1);
- CTD's (small cost effective units) to be deployed in conjunction with VR2s (1);
- External attachment holes for transmitters smaller than V16 (1);