FRDC FINAL REPORT

AUSTRALIAN SOCIETY FOR FISH BIOLOGY CONFERENCE AND WORKSHOP 2006 - CUTTING EDGE TECHNOLOGIES IN FISH AND FISHERIES SCIENCE

J.M. Lyle and C.D. Buxton

April 2008

FRDC Project No. 2006/302

Australian Government

Fisheries Research and Development Corporation

Tasmanian Aquaculture & Fisheries Institute

University of Tasmania

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2006/302 Australian Society for Fish Biology Conference and Workshop 2006 - Cutting edge technologies in fish and fisheries science

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OBJECTIVES:

1. To host the 2006 ASFB workshop and conference.
2. To showcase the latest techniques and technologies in fish and fisheries science.
3. To publish the proceedings of the workshop.

NON-TECHNICAL SUMMARY:

The FRDC provided funding to support the organisation and hosting of the 2006 Australian Society for Fish Biology (ASFB) conference and workshop on cutting-edge technologies in fish and fisheries science. This funding was matched by sponsorship from a range of government, university and industry sources. Internationally recognised plenary presenters included Ron O'Dor of the Census of Marine Life, and Pamela Mace of the Ministry of Fisheries (NZ). The event was hosted in Hobart in August/September 2006 as a 2-day workshop and 2-day conference.

A comprehensive science program was developed with workshop presentations addressing four key theme areas:

- tagging and tracking;
- underwater vision and hydro-acoustics;
- chemical techniques; and
- data capture and management.

Keynote and panellist presentations involving invited speakers addressed each of the themes, many of these presenters being generally recognised internationally for their expertise in their particular research field. Presentations were followed by discussion sessions, in which the following steering questions were posed:

- How does the range of technologies presented deliver opportunities for the discipline?
- Why do these technologies offer better solutions?
- Can these technologies fully replace more traditional methods?
- What's the take-home message – where to from here?

Key insights arising from the workshop included:

- New technologies were providing unprecedented quantities of information but data management and analysis issues remained important challenges.
- Many technologies were complementary.
- Ecosystem-Based Fisheries Management data requirements represented a major driver for information.
- Enormous opportunities existed for collaboration and partnerships.
- The promotion of a culture of sharing of data, infrastructure and expertise was a priority.
- Technologies had important applications for communication and education.
- Cutting-edge technologies can be seductive but were not necessarily always the best choice. There is a need to be critical when considering research options.
- There was a risk that competition for funds was driving researchers to look towards innovation to attract funding. Associated with this issue, was the recognition that technologies needed to be appropriate to the questions. That is, the questions need to direct choice of technologies not other way round.
- New technologies needed to be validated against established techniques, and as such established techniques should not be abandoned.

The conference program involved around 150 oral presentations along with over 30 poster presentations. Papers were grouped into a range of themes, including fisheries assessment and management, recreational fisheries, movement and stock structure, early life history, biology and physiology, underwater technology, habitats and mapping.

Overall the event was an outstanding success, attracting over 320 delegates, representing the largest attendance for an ASFB national conference to date. Significantly, universities were well represented, with about 90 students attending the event. Approximately 25 international delegates from New Zealand, north America, Europe and Asia attended.

An evaluation survey of workshop participants revealed that benefits that will flow into the broader research agenda through adoption of latest techniques/technologies and through increased collaborations and partnership.

Workshop proceedings were published within 12 months of the event and have been distributed to workshop participants, research agencies, funding bodies and libraries. Downloadable pdf versions of the proceedings are also available from the ASFB website.

OUTCOMES ACHIEVED

The Workshop provided researchers and industry with an understanding of the latest developments in the sector, ensuring a rapid uptake of this technology.

The Workshop has already had a demonstrable impact on research being undertaken in Australia, with many participants following up on technology matters, including the development of new research projects. Ultimately this will result in greater collaboration and partnership and better research outcomes.

KEYWORDS: Australian Society for Fish Biology, cutting-edge technologies, science workshop and conference, fish and fisheries.

ACKNOWLEDGEMENTS

Dianne Furlani deserves special mention for her efforts in organising the workshop program and working closely with workshop presenters to ensure that the proceedings were produced within 12 months and to a very high standard. We also wish to acknowledge the other members of the organising committee - Cathy Bulman, Stuart Chilcott, Stewart Frusher, Gary Jackson, Sarah Metcalf, Francisco Neira, Jayson Semmens, Dirk Welsford, Alan Williams and Philippe Ziegler – and steering committee – Dan Gaughan, Peter Horvat and David Smith – who contributed to producing a science and social program of the highest quality.

The success and smooth running of the event was greatly enhanced by the team from Conference Design, in particular Ben Thiessen.

BACKGROUND

The Australian Society for Fish Biology (ASFB) has taken a lead role in encouraging international scientific links in fisheries research and management in Australia. Through the support of FRDC and State and Territory fishery agencies, ASFB has hosted an annual national workshop series that aims to:

1. Provide a forum at which a technical area or subject of current national significance can be discussed;

2. Support keynote addresses by visiting international scientists of acknowledged expertise in the workshop subject area;

3. Publish the workshop proceedings as a benchmark document of current knowledge in the subject area; and

4. Identify and define research needs of national significance.

The annual ASFB conferences and workshops are a key aspect of the people development needed to further the development of the fishing industry, providing a forum at which the latest developments in fish and fisheries biology can be showcased.

NEED

The ASFB Annual Conference and workshop provides an opportunity for scientists, managers, industry and communities from the various jurisdictions around Australia, New Zealand and the South Pacific, to come together and discuss the most recent developments in fish and fisheries science. The workshop specifically enables a topic of national significance to be discussed in an open forum in the presence of acknowledged international experts.

Recently we have witnessed a rapid expansion of methodologies and applications in our discipline that enable us to investigate the environment in new ways. There is thus an opportunity through the ASFB workshop to showcase the application of new techniques and technologies across a range of disciplines. Examples include smart tags, acoustic tracking, hydro-acoustics, remote sensing, habitat classification, underwater visual systems, electronic data capture, genetic and microchemistry applications.

Conferences and workshops such as this are a key component of the skill development of people in the sector, particularly offering students and young scientists the opportunity to obtain new ideas in a relaxed and informal setting.

OBJECTIVES

1. To host the 2006 ASFB workshop and conference.
2. To showcase the latest techniques and technologies in fish and fisheries science.
3. To publish the proceedings of the workshop.

WORKSHOP AND CONFERENCE ORGANISATION

Event organisation was overseen by a Steering Committee chaired by Prof Colin Buxton (TAFI). An Organising Committee convened by Dr Jeremy Lyle (TAFI) and a Workshop Committee convened by Dianne Furlani (CSIRO) were responsible for promotion, sponsorship and development of the scientific and social programs (Table 1). A professional conference management company, Conference Design, was engaged to manage the overall process.

Organisation of the event was undertaken by an Organising Committee involving membership from TAFI, CSIRO, Inland Fisheries Service, Australian Antarctic Division and the professional conference manager (Conference Design) engaged to manage the event. This committee met regularly and was responsible for most aspects of the promotion and organisation of the event.

A Workshop Committee was also convened, with membership from CSIRO, TAFI and the ASFB workshop committee convener. This committee was tasked with refining workshop objectives, developing the workshop program, and contacting potential workshop presenters.

Table 1 Conference committee membership

Steering committee	Organising committee	Workshop Committee
Colin Buxton (Chair)	Jeremy Lyle (Convener)	Dianne Furlani (Convener)
David Smith (CSIRO)	Cathy Bulman (CSIRO)	Jeremy Lyle (TAFI)
Dan Gaughan (ASFB)	Stuart Chilcott (IFS)	Stewart Frusher (TAFI)
Peter Horvat (FRDC)	Sarah Metcalf (TAFI)	Gary Jackson (ASFB)
	Francisco Neira (TAFI)	Jayson Semmens (TAFI)
	Dirk Welsford (AAD)	Alan Williams (CSIRO)
	Philippe Ziegler (TAFI)	Philippe Ziegler (TAFI)
	Ben Thiessen (Conference Design)	

The Organising Committee sought to maximise attendance/participation of post-graduate students, promoting the event through established student networks and offering attractive registration rates. This was seen as an effective means of exposing young scientists to a broad range of new techniques and technologies and facilitating communication and interaction with established researchers.

EVENT PROMOTION

Promotion of the event commenced in late 2005 with the production of a postcard flier (Appendix 3) which was circulated widely within Australia and overseas (distributed at international conferences in the USA and Europe). The event was further promoted via block emails to the ASFB membership, articles in the ASFB Newsletter and via the internet and a Conference website. An advert was also placed in R&D News (May 2006).

The conference 'brand' which was used on most conference material was developed in conjunction with the CSIRO Communication group (refer Appendix 4).

Sponsorship

A sponsorship and exhibition prospectus was developed (Appendix 4) and circulated to potential sponsors. In addition to contacting key Australian research and management agencies, considerable effort was made to contact major technology suppliers around the world. Three main categories of sponsorship were established; Principal Sponsor, Major Sponsor and Sponsor. Overall we were very successful in attracting sponsorship from government agencies, support from commercial companies was less successful.

FRDC was the Principal Sponsor; TAFI, CSIRO, Department of Fisheries (WA), SARDI, Murray Darling Basin Commission, AFMA, DAFF, DEH, Ministry of Fisheries (NZ), Department of Economic Development (Tas), Hydro Tasmania and SciElex (Tas) were Major Sponsors; and DPIW (Tas), Inland Fisheries (Tas), DPI (Vic), DPIF (Qld), DPIFM (NT), SonarData (Tas) and Thelma (Norway) were sponsors.

Additional commercial exhibitors included Vemco (Canada) and LoligoSystems (US).

SCIENTIFIC PROGRAM

The scientific program involved two components, the workshop and conference programs.

Workshop Program

The workshop was organised into four theme areas and in order to encourage maximum participation by delegates, sessions were not run concurrently. Workshop theme areas were:

- tagging and tracking;
- underwater vision and hydro-acoustics;
- chemical techniques; and
- data capture and management.

Workshop presenters were invited based on their expertise within each of the technology theme areas. International scientists, Ron O'Dor (Canada) and Pamela Mace (New Zealand) were invited to present plenary addresses and keynote presentations aligning to each of the four theme areas were delivered by Alistair Hobday, John Penrose, Bronwyn Gillanders and Bruce Wallner. Within each theme area a further five presenters were invited to deliver more focussed overviews of specific technologies or techniques. Presenters were provided with a set of guiding questions to help focus on the workshop's key objectives:

- showcase technologies;
- identify opportunities to further develop research capacity through science-industry partnerships and collaboration between institutions and disciplines; and
- consider the inherent challenges

At the completion of the presentations in each theme are a general discussion session was held and key outcomes documented. Within each theme area, invited panellists presented overviews and examples of specific technology applications. Presentations were followed by discussion sessions, in which the following steering questions were posed:

- How does the range of technologies presented deliver opportunities for the discipline?
- Why do these technologies offer better solutions?
- Can these technologies fully replace more traditional methods?
- What's the take-home message – where to from here?

The workshop was concluded with a general wrap-up discussion session. The workshop program is provided as Appendix 5.

Conference Program

The conference program was developed around abstracts received from participants and covered a wide range of topics, including the application of cutting edge technologies. While most of the two-day conference was conducted in concurrent sessions, a plenary session was set aside for a presentation by the K. Radway Allen Award recipient, Prof Norm Hall, and the presentation of the outcomes of the 2005 ASFB workshop on monitoring fish stocks and aquatic ecosystems. The conference program is appended as Appendix 5.

There was considerable interest in the conference, with more oral presentation submissions received than could be accommodated. Four concurrent sessions were run, with papers grouped into a range of themes. Major themes included fisheries assessment and management, recreational fisheries, movement and stock structure, early life history, biology and physiology, underwater technology, habitats and mapping.

THE EVENT

The ASFB Conference and Workshop was hosted in Hobart between 28 August and 1 September 2006 at the Hobart Grand Chancellor. The event was officially opened by the Governor of Tasmania and attracted the largest number of delegates attending any ASFB conference (about 320), including a strong contingent of international delegates (New Zealand, USA, Canada, France and Korea).

The Workshop was attended by over 230 delegates and included two plenary, four keynote and 20 panel presentations, with several discussion sessions and an overall wrap-up discussion. At the Conference almost 150 oral papers were presented, encompassing a diversity of research into fish and fisheries within Australia and overseas, along with 32 poster presentations.

Significantly, over 90 students attended the event, which augers well for the future of fisheries science in Australia.

Media coverage of the event was mainly via radio, with a number of delegates interviewed on local and national radio about aspects of their research.

WORKSHOP PROCEEDINGS

The Workshop proceedings were published within 12 months of the event, and comprised two plenary papers, four keynote papers and 20 panellist presentations. Key discussion points and chairs summary are provided for each theme area. In addition a wrap-up discussion and chairs summary is included. Details of the publication follow:

Lyle, J.M., Furlani, D.M., & Buxton, C.D. (Eds.) 2007. Cutting-edge technologies in fish and fisheries science. Australian Society for Fish Biology Workshop Proceedings, Hobart, Tasmania, August 2006, Australian Society for Fish Biology. 225p. ISBN 9780980401103

Proceedings (hard copy) have been circulated to all workshop participants, sponsors, relevant national research and management agencies, and libraries. In addition, the proceedings are freely available as a downloadable pdf file from the ASFB website (http://www.asfb.org.au/pubs/index.htm).

A formal presentation of key outputs of the workshop was made at the 2007 ASFB conference and workshop (Canberra, September 2007) by Dr Jeremy Lyle.

WORKSHOP EVALUATION SURVEY

A questionnaire based survey of Workshop participants was undertaken in mid-2007, some 10 months after the event (refer Attachment 7). The questionnaire was emailed to Australian participants only and was designed to evaluate how the well the workshop had achieved the stated goals, which were to identify:

- emerging science-industry opportunities
- opportunities for collaboration
- cross-theme linkages
- future needs and directions of fisheries science

A total of 51 participants responded to the survey, the majority were affiliated with government fisheries agencies, although there was strong representation from universities and to a lesser extent industry (Fig 1a). Based on status, the majority of participants were researchers, with a good representation of students, reflecting the large number of students who attended the event (Fig. 1b). Resource managers and industry representatives (including technology manufacturers) made up the remainder of the sample.

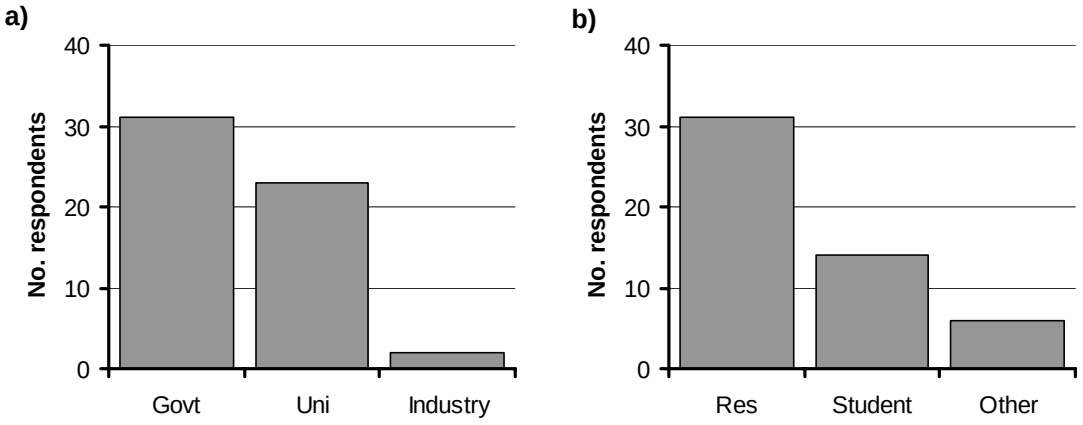

Fig. 1: Number of respondents based on a) affiliation and b) status.

Respondents were asked to indicate which of the Workshop theme areas they considered most relevant to their area of expertise or interest. The majority identified that tagging and tracking (T&T) was of greatest relevance, followed by underwater vision and hydro-acoustics (UV&H), data capture and management (DC&M) and chemical techniques (CT) (Fig. 2).

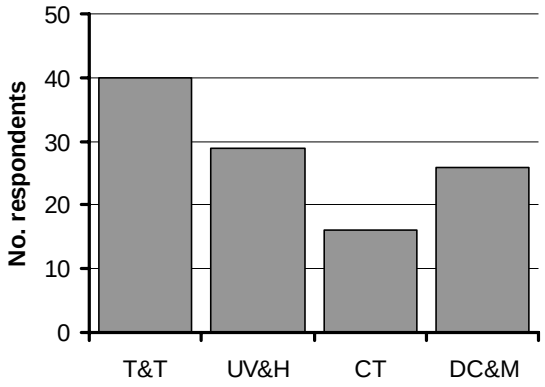

Fig. 2: Number of respondents who indicated given theme areas as being of most relevance to them. Tagging and tracking (T&T); underwater vision and hydro-acoustics (UV&H), chemical techniques (CT), and data capture and management (DC&M).

In a follow-up question, respondents were asked whether the Workshop had exposed them to technologies and techniques that were *unfamiliar* but may have relevance to their area of interest/expertise. While the pattern of responses was similar to the previous question, it was evident that there was an increase in responses relating to tagging and tracking and data capture and management themes, with about half of all respondents to each of the theme areas indicating that they had followed up, or at least intended to follow up, on these techniques by contacting other researchers or manufacturers, undertaking literature searches, etc (Fig. 3).

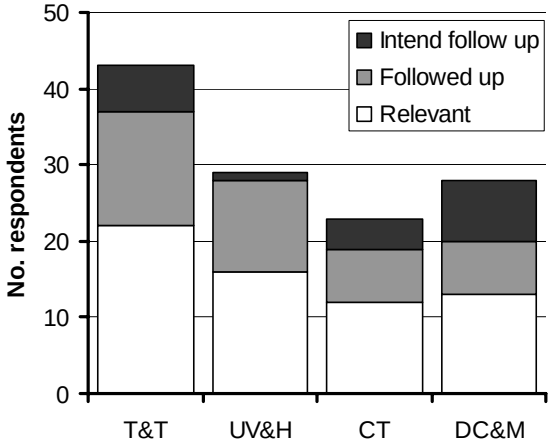

Fig. 3: Number of respondents who indicated that the Workshop had exposed them to unfamiliar technologies and techniques in their area of interest and whether they had or intended to follow-up on them. See Fig. 2 for theme area abbreviations.

In order to understand potential benefits of the Workshop to participants, respondents were asked to indicate whether the Workshop had directly or indirectly assisted their area of research or business based on a list of criteria. All respondents indicated that the workshop had had a positive impact against at least one of the categories, with the

highest number of positive responses to “increased awareness of applications” (Fig. 4). “Exposure to novel applications of technology” and “greater understanding of limitations” were next in importance, followed by “collaboration with other groups”. “Identifying industry-science partnership” was the lowest ranked category.

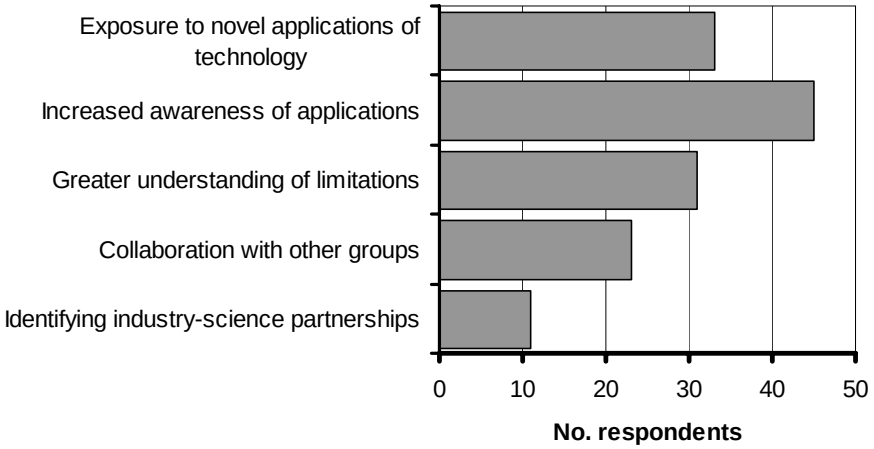

Fig. 4: Number of respondents indicating ways in which the Workshop had assisted in their area of research or business.

An alternative measure of impact relates to how the Workshop may have influenced the national research agenda. In this respect respondents were asked whether they had developed, or intended to develop, research projects in the near future that had benefited from participation at the Workshop. Over half (55%) of respondents indicated that they had, and further information was requested regarding funding source and status of the project. The number of projects (proposed or submitted), number submitted (either under review or assessed) and number of successfully funded projects are presented in Fig. 5. While the final outcome of several projects was uncertain at the time (i.e. still being evaluated), it was clear that there was a relatively large number of projects had been influenced by Workshop participation, with funding sought from a variety of funding sources. Interestingly, FRDC had attracted the highest number of projects of any of the funding bodies.

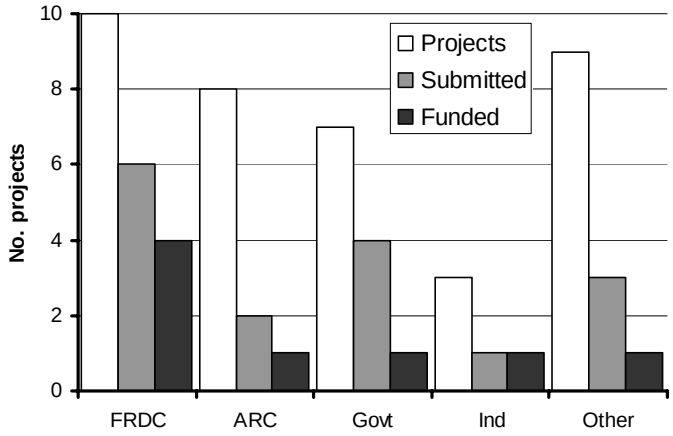

Fig. 5: Number of projects by funding source identified by respondents as having derived some benefit from the Workshop. Funding sources are Fisheries Research and Development Corporation (FRDC), Australian Research Council (ARC), government funding bodies (Govt), industry funded (Ind), and not elsewhere classified (Other).

Respondents were also invited to provide any feedback about the Workshop relating to the program, quality of presentations, value of discussion sessions, venue and general organisation. Comments are provided in Appendix 8.

Summary

This evaluation survey has quantified some of the benefits arising from the Workshop. Specifically there were positive impacts in terms of increased awareness of technological applications, their capabilities and limitations for many participants, with some respondents indicating that they had followed up on specific technology matters. An important metric in terms of research outcomes relates to potential benefits to the broader research agenda, it is significant therefore that the most respondents identified that proposed or submitted projects had benefited from Workshop involvement.

BENEFITS

The main benefits of the 2006 ASFB Conference and Workshop relate to the exposure of the latest techniques and technologies across a broad range of disciplines to researchers, managers and industry stakeholders. As evidenced by the number and quality of presentations, the large number of workshop participants (about 230) and the overall number of registrants for the conference and/or workshop (about 320), along with the positive feedback from the evaluation survey it is clear that there was considerable interest in the area.

Not only was the event of an exceptionally high standard in terms of venue, organisation, scientific program and social functions, the evaluation survey provides a clear indication of benefits that will flow into the broader research agenda through adoption of latest techniques/technologies and through increased collaborations and partnership.

FURTHER DEVELOPMENT

In relation to this project there is no further development required. However, we believe that the integrated approach to organising the event, with effective promotion strategies targeted at government, educational and industry sectors is a model for future conferences. Specifically, we were successful in attracting a strong representation of post-graduate students and university researchers, groups that have much to offer to fisheries science and management, especially given the need to consider information needs in the context of ecosystem based fishery management.

PLANNED OUTCOMES

The workshop was designed to provide researchers and industry with an understanding of the latest developments in the sector, ensuring a rapid uptake of this technology. For the fishing industry this will be aimed at resource security, sustainability and increasing the value of the resource.

The broad scope of the Workshop program, the quality of presenters, most of whom are recognised internationally as experts in their fields, coupled with the level of interest in the Workshop topic (evidenced by the number of registrants and sponsors) pays testimony to the overall impact of the Workshop. Furthermore, there is evidence that the Workshop has already had a demonstrable impact on research being undertaken in Australia, with many participants following up on technology matters, leading to greater collaboration and partnership and better research outcomes.

CONCLUSION

The 2006 ASFB Conference and Workshop was an outstanding success at all levels. In terms of promotion and sponsorship the Organising Committee was able to attract a large number of government, university and industry sponsors. In terms of registrants, this conference and workshop was amongst the largest national conferences ever hosted by the ASFB. Of particular significance was the large number of international delegates (around 25) and the large student representation (about 90), which represent the future of fish and fisheries research in Australia.

Both the Workshop and Conference programs included many very high quality presentations, with many of Australia's most productive and innovative researchers presenting their work. The Workshop proceedings represent an important and tangible output that represents an important and timely amalgamation of cutting edge technologies currently available to fish and fisheries science. In this respect it is evident that Australian scientists and technology providers are at the forefront in many areas and that there are considerable opportunities for collaboration and partnership.

Key insights arsing from the workshop included:

- New technologies were providing unprecedented quantities of information but data management and analysis issues remained important challenges.
- Many technologies were complementary.
- Ecosystem-Based Fisheries Management data requirements represented a major driver for information.
- Enormous opportunities existed for collaboration and partnerships.
- The promotion of a culture of sharing of data, infrastructure and expertise was a priority.
- Technologies had important applications for communication and education.
- Cutting-edge technologies can be seductive but were not necessarily always the best choice. There is a need to be critical when considering research options.
- There was a risk that competition for funds was driving researchers to look towards innovation to attract funding. Associated with this issue, was the recognition that technologies needed to be appropriate to the questions. That is, the questions need to direct choice of technologies not other way round.
- New technologies needed to be validated against established techniques, and as such established techniques should not be abandoned.

By reference to performance indicators identified in the original project application, it is apparent that all have been achieved. They included the successful organisation and hosting of the 2006 ASFB Conference and Workshop; the latest techniques and technologies in fish and fisheries science being disseminated to a wide audience, and the Workshop proceedings being published within a short timeframe in a high quality format.

APPENDIX 1: INTELLECTUAL PROPERTY

This is not applicable to this project.

APPENDIX 2: STAFF

Prof Colin Buxton, Marine Research Laboratories, Tasmanian Aquaculture and Fisheries Institute, University of Tasmania

Dr Jeremy Lyle, Marine Research Laboratories, Tasmanian Aquaculture and Fisheries Institute, University of Tasmania

Dianne Furlani, CSIRO Marine and Atmospheric Research.

APPENDIX 3: POSTCARD FLIER

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APPENDIX 4: SPONSORSHIP AND EXHIBITION PROSPECTUS

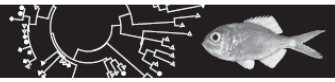
Prospectus cover illustrating the ‘conference brand’.

APPENDIX 5: WORKSHOP PROGRAM

WORKSHOP PROGRAM

Monday 28 August

08:45		Welcome
		Official Opening The Hon. William J. E. Cox AC RFD ED, Governor of Tasmania
		Objectives of the ASFB Workshop 2006
09:15		Plenary Talk Ron O'Dor: *The cutting edge of the Census of Marine Life*
10:00		Morning Tea
	Session 1: Tagging and Tracking	
	Chair	Ron O'Dor
10:30	Keynote	Alistair Hobday: *Tagging and tracking technologies for marine fish*
10:55	Panel	Laurent Dagorn: *New instruments to observe pelagic fish around FADs: Satellite-linked acoustic receivers and buoys with sonar and cameras*
11:10		David Griffin: *Making sense of fish tracks by looking at the oceanography*
11:25		Rik Buckworth: *Genetag: Monitoring fishing mortality rates and catchability using remote biopsy and genetic mark-recapture*
11:40		John Koehn: *Advances in the use of radio and PIT tags to study freshwater fish in Australia*
11:55		Stewart Frusher & David Hall: *Conventional tags – New tricks with 'old' technology*
12:10		Discussion of Session 1
13:10		Lunch
	Session 2: Underwater Vision and Hydro-acoustics	
	Chair	Simon Allen
14:00	Keynote	John Penrose: *Developments in acoustic sensing applied to marine habitat assessment*
14:25	Panel	Gavin McCaulay: *Hydro-acoustics for fish biomass assessment and ecosystem studies*
14:40		Lee Baumgartner: *Assessment of a dual-frequency identification sonar (DIDSON) for application in fish migration studies*
14:55		Alan Williams: *Deepwater fish habitat off SE Australia: What, where, how much and management implications*
15:10		Mike Cappo: *Baited video techniques*
15:25		Matthew Dunbabin: *Low-cost autonomy for visual verification of acoustic data sets*
15:40		Afternoon Tea
16:00		Discussion of Session 2
17:00		End of Day 1



Tuesday 29 August

08:30	Housekeeping	
08:40	Plenary Talk	
	Pamela Mace: *Technological needs for fish stock assessments and fisheries management*	

09:25	Morning Tea	

	Session 3: Chemical Techniques	
	Chair	Greg Jenkins
09:45	Keynote	Bronwyn Gillanders: *Overview of chemical techniques as applied to fish ecology and fisheries science*
10:10	Panel	David Crook: *Tracing the migrations of diadromous fish using otolith chemical analyses*
10:25		Jenny Ovenden: *Distribution and abundance of genes in fish populations*
10:40		Simon Jarman: *DNA as a dietary biomarker for fish*
10:55		Peter Nichols: *Signature lipids and fatty acids in trophic studies*
11:10		Rod Connolly: *Stable isotope analysis in fisheries food webs*
11:25		Discussion of Session 3

12:25	Lunch

	Session 4: Data Capture and Management	
	Chair	Ian Knuckey
13:10	Keynote	Bruce Wallner: *Vanquishing the "data poor fishery" using electronic smarts*
13:35	Panel	Brent Wise: *Determination of cost effective techniques to monitor recreational catch and effort in Western Australian Fisheries*
13:50		Peter Stephenson: *Vessel Monitoring Systems: a cost effective alternative to logbook date*
14:05		Craig Mundy: *Electronic data capture in abalone fisheries: Facing up to reality*
14:20		Brian Schlining: *Turning video into information*
14:35		Gordon Keith: *Compiling a data archive for a research voyage*
14:50		Discussion of Session 4

15:50	Afternoon Tea

16:10	Wrap Up Discussion	
	Chair	Colin Buxton
	Panel	Plenary and Keynote Speakers from all Sessions

17:30	End of Day 2

19:00	Workshop Dinner

APPENDIX 6: CONFERENCE PROGRAM

ASFB Hobart 2006: Conference Program

Thursday 31 August

8:30	Welcome
8:45	**Norm Hall** (K. Radway Allen award recipient): *Hooked by the bottom Line*
9:25	**Michael Phelan:** *Outcomes of the ASFB Workshop on Monitoring Fish Stocks and Aquatic Ecosystems, Darwin, July 2005*
9:40	Morning Tea

	UW Technology	Otoliths	Recreational Fisheries	Freshwater – Early Life History
Chair	Russ Bradford	Tony Fowler	Lynnath Beckley	Stuart Chilcott
10:10	**Matthew Gordon:** Factors affecting the use of Submersible Ultrasonic Receivers and ultrasonic tags in marine telemetry	**Dan Gaughan:** Minimising the long-term cost of age monitoring for a suite of fish species	**Ross Winstanley:** RecFishing Research – a national approach to developing recreational fisheries	**Stephen Balcombe:** Patterns of recruitment in the fish assemblages of an Australian dryland river
10:30	**Laurent Dagorn:** FADIO (Fish Aggregating Devices as Instrumented Observatories of pelagic ecosystems): a European Union funded project on development of new observational instruments and the behavior of fish around drifting FADs	**Sandra O'Sullivan:** Quality assurance of fish age estimations	**Jason McGilvray:** Sampling recreational fisheries; A Southern Queensland perspective	**Katherine Cheshire:** Raising the bar: Monitoring the response of larval fish communities to adaptive flow management in the River Murray, South Australia.
10:50	**Michael Mackie:** Management and monitoring of fish spawning aggregations within the West Coast Bioregion of Western Australia	**Graeme Ewing:** Multi-faceted approach to age validation in banded morwong (*Cheilodactylus spectabilis*) – a very long-lived temperate reef fish	**Karina Ryan:** Use of the Victorian Recreational Fishing Licence database as a sampling frame for a survey of the recreational fishery for snapper (*Pagrus auratus*).	**Scott Hardie:** Recruitment dynamics of the non-diadromous golden galaxias (*Galaxias auratus*): how important is lake level management?
11:10	**Nick Otway:** SEACAMS: Development, deployment and operation	**Julian Hughes:** Age validation and growth of three commercially important Hemiramphid species in New South Wales	**Kim Smith:** An update on the WA Research Angler Program – can data from volunteers really be used to monitor fisheries?	**Rob Hale:** Laboratory-based evidence for the potential role of active habitat selection during settlement by diadromous galaxids
11:30	**Dianne Watson:** The application of stereo-video technology to survey demersal fish assemblages	**Zeb Tonkin:** Effects of differing temperature and feeding regimes on otolith growth in Australian Smelt	**Aldo Steffe:** Changes in the recreational fishery of Lake Macquarie following the establishment of a 'recreational fishing haven'	**Fiona McAleer:** Larval development and ontogenetic changes in the diet of the trout minnow (*Galaxias truttaceus*) in south-western Western Australia
11:50	**Myounghee Kang:** Applications of acoustic data using Sonar Data's Echoview for fisheries science	**Jodie Kemp:** The potential use of Fourier Analysis of otolith shape to identify cod prey species (Genus Pseudophycis) within the diets of little penguins and Australian fur seals	**Michael Lowry:** Relationships between bait collection, bait type and catch: A comparison of the NSW Trailer-Boat and Gamefish-Tournament Fisheries.	**Damien O'Mahony:** Marking of hatchery golden perch (*Macquaria ambigua*) with fluorescent compounds: mark quality and effects on growth and mortality

12:10 Lunch

	Fisheries Assessment & Management	Stock structure	Recreational Fisheries	Freshwater – Environment
Chair	David Smith	Neville Barrett	Michael Lowry	John Koehn
13:00	Richard McGarvey: Estimating absolute abalone density by diver survey: the leaded-line transect method	Ronald Thresher: Stock structure in Australian and NZ orange roughy: inferences from otolith composition	Andrew Rowland: A tagging study on Samson Fish (*Seriola hippos*) in Western Australian waters: movement and post-release survival	Alison King: Native fish flourish in Barmah-Millewa Forest environmental flows
13:20	Stephen Mayfield: Assessing the distribution, abundance and harvestable biomass of an abalone population over a large area: integrating exploratory fishing with fishery-independent survey.	David Welch: Broad spatial-scale stock structure of grey mackerel in northern Australian waters	Jeremy Lyle: Post release survival in recreationally caught flathead: is there a problem?	Alasdair Macdonald: Unwanted housemates: Drought imposed cohabitation of fish in the Wimmera River system.
13:40	Stewart Frusher: Developments in the use of multi-period tagging models to estimate key fishery parameters.	Bita Archangi: Genetic diversity of wild and cultured population of mulloway (*Argyrosomus japonicus*) using mitochondrial DNA and microsatellites	John Kirkwood: Does barotrauma relief enhance survival of tropical reef fish?	Travis Howson: Out on a limb: Could small size debris alternatives for river rehabilitation practices influence fish assemblage structure?
14:00	Paul Burch: The use of different survey strategies in a multiyear tagging study – a cost benefit analysis using the Tasmanian Rock Lobster Fishery as an example	Damien Broderick: Application of genetic mark-recapture methodologies in large and small populations; case studies from Spanish mackerel and dugong.	Heath Folpp: The use of artificial reefs for recreational fishery enhancement	Alex Leonard: Investigations into eel deaths in Victorian waterbodies: 2004-2006

14:20 Afternoon Tea

	Fisheries & Communities	Species Registers & General Biology	Sharks & Rays – Movement	Freshwater – Introduced Species
Chair	Cathy Bulman	Kevin Rowling	Jayson Semmens	Ron Thresher
14:50	Sarah Metcalf: The use of qualitative loop analysis to inform quantitative ecosystem studies in fisheries management	Robert Ward: FISH-BOL – the Fish Barcode of Life Campaign	Malcolm Francis: Tropical excursions and deep diving by great white sharks (*Carcharodon carcharias*) tagged in New Zealand	Joanne Kearns: Movement of oriental weatherloach in an urban waterway within Melbourne
15:10	Neville Barrett: The value of MPAs as reference areas for sustainable fisheries management. A Tasmanian case study.	Bronwyn Holmes: DNA barcoding of fishes: An Australian perspective	Barry Bruce: Coastal migrations, temporary residency and site fidelity of white sharks in Australian waters	Renae Ayres: Population structure of mosquitofish (*Gambusia holbrooki*) within Melbourne
15:30	Hamish Malcolm: Optimal selection of surrogates for describing reef-fish assemblages in a subtropical marine park	Darren Roy: Species Register – It's just an electronic reference collection!	Michelle Heupel: Up the river with bull sharks: the effects of changing salinity regimes on movements and distribution	Kerri Lynch: Genetic population structure of the exotic mosquitofish, *Gambusia holbrooki*.

15:50	**Scott Ling:** Climate change, overfishing and recent phase shift in a temperate reef ecosystem	**Natalie Toon:** Distribution of solegnathus species and their associated community assemblage in south-east Queensland trawl grounds	**Jonathan Werry:** Management of large shark species on urbanising coastlines with a focus on *Carcharhinus leucas*.	**Jawahar Patil:** Daughterless: A recombinant approach to manage the impacts of feral fish
16:10	**Anne Elise Nieblas:** Climate driven changes in upwelling and mixing in waters around Australia: Possible impacts on regional productivity and marine fisheries	**Ian Carlson:** Patterns of distribution and movement of two species of temperate reef fish, *Ophthalmolepis lineolatus* (Labridae) and *Hypoplectrodes maccullochi* (Serranidae), on temperate rocky reefs of southeastern Australia	**Stephen Taylor:** Habitat partitioning among sharks in Moreton Bay, Queensland	**Stephen Beatty:** The yabbie in Western Australia: An invasion from the east

16:30 **Annual General Meeting (All members are encouraged to attend)**

18:00 **Poster Session**

19:30 End of day 1

Friday 1 September

	Invertebrates	General Biology	Habitat & Mapping	Freshwater – Cods
Chair	Gretta Pecl	Alexander Morison	Alan Williams	David Crook
8:20	**Arani Chandrapavan:** Translocation of southern rock lobsters: A novel approach to lobster stock enhancement	**Ashley Williams:** Population biology of three coral trout species in the eastern Torres Strait	**Gordon Keith:** Integrating and visualizing epi-benthic habitat survey data	**Cathy Nock:** Population genetics and evolutionary history of the endangered eastern freshwater cod, *Maccullochella ikei*.
8:40	**Hugh Pederson:** Understanding the effects of fishing on rock lobster(*Jasus edwardsii*) foraging behaviour and habitat utilisation via radio acoustic tracking	**Allen W.L. To:** Reproductive biology and fishery of serranid fishes in Hong Kong Sar, China	**Bradley P. Harris:** Benthic habitat mapping in offshore USA sea scallop, (*Placopecten magellanicus*), beds based on underwater video surveys.	**Meaghan Rourke:** Genetic diversity in Murray cod (*Maccullochella peelii peelii*) across the Murray-Darling Basin.
9:00	**Fay Helidoniotis:** Modelling the growth of juvenile black lip abalone in southern Tasmania	**Ben Kendall:** Reproductive biology of flat-tail mullet and sand mullet in NSW	**Alan Jordan:** Spatial structuring of seabed habitats on the continental shelf of New South Wales, Australia	**Gavin Butler:** Reproductive Behaviour of the endangered eastern freshwater cod *Maccullochella ikei* in the Mann-Nymboida Rivers of NSW.
9:20	**Malcolm Haddon:** Modelling invertebrate growth: Empirical models versus traditional growth models in black lip abalone and giant crab	**James Haddy:** Spatial and temporal trends of southern black bream, *Acanthopagrus butcheri* spawning activity in intermittently opening estuaries.	**Vanessa Lucieer:** Characterisation of rocky reef using object oriented classification methods and fragmentation statistics	**John Koehn:** Habitat selection by Murray cod

9:40	**Thor Saunders:** Utility of a 'morphometric marker' for fine-scale management of abalone fisheries.	**Janet Ley:** Indo-Pacific tarpon *Megalops cyprinoides:* A review and ecological assessment	**Miles Lawler:** Acoustic detection of sub-surface *Macrocystis pyrifera* for long term monitoring	**Jason Lieschke:** The use of hollow logs in the Murray River by trout cod and Murray cod
10:00	**Jessica André:** Shedding light on growth variability in octopus: An experimental individual based approach	**Alistair Becker:** The diets of four dominant fish species within an intermittently open estuary in South Eastern Australia	**Dana Burfeind:** A comparison of faunal assemblages in *Caulerpa taxifolia* and seagrass beds in Moreton Bay Queensland	**Jason Thiem:** Fate of on-grown endangered trout cod stocked into two upland rivers
10:20	Morning Tea			
	Fisheries Assessment & Management	**Early Life History**	**Sharks & Rays – Physiology & Genetics**	**Freshwater – Movement & Stock Structure**
Chair	Malcolm Haddon	Pancho Neira	Bob Ward	Mark Lintermans
10:40	**Reg Watson:** Global fisheries: The big picture	**Afsana Yasmin:** Effects of different levels of conjugated linoleic acid (cla) on egg and larval quality in broodstock diet of tilapia *Oreochromis niloticus*	**Fabian Trinnie:** Reproductive biology for ecological risk assessment of several urolophid species taken as bycatch in south-eastern australia	**Ben Broadhurst:** Radio-tag attachment to two-spined blackfish, *Gadopsis bispinosus:* tag retention and behavioural effects
11:00	**Gary Jackson:** Stock assessment of snapper, *Pagrus auratus*, in oceanic waters off Shark Bay, Western Australia: imprecise catch-at-age data combined with problematic catch and effort statistics	**Kathryn Hassell:** Mild hypoxia, lowered temperature and decreased salinity levels affect egg hatching and larval survival in black bream, *Acanthopagrus butcheri*.	**Cynthia Awruch:** New tool to address size at maturity: steroid hormones	**Michel Dedual:** Horizontal movements of adult rainbow trout in Lake Taupo, New Zealand as determined by acoustic tracking
11:20	**Mike Allen:** Stochastic stock reduction analysis for assessment of the pink snapper fishery in Queensland	**Kane Blackman:** Locomotory capabilities of temperate larval fish	**Lorenz H Frick:** Capture simulation: a new approach to studying chondrichthyan stress physiology	**David Crook:** First evidence for facultative diadromy in mainland coastal populations of Australian smelt (*Retropinna spp.*) in south-eastern Australia
11:40	**Philippe Ziegler:** Harvest strategy evaluation for a spatially-structured temperate reef-fish fishery	**William Gladstone:** The roles of parental food supply and larval dispersal in the selection of spawning sites by *Chromis hypsilepis* (Pomacentridae)	**Anja Nicole Steinberg:** A comparison of the electrosensory system of *Dasyatis kuhlii* and *Dasyatis fluviorum*.	**Matthew Gordos:** Data acquisition and management of fish passage barriers in coastal NSW.
12:00	**Jemery Day:** Application of a new harvest strategy framework to shelf species in the southern and eastern scalefish and shark fishery	**Ana Lara-Lopez:** Transport and tidal exchange of larval fishes at the entrance of a tide dominated estuary	**Christine Dudgeon:** Molecular ecology of the leopard shark *Stegostoma fasciatum* within the Indo-Pacific	**Paul Thuesen:** Biological barriers to gene flow in a rainforest stream fish
12:20	**David Ramm:** CCAMLR's framework for managing fisheries in the Southern Ocean	**Jeffrey Leis:** How larval fish behaviour influences dispersal – ontogeny, behaviour, physiology, phylogeny, hydrodynamics and biogeography meet hydrography	**Jenny Ovenden:** Cryptic species alert for sustainable management of black-tip and spot-tail shark.	**Andrew Munro:** Natural chemical markers discriminate between hatchery and wild golden perch

12:40 Lunch

	Fisheries Assessment & Management	Early Life History	Sharks & Rays – General Biology	Freshwater – Distribution
Chair	Gary Jackson	Tony Miskiewicz	Peter Last	Wayne Fulton
13:30	**Jane Alpine:** Spatial closures in pelagic ecosystems: Do area requirements really limit viability?	**John Keane:** Linking larval fish assemblages with water masses from non-depth-discriminate data in shelf waters off south-eastern Australia	**David Phillips:** The biology and ecology of the southern eagle ray *Myliobatis australis* from south-eastern Australia	**David Morgan:** Fishes of the King Edward River, Kimberley, Western Australia
13:50	**Julian Harrington:** Implementing detailed spatial management in Tasmanian scallops	**Lynnath Beckley:** Swings and roundabouts! Leeuwin Current eddies and potential impacts on Western Australian fisheries	**Ian Jacobsen:** The biology of the australian butterfly ray, *Gymnura australis* (Ramsay & Ogilby, 1885)	**Adam Kerezsy:** The distribution and abundance of fish in the Lake Cargelligo system
14:10	**Katherine Tattersall:** Applications of GIS to analyse spatial data collected from GPS loggers deployed on the boats of abalone (*Haliotis sp.*) divers in Tasmania.	**Pancho Neira:** Evaluation of daily egg production to estimate spawning biomass of redbait off eastern Tasmania	**Justin Bell:** Age and growth and reproduction of southern Australian Holocephalans and the white-fin swell shark (*Cephaloscyllium spp.*)	**Brendan Hicks:** Fish in the lower Waikato River and its tributaries – a New Zealand perspective from boat electrofishing
14:30	**Julie Lloyd:** Utilisation of GIS spatial statistical methods and fuzzy-rule based modelling to assist in the development of ecosystem based fishery management strategies for the NT Timor Reef fishery.	**Sean Tracey:** Coupling temperature related larval growth and survival estimates with a Lagrangian particle dispersal model to predict recruitment and connectivity success	**Matias Braccini:** Biology and risk assessment of *Squalus megalops*	**Brendan Ebner:** Spatial distribution of an upland fish fauna: Implications for managing threatened fishes
14:50	**Philippe Puig:** New approaches to fisheries management using a fuzzy rule based dynamic model	**Russell Bradford:** Larval transport and recruitment process of southern rocklobster in Australian waters	**Ken Graham:** How does the biology of New South Wales gummy sharks (*Mustelus antarcticus*) relate to the southern Australian population?	**Mark Lintermans:** Stock enhancement for threatened fish species in Australia: Where have we been and where are we going?

15:10 Afternoon Tea

	Fisheries & Bycatch	Early Life History	Sharks & Rays – Fisheries	Movement
Chairs	Stewart Frusher	Jeff Leis	Malcolm Francis	Barry Bruce
15:30	**Kate Stark:** Spatial and seasonal patterns of arrow squid (*Nototodarus gouldi*) abundance in southeastern Australia: Can we detect environmental effects?	**Graham Pegg:** A comparison of marine fish larvae identification outcomes using MtDNA and morphological characteristics	**Colin Simpfendorfer:** Conservation biology of the smalltooth sawfish (*Pristis pectinata*): Science to save the USA's first endangered elasmobranch	**Ryuji Sakabe:** Spawning migration and localised movement patterns in black bream, *Acanthopagrus butcheri* (Munro), in a Tasmanian estuary based on acoustic telemetry
15:50	**Shane Roberts:** A tale of contrast for South Australia's western king prawn (*Melicertus latisulcatus*) fisheries	**Vanessa Thompson:** Determining the mechanisms of population self-replenishment in coral reef fishes.	**William White:** Elasmobranch fisheries in eastern Indonesia: The target longline fishery for sharks in Lombok	**Gretta Pecl:** Assessing population linkages in a mobile inshore squid species using a combination of acoustic tracking, t-bar tagging and trace element analysis

16:10	**Cameron Dixon:** By-product stock assessment and research in South Australian prawn fisheries	**Nicole McCasker:** A critical look at the critical period hypothesis: Is it time to move on?	**Claire Bartron:** Elasmobranch fisheries in eastern Indonesia: Reproductive biology and age and growth of the silky shark *Carcharhinus falciformis*	**Jayson Semmens:** Understanding the dynamics of aggregations of black jewfish (*Protonibea diacanthus*) in the Northern Territory
16:30	**David Maynard:** Using submerged lighting to reduce night-time finfish by-catch in tropical prawn trawling: implications for sequential by-catch Reduction	**Anthony Fowler:** Snapper – significance and characteristics of recruitment of 0+ fish	**Lindsay Marshall:** Using morphological techniques to identify shark fins: The case of illegal shark fishing in northern Australia.	**Kyoung Mi Kang:** The seasonal movement ranges and routes of black rockfish *Sebastes schlegeli* measured by acoustic telemetry
16:50	**Simon Willcox:** Marine mammal interactions with mid-water trawl fishing: Developing strategies to mitigate mortalities	**Paul Hamer:** Quantify linkages between 0-age recruitment areas and replenishment of local populations using otolith chemistry: The role of Port Phillip Bay in sustaining the Victorian snapper fishery	**Jenny Giles:** Species identification of shark fin: A molecular technique using mitochondrial DNA	**Jay Willis:** Movement rules for large pelagic fishes derived from acoustic monitoring

17:10 End of Day 2

18:00 Conference Dinner

APPENDIX 7: WORKSHOP EVALUATION SURVEY

2006 ASFB Workshop – Cutting edge technologies in fish and fisheries science

Evaluation survey

The primary objective of Workshop was to showcase and identify new techniques and technologies that enhance research capacity in fish and fisheries science. Secondary objectives were to identify opportunities to further develop research capacity and to consider the challenges and benefits that these opportunities may present.

It was hoped that the workshop would identify:

- emerging science-industry partnerships;
- potential for new collaborations between institutions and disciplines;
- cross-theme linkages,
- advances in the application of available techniques; and
- limitations of technology.

In order to evaluate how well the Workshop met its objectives and assess benefits for fish and fisheries science we would appreciate it if you could spare a couple of minutes to answer the following questionnaire. *Participation is voluntary and responses will remain anonymous. Please email completed forms to* Jeremy.Lyle@utas.edu.au *by 13 July 2007.*

Your affiliation and status (*indicate Y as appropriate*)

Affiliation	Govt agency		University		Private company		Other	
Status	Student		Researcher		Industry		Other	

According to the Workshop theme areas, which if any do you consider most relevant to your area of expertise/interest (can be more than one) (*indicate Y as appropriate*)

Workshop theme area	Most relevant	Minor relevance	Limited/no relevance
Tagging and tracking			
Underwater vision and hydro-acoustics			
Chemical techniques			
Data capture and management			

Did the Workshop expose you to technologies and techniques that were *unfamiliar* to you but may have relevance to your area of interest/expertise? Have you followed up, or intend to follow-up, on any of these techniques, eg by contacting other researchers/manufacturers, literature searches, etc. (*indicate Y as appropriate*)

Theme area	Relevant	Followed up	Intending to follow-up
Tagging and tracking			
Underwater vision and hydro-acoustics			
Chemical techniques			
Data capture and management			

Would you say the Workshop directly or indirectly assisted you in your area of research or business through any of the following: (*indicate Y as appropriate*)

Exposure to novel applications of technology	
Increased awareness of applications	
Greater understanding of limitations	
Collaboration with other groups	
Identifying industry-science partnerships	
Other (specify)..	

Have you developed or do you intend to develop research projects/applications in the near future that have benefited from your participation at the Workshop? **YES/NO** (*delete as appropriate*)

If **YES**, indicate theme area (refer above), funding source and project status
(*Y/N as appropriate, if more than one project indicate number in brackets*)

Main funding source	Theme area(s) - T&T, UV&H, CT, DC&M	Proposed	Submitted	Evaluated	Successful
FRDC					
National competitive eg ARC					
Govt.					
Industry					
Charitable trust					
Other					

Do you have any general feedback about the Workshop relating to the program, quality of presentations, value of discussion sessions, venue and general organisation?

Any other comments?

Please note the survey results will be collated and reported at the 2007 ASFB conference and as part of the Final Report to the FRDC.

***Workshop Proceedings will be available very shortly*.**

On behalf of the organising committee thank you for your time and feedback.

Jeremy Lyle
2006 ASFB Conference Convener

APPENDIX 8: PARTICIPANT FEEDBACK

As part of the Workshop Evaluation Survey, respondents were invited to provide additional feedback about any aspects of the event, including program, quality of presentations, value of discussion sessions, venue and general organisation. The following comments were provided:

'The venue was of exceptional quality, organisation, location and appropriate level of technical ability to show case most of the presentations.'

'I believe the discussion sessions were of a high level of expertise which assisted me with the ability to provide high level feedback to my peers and industry associates.'

'Quality of presentations, overall were of a high standard with presenters able to clearly and concisely give the audience a comprehensive summary/overview of what it was they were presenting. A very well organised and thoughtful program and conference – well done!'

'All very well run and organised.'

'Outstanding success and professionally run – well worthwhile from an industry supplier perspective'

'I think quality of presentations was excellent and even if some topics didn't relate directly to my area it was interesting to find out more about marine sciences. Venue and organisation was excellent and it was great to have an opportunity to attend this workshop without excessive travel and accommodation costs.

Being a computer scientist, I think it's important that other sciences (in this case marine sciences) understand that computers can be used for more than just word processing. There has been a lot of talk about gathering large volumes of data during the workshop but it's difficult to analyse these large amounts. Computers can assist in this task and the School of Computing at UTAS does have a Marine ICT group and they are involved in several projects and are looking for more collaboration. I think that marine scientists are often not aware of potential technologies other areas can provide. Video processing is one of those technologies I'm involved in and I'm using this technology in aquaculture context. If you'd like to find out more about Marine ICT group within the School of Computing see the following page:
http://www.comp.utas.edu.au/external/research/marineICT/'

'All excellent. As a presenter I enjoyed the patience and attention to detail given to me by the organisers at all stages of the workshop, from presenting to writing up in the

proceedings. In addition, there was opportunity to attend, or present further material at, some informal workshops to learn and demonstrate techniques, or hear the latest in shark research. The schedule of talks allowed quick and easy transfer of audience amongst themes. The student talks were of high quality, and the overviews given by keynote speakers covered major issues at the cutting edge.

Since the workshop our UV&H software has been shared with 12 other government, university and private industry groups. Adoption is the key to success, and the workshop was a trigger to get the adoption happening.'

'General organisation was excellent. Quality of the presentations, particularly the students gets better each year. Vemco's technical training workshop was a good.'

'National acoustic network needs further development and investment.'

Electronic dissemination of the results innovative. Website downloads will improve access. Well done to the organising Committee for a successful Workshop

'In general the workshop themes were very appropriate. However the chemical section was a little biased towards dietary studies. A presentation on endocrinology may have been nice to present it as a tool for non-destructive reproductive studies.'

'A great conference/workshop and well organised. However a bit rushed between speakers and there were a few speakers I intended to see but other speakers ran overtime or there was another relevant speaker on at the same time.'

'Great venue, high quality presentations, perhaps the best ASFB yet.'

'In all these respects the conference was very good – thank you.'

'Workshop provided benefits for amendments to an existing project , and for a future proposal that is still in an early stage of development.'

'It was possible too popular for it's own good – but still a very useful meeting. Thanks for organising it.'

'I thought it was one of the better workshops I had been to some time.'

'I think there was not enough opportunity for speculation about how some of the techniques might be used – i.e. there was description of techniques and technology but there could have been more brainstorming on how they could be used more widely. Informative in most ways.'

'Well organised. Good audience discussions. Thanks.'

'I found the chemical techniques workshop a valuable experience, including as a presenter and also viewing the other talks.'

'The discussion sessions were great and very worthwhile in having. The workshop and conference all ran very smoothly and was well organised. I got a lot out of this week.'

'Well organised, well presented.'

'The workshop was extremely interesting, although many of the techniques were not as new/novel as they were presented to be. The discussion sessions were interesting but tended to get side-tracked easily (stricter chairing perhaps!).'

'I was somewhat disappointed in the workshop focussing so much on fisheries and fisheries applications rather than fish science/pure research – although I suspect this reflects funding sources.'

'The organisation and venue etc was excellent and the quality of presentations generally high. The social side was good fun and particularly useful for students (eg me) to meet professional fish people from around Australia in a more relaxed environment.'

'On the acoustics issues I was a bit concerned at the shallow treatment of the topic. It appears to me there is a 'cargo cult' approach to acoustic tracking and tagging where individual researchers have picked up the technology and run with it without having any idea of what it does and its limitations. Massive errors in their interpretation were obvious as they were biologists using an engineers tool without understanding the engineering. I am a biologist who only does underwater engineering so I see the problem. Unfortunately the workshop saw the obvious Cargo Cult capture of some young idealistic researchers who in turn advocated the cargo cult approach.

The T&T experts were engaged in conversation and agreed with my criticism although from a slightly different angle. For example the devices they use to generate the tag sounds in tags are quite poor and better are available. The other problem is that use of commercial tags and tracking systems limit the user to utilising their technology that is quite expensive, There are better approaches but the Australian fisheries industry has been captured but does not realise it.'

'Well organised well done.'

'Workshop was very interesting and a great opportunity to gain an extensive overview of current research directions and technological developments. In addition an excellent opportunity to develop and increase networks. As is always the case in this type of workshop format, inevitable clashes within the program timing for sessions of interest.'

'Pretty good all round.'

'Well organised and informative.'

'Workshop was excellent. Highly qualified scientific presenters produced high quality, informative presentations. Also, the venue and general organisation were excellent.'

'Smaller groups and a more hands-on approach with the technology would have increased the value of the workshop for me.'

'Very well done. Good speaker selection.'

'The room was too small for all the people that wanted to participate.'

'While I found interesting some of the presentations not associated with my work, in particular the keynote talk on otolith chemistry, I can't say that the tagging session was of much value to me. I found that (as usual) much of the discussion centred on tag development and tag deployment procedures i.e. the 'exciting potential' for the mechanical aspects of the project setups. My area is actually in the analysis of the resulting data, which is generally complex and unglamorous, but perhaps more of a current challenge to tagging groups worldwide? In fact, I would say development of data analyses techniques is currently the most "cutting edge" aspect of tagging and tracking research, and most fundamental to the development of research capacity in this area. There was absolutely no content with regards to this in the workshop which I thought was very poor.

The audience size ended up being equivalent to that of a conference. Consequently, the structure was like that of a conference, with the primary content being presentations. The resulting discussion was therefore quite limited and tended to revolve around a few of the most vocal members. I would not say that it was successful as a workshop environment.'

‘Very good coverage of topic and availability of distributors was excellent. Venue and organisation could not be faulted. Lecture rooms and facilities were top class.’

‘One of the most enjoyable and worthwhile conferences/ workshops I have attended.’

‘A healthy debate canvassing a broad set of views from encouragingly enthusiastic participants.’

‘Well organized and valuable as it is always beneficial and interesting to see and hear about what others are doing. Presentations were mostly of high quality.’