# NSW Branch Newsletter

Issue 47 February 2016

Australian and New Zealand FORENSIC SCIENCE SOCIETY

★ Happy New Year to all members and their families. We look forward to bringing you a range of exciting events this year

★ Don't forget the like the NSW Branch Facebook Page

**Inside this issue:**



## NSW Branch Meeting

*The NSW Branch of the ANZFSS is delighted to announce our first meeting of 2016*

**New Year Networking Night!**

*This casual evening will feature 5 minute 'speed talks' from committee members*

**Students – make contact with potential employers**

**Academics – meet future collaborators**

**Practitioners – share war stories and see what it's like on the opposite side of the lab bench!**

***Nibbles provided, cash bar***

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|---|---|
| WHERE: | East Sydney Hotel<br>Corner of Crown & Cathedral Streets, Woolloomooloo |
| WHEN: | Wednesday 10th February 6.30 pm |
| COST: | Free for members, $5 for non-members |

## New Society Members:

The NSW Branch of ANZFSS warmly welcomes the following new and returning members:

- Jessica ANDRAWES
- Lance AXMAN-FRIEND
- Michael BELL
- Laura CLANCY
- Jesse DAVIS
- Kyle EWART
- Kevin FORWARD
- Claire GRAYDON
- Tony HOADY
- Jared HUNTLEY
- Eric KAU
- Alicia KHUU
- Matthieu MAITRE
- Rebecca McCABE
- Harmonie MICHELOT
- Dilan SECKINER
- Chung San SHAN
- Julianne STEVENS
- Vitor TARANTO
- Ka Tak WAI
- Jeremy WATHERSON
- Natasha WHITMAN
- Michael WHYTE

## Presidents Message

Dear members,

The AGM in October signalled the end of my time as the NSW Branch President. I start my message by thanking all our branch members for the support you have given to the Branch and myself over my last five years as Branch President.
My last address as President was the Branch AGM held on October 1, 2015. Due to the interest in the topic we were forced to change the venue to safely accommodate all our RSVP'd guests!

The date of the AGM was one which also marked a dark period for many Australians. It was the 10th Anniversary of the Bali bombing. In response to this heinous crime, a comprehensive DVI operation by the Australian forensic community was initiated. This anniversary date was coincident to the topic we spoke about at our AGM; another DVI operation mounted in response to a tragic event – the downing of Malaysian Airlines flight MH17 - involving the death of 298 passengers and crew members, including 41 passengers of interest to Australia, 28 of those Australian citizens. This was also sadly at the hands of other fellow human beings.

These incidents require the dedication of many experts to identify the deceased and bring some kind of closure to those relatives and friends. Australia is fortunate to have one of the best when it comes to the coordination of DVI operations - Dr Simon Walsh, AFP Chief Scientist and AFP National DVI Commander. Simon, who held the key command responsibilities for the DVI operations, was our presenter for the evening and spoke eloquently of the extremely professional work the operational team carried out under Operation AREW. No fewer than 280 AFP members were deployed, including DVI and other specialists, with support from other states and territories, as well as other Australian Government Agencies. We saw pictures and heard anecdotes of events that occurred during the operation, and the difficulties with carrying out such an operation in a war affected region. Having experienced working within an Australian AFP-led DVI Operation overseas, I can attest to the hard work and dedication that is required for a response like this to be coordinated, and how well AFP conduct their operations; listening to the presentation reminded me of just how much our Australian Forensic community can offer in expertise and skill in these extremely difficult situations. For those who are not aware, Simon received the Public Service Medal in July 2015 for 'outstanding public service in forensic science particularly disaster victim identification'. On behalf of the NSW Branch I would like to congratulate Simon on this significant award.

Those who keep track may have also noticed the AGM was held a little later than normal again this year. This is part of our change to a financial year calculation for membership, and the Incorporation Act / rules which require each Branch to hold an AGM within 6 months after the end of financial year. I expect the AGM will be held in a similar month from here on.

## Presidents Message

Whilst we have had to change a couple of meeting topics due to illness over the past year, we have still had some very interesting and pivotal talks in 2015;
Feb – Dr Mark Tahtouh, AFP, "Who supplies Australia's Drugs? Looking at how Forensic Drug Intelligence is used to assist Police operations within and across jurisdictions.
March – Dr Kaye Ballantyne, VicPol, "Cognitive science and Forensics – more than just bias blinding" Considered a hot topic presently, Kaye spoke about cognitive forensic science and the important role human factors play in forensic decision making. Research was presented to demonstrate how observational and psychological studies can provide information about examiner behaviour, human factor predictors of examination
success, and why context information is sometimes required for optimal performance.
April – Dr Andrew Symons, Environmental Forensics Team, Office of Environment and Heritage. "Environmental Forensics: CSI for the environment" Showed how scientific evidence is gathered for legal proceedings against those that cause harm and pollution to our environment.

May – Dr Adam Cawley and Dr Catrin Goebel, "Advances in Sports Anti-Doping: Staying ahead of the game". This was a very technical drug-related presentation but was an interesting perspective into how it may be possible to track drug cheats within the human and horse racing world.

July we held another successful bi- annual Inside the Forensic World careers day for school leavers and other educational workers. We had a great response of 60 participants (maximum number). The committee worked extremely hard to organise and ensure the day went off without a hitch. I thank the Centre for Forensic Science and UTS for their major support of this day, and in-kind support of NSW FASS for supply of consumables. 2015 ended with a lavish affair – the ANZFSS Executive AGM, with Branch Presidents or their Representative in attendance. A sit-down dinner and meal in the Skeleton Gallery at the Australian Museum, was followed up with speakers from the NSW Fire and Rescue talking on the Quakers Hill Nursing Home fire and subsequent investigation.

On behalf of the Committee, I would like to thank our outgoing Vice President, Ali Beavis, who has decided not to stand for nomination this year. I would like to thank her for her dedication and also congratulate her on her promotion to Associate Professor at UTS. She has promised to help out wherever she can, and I expect we may call on her from time to time. We will definitely miss her baked 'forensic cookies'! Also a special mention to Glenn Wilcher who is responsible for many of the excellent stories in our Newsletter – he also is not nominating though has offered to assist with the Newsletter wherever required. The whole committee thanks him for his contributions. I also thank Tania Prolov for her assistance and contribution with gaining sponsorship to help support our Branch activities. Lastly, our previous Secretary Kate Grimwood, who resigned from our Branch due to moving interstate, is sitting in the Vice Presidents Role for the South Australia Branch. I am certain they will benefit from all the skills Kate will bring to that role. For those who don't know, Kate played a pivotal role in many aspects of the NSW Branch Administration upgrading, including contributions to the conversion of our hard copy-based membership applications into an electronic database; it was from this that many aspects were drawn from for the executive membership database we use today.

## Presidents Message

I would like to sincerely thank the outgoing committee this year, and over the previous years also – I am just the one who gets to stand in front of members and introduce presenters and talk a little – the committee does the hard work for each meeting, and are what makes the Society successful; I am extremely grateful for your support and commitment. At the risk of being sentimental … upon reflection, I have enjoyed my time in this role, and appreciate (NSW Branch past President and Vice President) Claude Roux and James Wallmans' invitation to be the caretaker President in 2010 when they first moved across to the Executive. It was 'their fault' I ended up staying on for 4 more years! In fact the whole association with the ANZFSS has been fantastic professionally and has afforded me many opportunities, and I would encourage others to move from the periphery and get involved! I intend to stay involved with the committee for a while yet - at least while someone is still willing to sign my nomination form.

By stepping into the Vice President Role, I remain active within the Branch. I look forward to the new President Rebecca Johnson taking the reins, and am certain she will inject some new energy and enlightenment to the Branch. I encourage all members to get out to a branch meeting where possible – we are still working on ways to change and offer new experiences that may benefit more members, and as always, encourage you to let us know if there is something that you would like to see offered through ANZFSS – better yet, become part of the organising committee!

I am also co-opted onto the Executive assisting with the Professionalization of the ANZFSS across the board. With this initiative, the Society's goal is to better represent you the member, and those members who are working within the profession of forensic sciences. And note I say profession, as it is a profession, and it is time that we as a profession have a body who may represent you and provide some conduit between the professional and the many resources, research, education, legal interaction and opportunities that exist out there. There are many ways this could be achieved but ultimately it is up to you as the member to decide if you want to explore this and how you would like the Society to represent you as we move into the future. There will be more of this to come through 2016….

Regards,

*- Alison Sears, Outgoing President, NSW Branch ANZFSS*

# Environmental Forensics — Dr Andrew Symons (NSW Branch Meeting 29th of April 2015) Review by Glen Wilcher

Andrew Symons is a Senior Scientist in the Environmental Forensics team within the Office of Environment and Heritage. Andrew uses various forensic, analytical, and ecotoxicology techniques to undertake environmental forensic investigations. Andrew has over ten years' experience in environmental science, previously having worked at the National Measurement Institute and CSIRO Land and Water. Andrew has a BSc in Environmental Chemistry and a PhD in Environmental Microbiology from the University of Sydney. The Environmental Forensics Team within the Office of Environment and Heritage undertakes approximately 400 forensic investigations each year. The team analyses an extremely diverse range of sample types including toxic and hazardous materials, orphan wastes, poisoned wildlife and atmospheric fallout.

**Andrews team at a scene**

Andrew commenced with defining what environmental forensics is.

*Environmental forensics is the scientific investigation addressing contamination, environment, and media being air, soil, water and biota to assist in determination of facts for use in law courts.*

Andrew mentioned legislation in NSW concerning environmental protection with the main legislation being the *Protection of Environment Legislation Act and the Pesticides Act.* The *Contaminated Land Management Act* is another example.

Andrew explained the Environmental Protection Authority (EPA) works in collaboration with other government agencies to respond to and manage incidents being in effect the 'environment police'.

The EPA does this by monitoring emissions and compliance, conducting audits and investigating reports of pollution. They issue environment protection licences to control activities that could have an impact on the environment or human health. The EPA provides scientific and legal services, and prosecuting organisations and individuals who breach environmental laws.

The Environmental Forensic team consists of 24 staff members and is based at Lidcombe being employed for chemical forensics and ecotoxicology testing. The facility has $4 million of modern laboratory equipment. Clients include the EPA and NP&WS.

## Investigation of Environmental Incidents.

Andrew outlined the steps involved in the investigation of incidents. An incident occurs such as a pollution event. The EPA is notified. This can be self - notification, a member of the public or the EPA conducting audit or compliance checks. An EPA Officer investigates and collects evidence. Advice and consultation is provided on collection of evidence. Samples collected are examined and tested by the forensic team and a report prepared as a brief of evidence in effect so as to decide on a decision with respect to a regulatory response.

Key questions to be asked in investigations include what is the chemical contaminant, the concentration levels, where did the contamination originate, why did it occur, who was responsible, and what is the potential or actual environmental impact.

# REVIEW: 'Environmental Forensics' — Dr Andrew Symons (NSW Branch Meeting 29th of April 2015) Review by Glen Wilcher

## Types of evidence collected.

Andrew outlined types of evidence collected by investigators which includes;

Interviews

Physical evidence such as samples

Records like manifests, productivity records, emissions, electronic and paper records.

Photographs

Surveillance such as video cameras, motion sensors, and camouflaged cameras used in illegal dumping.

Tracers being fluorescent balls that are placed in dumpsters of building waste such as asbestos. The balls are labelled 'EPA' and if balls are found by the EPA it shows a link between the origin of the waste and the dump site and contractor.

Andrew also outlined the collaboration that occurs between his team and other government bodies. The example he used was of a methamphetamine lab that was located in a National Park. This was a combined Police and Environment Operation.

There were chemicals on site, LPG gas cylinders, 20 litre reactor flasks, and coffee plungers used as beakers. Andrews team was asked to analyse the samples collected. He then outlined some of the capabilities they have such as chemical, metal and organic testing using different technology as simple as optical microscopy and ability to utilise SEM, gas chromatography such as 2D gas chromatography, and infrared spectrometry.

## Types of Ecotoxicology testing.

Andrew mention various types of tests conducted using test species such as the water flea test, using fluorescent bacteria, juvenile rainbow fish and the worm avoidance test.

These test species are used in toxicology testing, heavy metals, agricultural and domestic use of pesticides establishing safe levels of use. Examples include the levels of copper with rainbow fish and crude oil toxicants and dispersants with respect to egg production, hatchability, and larval growth.

Worm avoidance test look at the worm's mortality or avoidance of soil contaminates.

*Daphnia magna* are small 5mm species so a great number can be raised in a small space. They have short life span, easy to culture. Different tests of chemicals utilize the water flea with exposure to varying concentrations of a substance under test and in chronic toxicity testing for example the total number of offspring produced at the end of a test can be assessed.

## Cases.

Andrew presented various cases investigated in the past.

### South West Sydney – Poisoned pigeons.

Busby Shopping Centre contacted a Russell Betland Manager of 'Birds No More' who specialised in "pigeon control'. Tenants were complaining about the birds. Betland arrived in a van owned by his sister. He had no drivers licence or pest control licence. The unlicensed contractor's method of pest control was less sophisticated than his website suggested. Russell Betland and a friend went on to the roof and spread piles of seed laced with Fenthion. Betland also claimed he was offered money to poison more birds at the near -by home of Ronald Dean, who fed birds that visit his property.

# REVIEW: 'Environmental Forensics' — Dr Andrew Symons (NSW Branch Meeting 29th of April 2015) Review by Glen Wilcher

Scattered poison seed was found where Dean's grandchildren play as well as 44 dead birds, consisting of 38 Pigeons, 4 Doves and 2 Rainbow Lorikeets.
26 more birds were found dead at the shopping centre.

**EPA worker recovering bird remains for testing**

## Dubbo bird deaths.

Bodies of cockatoos, corellas and galahs were discovered at Troy Reserve, a stretch of the Boothenba Road and other locations. The EPA reported testing indicated that an insecticide, Fenthion, was the likely cause of death. The insecticide detected in bird samples is commonly used to eradicate insects and non - native birds, such as starlings.

## Newcastle Oil Spill – MS Magdalene

On the 25th August 2010, at approximately 1030 hours while berthed at Kooragang Berth 4 in the Port of Newcastle, the MV "Magdalene" commenced deballasting. Oil had seeped into a ballest tank as a result of a 15mm diameter hole. During the deballasting between 1030 and 1400 hours on the 25th August oil was discharged into the Hunter River at the Port of Newcastle.

**Wildlife affected by the oil spill**

The mixture of oily water containing 72,000 litres of heavy fuel oil was discharged. The total cost of the clean-up to the Port of Newcastle was approximately $2 million. Difficulties were experienced due to the thickness of the oil.

The spill had effects on fauna and the local ecosystem. 45 to 50 pelicans were impacted which were required to be transported to Taronga Zoo for intensive care and rehabilitation. Light oil spotting occurred in protected salt marshes and mangroves in the Hunter Wetlands National Park. Invertebrate animals on mudflats were also contaminated.

Environmental forensics is gaining more interest within consulting and legal communities, academia, industry and regulators as well as outside the legal environment. It is a specialization in forensics with greater investigative methods and tools. The advancement of this forensic and scientific discipline is evidenced with numerous universities offering degree programmes in environmental forensics and the publication of specific peer reviewed journals.

## References.

Images from Google image.
Sydney Morning Herald 4/10/2010 Pigeon lover poisoned other man's birds.
www.abio.com.au/bifenthrin-pesticide-causes-catastrophic-crayfish-mass-mortality
www.epa.nsw.gov.au/epamedia/EPAMedial502801.htm

## REVIEW: 'Advances in Sports Anti-Doping: Staying ahead of the Game ANZFSS Public Night—27th May 2015. Review by Glenn Wilcher.

### Advances in Sports Anti – Doping: Staying Ahead of the Game.—Dr Adam Cawley and Dr Catrin Goebel

For this years public night, we were treated to a pair ofspecial presentation that examined the changing world of sports drug testing. The speakers Dr Adam Cawley and Dr Catrin Goebel Adam has 17 years' experience in research related to sports anti – doping and is currently Science Manager to Racing NSW. Adam holds a Ph.D in Science and Bachelor of Science with First Class Honours Degrees from the University of Sydney. He has published in scientific journals with reports to Government agencies.

Adam opened with figures on the importance of the racing industry to the state economy generating $1.2 billion and a significant contribution to regional NSW investment. The racing industry employs directly 50,000 people with NSW the busiest state.

Adam stated data control is conducted in racing to ensure integrity and accountability and ensuring a level playing field for participants and also ensuring the welfare of the competing animals in the various sectors of the industry.

The organisation is the frontline defence in doping and what animals may be subjected to but unlike human athletes who have a choice animals do not have a choice what is administered to them.

### Australian Racing Forensic Laboratory (ARFL).

The role of the ARFL is providing accurate and independent analytical services to Racing NSW Stewards to assist in rules pertaining to prohibited substances in the sport of thoroughbred racing. The laboratory controls the use of prohibited substances by provision of sampling kits and protocols, analysis of samples, and research to improve detection capabilities, responding to new challenges, assisting veterinarians and use of medicine by vets and staff.

Sampling kits for urine and blood collection are distributed to all racing centres involving different levels of security, being uniquely numbered enabling tracking via laboratory information systems right through to discarding the specimens. Annually 30,000 animal samples are tested with only a small proportion found to contain prohibited substances and using a staff of 16 people in the laboratory.

Human urine samples from jockeys, track riders, stable hands, and external bodies such as Harness Racing NSW, and Greyhound Racing NSW. are also tested. The ARFL conducts important research which includes equine metabolism and excretion of therapeutic substances to assist trainers and veterinarians to assist with legitimate medication.

### Athlete and Equine Biological Passport and Gene Doping.

Both Adam and Catrin discussed respective athlete and equine biological passports and gene doping.

The Athlete Biological Passport (ABP) is for monitoring variables (biomarkers of doping) over time directly revealing the effect of doping.

## REVIEW: 'Advances in Sports Anti-Doping: Staying ahead of the Game ANZFSS Public Night—27th May 2015. Review by Glenn Wilcher.

The ABP consists of two modules the haematological module introduced December 2009 identifying oxygen transport enhancement such as the use of erythropoiesis stimulating agents and any form of blood transfusions or manipulation. The steroidal module implemented 2014 aims to identify endogenous anabolic steroids administered exogenously and other anabolic agents.To enhance integrity in the racing industry and to prevent gene doping and other methods of performance enhancement Adam mentioned how Racing NSW has been developing an Equine Biological Passport.The 'passport' is similar to the World Anti-Doping Agency (WADA) introducing the Athlete Biological Passport back in 2009.

Gene doping involves the transfer of DNA which can be used for performance enhancement and makes detection very difficult. A feature of the 'passport' is monitoring the genes of racehorses to identify changes throughout the career of horses. Adam stated that the passport will have biomarkers that provide a 'fingerprint' which contains information about horses biological system, which can be compared to previous collected data. Issues with gene doping include the potential to alter a horses DNA genes for muscle inflammation so that it performs through pain and which could lead to breakdown endangering both horse and riders. Also is the potential for gene manipulation for muscle growth with breeds being very muscular with increased strength.

Catrin is the Director of the National Measurement Institute Sports Drug Testing Laboratory (ASDTL) and a Fellow member of the World Association of Anti – Doping Scientists. The ASDTL is a World Anti – Doping Agency (WADA) accredited laboratory which conducts the testing of athlete samples from the Oceania region.

The ASDTL research programs aim to improve analytical techniques used in the drug testing laboratory and to investigate new forms of doping which can be undetectable. They receive funding from WADA .

Catrin joined the laboratory in the lead up to the Sydney Olympics and has continued to work in the research section developing new methods for the detection of prohibited substances. Catrin became the Director of the laboratory in 2010.

Catrin discussed the technique for testing for synthetic versions of naturally occurring steroids that can be used by athletes for performance enhancement is to compare those substances namely testosterone concentration to the compound epitestosterone in urine, known as the (T/E Ratio). In 1982 the concept of using T/E ratio was introduced to detect doping Using testosterone with the level set at 6. Most of the population will produce T/E ratios above 6 when given testosterone. Asian individuals excrete lower amounts of testosterone glucuronide (TG) and therefore have lower T/E ratios increasing the risk of false negative doping test results. Persons' not having the gene have a T/E ratio less, that is common in Korean Asians who may have deletion polymorphism in the gene coding UGT2B17. The T/LH measurement has been used as a confirmation of doping for those with elevated T/E values and reduction of LH with the administration of testosterone does lead to an increase in the T/LH. In 2005 WADA reduced the T/E ratio from 6 to 4 this leading to more investigations, which Catlin explained were unnecessary because up to 2% of normal subjects have T/E ratios above 4, this leading to more follow up testing and increased costs.

## REVIEW: 'Advances in Sports Anti-Doping: Staying ahead of the Game ANZFSS Public Night—27th May 2015. Review by Glenn Wilcher.

Catrin discussed the measurement of *luteinising hormone* (LH) and that it can be used as a marker for testosterone abuse in male athletes including those that are low testosterone excretors. Catrin discussed the measurements of LH in all samples from male athletes.

With elevated T/E values and suppressed urinary LH there is increased chances of detecting athletes who abuse synthetic forms of endogenous steroids.

Catrin explained there is an ethnic group with natural T/E values being well below the population statistical mean, which will not produce T/E values above 6 despite being given testosterone.Testosterone is excreted mainly as glucuronide conjugates after metabolism by uridine diphospho-glucuronosyl transferases (UGT's). Testosterone is conjugated mainly by UGT2B17.

Ratios above 6 should be considered suspicious and the person concerned should be tested further. Asian individuals excrete lower amounts of testosterone glucuronide (TG) and therefore have lower T/E ratios increasing the risk of false negative doping test results. Persons' not having the gene have a T/E ratio less, that is common in Korean Asians who may have deletion polymorphism in the gene coding UGT2B17.

The T/LH measurement has been used as a confirmation of doping for those with elevated T/E values and reduction of LH with the administration of testosterone does lead to an increase in the T/LH.

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A T/E ratio greater than 4 can indicate abuse of testosterone.

On an individual basis there is variation in natural T/E ratios with ratios being above 4 when the individual has not taken steroids. In other people the T/E ratio may stay below 4 despite steroid abuse due to a genetic variation resulting in low urinary testosterone as mentioned previously.

Over a given period of time natural T/E ratios tend to be consistent with a variation possibly indicating doping. Catrin stated laboratories can be unaware of T/E values from previous samples
and only investigate T/E ratios above 4.

**Urine Samples.**

Catrin discussed briefly urine samples for doping analysis and effects with transportation.

Microbial and thermal degradation of the chemical substances in urine may occur which can lead to false negative or false positive results in doping analysis.

Composition of urine is complex and influenced by ingestion of food and also represents nutrient source for the growth of microorganisms. Different storage conditions consists of room temperature, refrigerated at 4 degrees centigrade, freezer at -20 and freezer / thaw cycles.

The presentations were interesting and illustrated the challenges in the specialist field of anti - doping investigations and costs involved in keeping sports a clean environment and an equal playing field for athletes and the racing industry.

## Review: 'Inside the Forensic World' 22nd August 2015 Review Annalise Wrzeczcki

There was a great turn-out of students, parents and interested members of the public at *Inside The Forensic World* 2015. All those in attendance (including many fabulous volunteer demonstrators and speakers) all contributed to making the day a wonderful success.

**IFW participants analysing a mock crime scene**

Interesting presentations were given by renowned forensic, law and education specialists. They covered pathology and the post mortem process, victim identification, the role of a crime scene officer, forensic taphonomy, forensic biology and the role of DNA in crime solving, where fingerprints come from and the their detection on a variety of substrates, how the legal system processes forensic evidence, notable Australian court cases and career pathways into various science roles. Helpful information was provided to assist future tertiary students as they face so many choices in regard to University, course, specialisation etc. And all attendees left with a bulging "goodie bag" of offerings from tertiary education providers across ACT and NSW and also from Pathtech, a company who supply, support and service a range of high quality forensic products and equipment.

Attendees participated in the investigation of mock crime scenes and became "Trainee CSO's" for the afternoon; collecting shattered glass and paper evidence, photographing blood spatter and swabbing window sills and bathroom tiles. All while dressed in appropriate PPE of course! This allowed attendees to gain an insight into their future careers in the Forensic Sciences.

The practical portion of the day was lots of fun and participants got to experience "hands-on" how fingerprints can be revealed by a chemical techniques; one involving Indanedione plus heat and then imaged with special lights (which everyone thought was very cool!) plus Infrared Analysis, footwear mark detection and comparison, Blood Pattern Analysis and more! A range of scientific instruments were demonstrated to an eager audience. The Electrostatic Detection Apparatus (ESDA) showed how latent indentations can be revealed in a threat letter and methods of forgery were discussed. The highlight for many was the practical experience of extracting DNA from a strawberry. Everyone left with test tubes of this genetic material, proud of their newly gained scientific abilities.


**A very exhausted volunteer**

Feedback from this years *Inside The Forensic World* has been overwhelmingly positive and ANZFSS NSW Branch extend thanks to all Universities and organisations who donated promotional material and goodies for distribution. Without such support and generosity, events like this one, promoting education and careers in science to our next generation of investigators, lawyers, forensic document examiners and pathologists (amongst others) would not be possible.

## REVIEW: 2015 AGM 1st of October - Malaysian Airlines flight MH17- Operation AREW - Dr Simon Walsh. Review by Scott Chadwick

For this years ANZFSS NSW Branch Annual General Meeting, our speaker was Dr Simon Walsh, AFP Chief Scientist and AFP National DVI Commander, who gave a very insightful presentation into the Australian response to the MH17 tragedy. Simon's presentation focussed in on the process of the investigation which specific focus on disaster victim identification (DVI).

On the 17th of July Malaysian Airlines flight MH17 was travelling from Amsterdam to Kulua Lumpur. The Boeing 777-200 was carrying 298 passengers and crew, 41 of which were passengers of interest to Australia (either Australian citizens, permanent residents or non-permanent residents). At approximately 1:20 PM (UTC) the plane crashed in the eastern Ukraine province of Donetsk, all passengers on board lost their lives. Initial reports indicated that the aircraft has been shot down by a BUK surface-to-air missile. The wreckage spread over an area of 50km$^2$, with six different wreckage sites identified, adding to this, the wreckage was in a conflict zone, which significantly impacted investigators ability to retrieve remains and analyse the crime scene.

Simon then began to outline the Australian government response to the tragedy, early on there were issues with communication, with different information coming from media and other sources. On the 18th of July the Australian Federal Police establish operation AREW, which made contact with the Netherlands and offered Australian support in the investigation. The aim of the Australian investigation was to help identify the victims of the crash, other aspects of the crash were investigations by the Dutch authorities. Over the course of the investigation approximately 280 AFP members would be deployed, with 63 personnel (AFP and other authorities) deployed just for the DVI process. The remainder of Simon's presentation focussed on the process involved with DVI.

**DVI—Phase 1— Scene**

The first part of the Australian investigation involved the search of the scene and recovery of any remains. This was a challenging task given the size of the crime scene, but there were also other factors that were working against investigators, this included, issues with access (the area was under separatist control, which meant that investigators were only allowed in certain areas for short amounts of time), geographical isolation, communication issue, time restraints (separatists only allowed them access for three weeks) and few investigators had experience in working in active conflict zones. Despite these factors working against them, investigators pressed on to achieve their objectives. The recovery of human remains was their primary objective, they also hoped to recover any personal effects relating to the deceased (which could aid in identification) and aircraft wreckage which could be used for the air crash investigation.

**Dutch and Australian Authorities at the crash site on 3rd August 2014**

# REVIEW: 2015 AGM 1st of October - Malaysian Airlines flight MH17- Operation AREW - Dr Simon Walsh. Review by Scott Chadwick

This phase of the investigation was successful with most remains being recovered from the scene. After the remains had been recovered they were transported by train out of the conflict zone in Torez to Karkiv (a disused munitions plant), at this point in time no analysis of identification steps were performed, the aim at this stage was to log what was retrieved, a preliminary safety assessment and placing the remains into coffins for transport to the Netherlands. After this all remains were transported to Korporaal Van Oudheusdenkazerne in a escorted convoy. After the coffins were transported to the facility the identification process could begin.

**"Convoy of MH-17 victims on the highway" by Ministerie van Defensie**

| Victims by State | |
|---|---|
| ACT | 1 |
| NSW | 5 |
| NT | 1 |
| QLD | 7 |
| SA | 0 |
| TAS | 0 |
| VIC | 18 |
| WA | 9 |

**Phase II—Post-Mortem**

This phase of the investigation aims to establish cause, manner and mechanism of death and to collect data for identification purposes. The first step in this process involved the x-raying and catscanning each coffin, this was done to identify whether any remains were of interest to the criminal investigation, these remains were then separated from the DVI process. Once this was performed a safety check of the remains was performed, this was of particular importance in this case since the remains had been exposed to a topical formaldehyde cream prior to transport. This resulted in a significant build-up of toxic gases in the coffins, which was a significant risk to investigators. Simon reported that the safe working levels of this particular chemical is around 50 parts per million (ppm), the levels reported inside the coffin were between 500-1500 ppm, as a result full respirators needed to be worn during the DVI process. Following this the post-mortem procedures could be carried out, including an autopsy, fingerprint collection, descriptions of clothing, collection of pathology samples (DNA) and dental examination. This process was all performed according to the INTERPOL Disaster Victim Identification Guide.

**Phase III—Ante-Mortem**

In order to compare the victim data, to a known source, ante-mortem collection need to occur in order to assist in the identification process. This process involved contacting the families of passengers on-board and collecting detailed descriptions of each potential victim, including jewellery, dental and medical records, photographs, DNA, fingerprint. During this time it was determined the number of victims from each state, Since this process needed to be done in Australia, the Victorian coroner and the Victorian Institute of Forensic Medicine (VIFM) were responsible for this process in the identification. Ante-mortem data in this case was collected within 2-3 weeks and sent to the facility in the Netherlands for the final phase of the DVI process,

## REVIEW: 2015 AGM 1st of October - Malaysian Airlines flight MH17- Operation AREW - Dr Simon Walsh. Review by Scott Chadwick

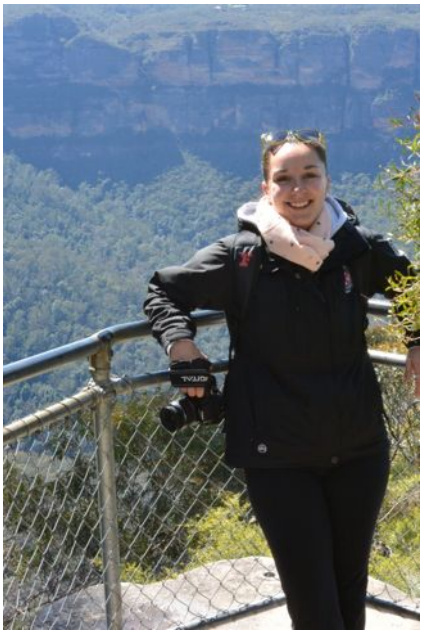
**Phase IV—Reconciliation**

The final phase of the DVI process requires the matching of post-mortem data with ante-mortem data to identify the remains. This process relies on primary identifiers (dental records, friction ridge analysis or DNA) or in some cases a combination of secondary identifiers (medical records, clothing, jewellery, tattoos) may be used. Simon mentioned that in this particular case social media (Facebook photos of victims before boarding the plane) was helpful in certain cases. Secondary identifiers were also helpful in reconnecting families with some of the belongings collected from the crime scene, During this process, all post– and ante-mortem data needed to be verified and confirmed that it was the proper standard so that a comparison report could be shown to international representatives part of the Reconciliation Centre. Once they are satisfied the report is sent to the appropriate legal authority which confirms and accepts the identification. After this stage the remains are returned to the families of the victims for proper burial. By December 2014 all Australians had been identified and accounted for. In the case of the Australian victims Simon stated that DFAT coordinated repatriation via military or commercial flights to bring them home. Information on the victims return was kept contained so that only the family were aware when the remains were being returned, this was done to ensure that the media did not circulate the information. The DVI operations for flight MH17 ceased on the 1st of September 2015 with 296 of the 298 victims identified. This is an incredible feat considering the factors working against investigators and the monumental task they undertook.

Simons presentation was very interesting and informative, by sharing his experience our members were able to gain greater understanding into the processes involved in this side of forensic science. This can be attested by the overwhelming response we had to this meeting..



# Committee Member Spotlight—Dr Katie Nizio



Dr. Katie Nizio holds a B.Sc. with Honours in Chemistry, a Minor in Biology, and a Diploma in Forensic Science from Saint Mary's University, and a Ph.D. in Analytical Chemistry from the University of Alberta. In August 2014, Katie left her home country of Canada to join the research group of Prof. Shari Forbes in the Centre for Forensic Science at UTS as a Research Associate. She has a strong role in providing research supervision to several Higher Degree by Research (HDR) students within Prof. Forbes' group and she also contributes at UTS as a volunteer mentor for incoming HDR students. Katie's current research focuses on the application of multidimensional gas chromatography coupled to mass spectrometry for the characterisation of ignitable liquid residues in fire debris, bacterial volatile organic compounds, decomposition odour, and training aids for cadaver-detection dogs.

Australian and New Zealand FORENSIC SCIENCE SOCIETY

## Contact Details - NSW Branch:

If you have any query, comment, suggestion or content idea for this newsletter or any Branch events, please do not hesitate to contact us. ***All correspondence regarding general enquiries, membership renewal, payment etc, can be addressed to:***

NSW Branch ANZFSS
PO Box K208
Haymarket NSW 1240

**Email:** nswbranch@anzfss.org

***Save this new email address in your contacts so branch correspondence doesn't end up in your spam folder. Specific recipients (e.g. President, Treasurer, Newsletter Editor) can be reached c/o these details.***

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## Missed a Meeting?

### Can't attend a meeting, but still want to keep up to date?

Don't forget that the information and detailed reviews of past meetings can be found on the ANZFSS NSW Branch Website (http://anzfss.org/nsw/branch-newsletters/)

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