BIO606 Aquatic Biosecurity workshops in Semester 1, 2016 – a synopis

This postgraduate unit will equip students with advanced knowledge in the discipline of aquatic biosecurity essential for developing policies involving biosecurity, protection of natural ecosystems and safeguarding aquaculture food production and aquatic livelihoods. Students will gain an understanding of complex interactions between infectious and non-infectious factors that impact aquatic animal health, human activities that impact aquatic biosecurity, and develop specialised technical skills via field visits to natural ecosystems, aquaculture facilities, processing plants for aquatic products, and laboratory sessions. For more information, please see http://handbook.murdoch.edu.au/units/details?unit=BIO606

Although meant for students enrolled in MSc in Biosecurity and MSc of Veterinary Studies (Conservation Medicine), there is the opportunity to enroll as 'non awards' or 'Continuing Education' student. See http://www.murdoch.edu.au/Future-students/Domestic-students/Deciding-what-to-study/Unit-options/ for more details. There is the possibility to attend selected topics within the workshop, or to subscribe to the recorded lectures. Please contact the unit coordinator, Dr Susan Gibson-Kueh at S.Kueh@murdoch.edu.au, to lodge an expression of interests.

Students will be given a reading list around specific topics each week, starting in Weeks 1 to 4 in Semester 1. There will be opportunities to discuss these topics via online forums.

There will be **two intensive 4-day workshops** scheduled over Easter week (Week 5: 29th Mar – 01st Apr 2016) and Anzac week (Week 9: 26th – 29th Apr 2016). These two intensive workshops will comprise of lectures, labs and field trips. These activities will be held at the lecture theatre (VBS3.023) and teaching laboratory (VBSEC3.107) in the Veterinary Biology Building, Murdoch University. The venue of field trips will be advised at the start of each workshop.

The first workshop is designed to give a background on diseases of aquatic organisms and impart practical skills in investigating aquatic disease outbreaks. Guest speakers will give a variety of lectures around aquatic biosecurity. These lectures will likely be given in the format of approximately 30-40 minute presentations, each followed by a 20-30 minute discussion forum. There will be ample opportunities to interact, ask questions and seek the opinions of presenters as well as other participants around the topic of Aquatic Biosecurity during the workshops. The second workshop will be focused on current issues around aquatic biosecurity, such as the impact of invasive alien aquatic species, preserving the

health of natural aquatic ecosystems and native fish from threats of increasing anthropogenic activities, the principles of assessing environmental impacts from aquaculture activities, biosecurity vs fish health management, translocation of aquatic disease and organisms, and the benefits of aquaculture zoning.

Please note that lectures may swap around: our guest speakers are full time staff at other institutions and government departments. They have kindly consented to give these presentations and lead the discussions on these special topics, to enrich your experience in aquatic biosecurity. Hence, they maybe called at last minute notice to tend to official matters. These lectures and discussions will be recorded as far as possible into our university's learning management system (LMS), which you may access at your convenience.

Murdoch University looks forward to see you in Mar and April 2016. Your kind understanding will be much appreciated!

BIO606 Aquatic Biosecurity Workshop 1
Murdoch University, South St., Perth. 29th Mar- 01st Apr 2016 (Tue-Fri)

Program for Day 1, Workshop 1 – Tue 29th Mar 2016

8.45 – 9.00	*Workshop sign-ins* *VBS3.023 lecture theatre, Veterinary Biology Building*
9.00 – 9.15	**Overview of workshop & unit assessments** *(VBS3.023)* • 30-40 min presentations followed by 20-30 min discussion • 2 wet labs, 3 field trips • Presentation & written report topic to be decided by 01 Apr (end of week 5, i.e. this week) – give topic to Susan • Presentation (actual) assessed week 9, Fri 29 Apr (30%) • Brochure based on presentation due Fri 29 Apr (10%) • Written report due Week 14 on Fri 03 June (40%) • Written exam 2h short answer Qs week 16 exam period, between 13-17 June (20%)
9.15 – 10.00	**Tell us about your work or research** *(VBS3.023)* • What do you hope to learn? Your expectations of this unit in Aquatic Biosecurity?
10.0-11.00	**L1: Aquatic disease investigations** *By Susan Gibson-Kueh, College of Veterinary Medicine, Murdoch University. Email: S.Kueh@murdoch.edu.au*
11.00 – 11.30	*Morning tea and coffee*

Program for Day 1, Workshop 1 – Tue 29th Mar 2016 (continued)

11.30 – 12.30	**L2: Infectious diseases of finfish** *(VBS3.023)* *By Susan Gibson-Kueh, College of Veterinary Medicine, Murdoch University. Email: S.Kueh@murdoch.edu.au*
12.30 – 13.30	**L3: Infectious diseases of shellfish** *(VBS3.023)* *By Susan Gibson-Kueh, College of Veterinary Medicine, Murdoch University. Email: S.Kueh@murdoch.edu.au*
13.30 – 14.30	*Lunch*
14.30 – 17.30	**Wet lab 1: Disease Investigation Techniques** *(VBSEC2.107)* *- Susan Gibson-Kueh & Alan Lymbery* • *Fish anaesthesia* • *Blood sampling & smear preparation* • *Fish & Shellfish dissections* • *Wet mount microscopic examinations* • *Sampling tissues for histology& PCR* • *Bacterial plating* • *Sampling tissues for virology and electron microscopy*
17.30 – 18.00	*Wrap-up & discussion*

Program for Day 2, Workshop 1 – Wed 30th Mar 2016

8.45 – 9.00	*General House-keeping*
9.00 – 10.00	**L4: Biohazards associated with seafood** *By* Ihab Habib, *School of Veterinary and Life Sciences, Murdoch University* *Email: I.Habib@murdoch.edu.au*
10.00 – 11.00	*Morning tea and coffee*
11.00 – 12.00	**L5: Investigating ecosystem health** *By Alan Lymbery, Fish Health Unit & Freshwater Fish Research Group, Murdoch University* *Email: A.Lymbery@murdoch.edu.au*
12.00 – 13.30	*Lunch*
13.30 – 17.00	**Field trips 1 & 2 – visits to two wetland systems for field sampling** *- Alan Lymbery & Susan Gibson-Kueh* • *Water Quality* • *Benthos invertebrate sampling*
17.00 – 17.30	*Wrap-up & discussion*

Program for Day 3, Workshop 1 – Thurs 31st Mar 2016

8.45 – 9.00	*General House-keeping*
9.00 – 10.00	**L6: Integrated Aquatic Animal Health and Biosecurity Management in WA** *(VBS3.023)* *By Terry Miller, Fish Health Section, Dept. of Fisheries WA.* *Email: Terry.Miller@agric.wa.gov.au*
10.00 – 10.30	*Morning tea and coffee*
10.30 – 11.30	**L7: Investigating fish kills in WA** *(VBS3.023)* *By Jo Bannister, Fish Health Section, Dept. of Fisheries WA.* *Email: Jo.Bannister@agric.wa.gov.au*
11.30 – 12.30	**L8: Advanced diagnostic tools in aquatic bacteriology** *(VBS3.023)* *By Nicky Buller, Dept. of Agriculture and Food, Western Australia.* *Email: Nicky.Buller@agric.wa.gov.au*
12.30 – 14.00	*Lunch*
14.00 – 17.30	**Wet Lab 2: Examination of wetland samples** *(VBSEC2.107)* *- Alan Lymbery & Susan Gibson-Kueh* • Benthic invertebrates • Growth rings in mussels • Otoliths
17.30 – 18.00	*Wrap-up & discussion*

Program for Day 4, Workshop 1 – Fri 01st April 2016

8.45 – 9.00	*General House-keeping*
9.00 – 10.00	**L9: Husbandry related diseases in aquaculture** *(VBS3.023)* *By Susan Gibson-Kueh, College of Veterinary Medicine, Murdoch University. Email: S.Kueh@murdoch.edu.au*
10.00-11.00	**L10: New approaches to managing biosecurity risks in the ornamental fish trade** - Can there be the perfect national aquatic biosecurity plan? *(VBS3.023)* *by Yuko Hood, Manager,Aquatic Animal Biosecurity, Dept. of Agriculture and Water Resources, Canberra, ACT.* *Email: Yuko.Hood@agriculture.gov.au*
11.00 – 11.30	*Morning tea and coffee*
11.30 – 12.30	**L11: The biosecurity of live aquatic animals and products trade** *(VBS3.023)* *by Yuko Hood, Manager,Aquatic Animal Biosecurity, Dept. of Agriculture and Water Resources, Canberra, ACT.* *Email: Yuko.Hood@agriculture.gov.au*
12.30 – 13.30	*Lunch*
13.30 – 17.00	**Field trip 3 – Visit to an aquaculture facility** *- Alan Lymbery & Susan Gibson-Kueh* **L12: Current trends in aquaculture development – critical factors for future success (TBC)** *By Gavin Partridge, Australian Centre for Applied Aquaculture Research, Challenger Institute of Technology, Fremantle.* *Email: Gavin.Partridge@challenger.wa.edu.au*
17.00 – 17.30	*Wrap-up & discussion followed by dinner in Fremantle*

BIO606 Aquatic Biosecurity Workshop 2
Murdoch University, South St., Perth. 26th - 29th Apr 2016 (Tue-Fri)

Program for Day 1, Workshop 2 – Tue 26th April 2016

8.45 – 9.00	*Workshop sign-ins* *VBS3.023 lecture theatre, Veterinary Biology Building*
9.00 – 9.15	**Overview of workshop & unit assessments** *(VBS3.023)* • Series of 30-40 min presentations followed by 20-30min discussion • 3 field trips, 1 workshop • Presentation (actual) assessed this week 9, Fri 29 Apr (30%) • Brochure based on presentation due this Fri 29 Apr (10%) • Written report due Week 14 on Fri 03 June (40%) • Written exam 2h short answer Qs week 16 exam period, between 13-17 June (20%)
9.15 – 09.30	**Updates from participants & catchup** *(VBS3.023)* • Any pertinent issues or questions
09.30-10.30	**L13: Western Australia's unique freshwater fishes: are they at risk?** *(VBS3.023)* *by David Morgan, Freshwater Fish Research Group, Murdoch University.* *Email: D.Morgan@murdoch.edu.au*
10.30 – 11.00	*Morning tea and coffee*

Program for Day 1, Workshop 2 – Tue 26th April 2016 (continued)

11.00 – 12.00	**L14: Invasive alien aquatic species - distribution, impacts and control of invasive fishes in WA** *(VBS3.023)* *by Steve Beatty, Freshwater Fish Research Group, Murdoch University.* *Email: S.Beatty@murdoch.edu.au*
12.00 – 13.30	*Lunch*
13.30 – 14.30	**L15: Shrimp restocking project – the science behind it!** *(VBS3.023)* *By James Tweedley, Conservation and Environmental Sciences, School of Veterinary and Life Sciences, Murdoch University.* *Email: J.Tweedley@murdoch.edu.au*
14.30 – 15.00	*Afternoon tea and coffee*
15.00 – 16.00	**L16: WA Restocking projects – projects approvals and the lessons learnt!** *(VBS3.023)* *By Greg Jenkins, Australian Centre for Applied Aquaculture Research, Challenger Institute of Technology, Fremantle.* *Email: Greg.Jenkins@challenger.wa.gov.au*
16.00-17.00	**L17: Black bream restocking projects** *(VBS3.023)* *By Alan Cottingham, School of Veterinary and Life Sciences, Murdoch University* *Email: A.Cottingham@murdoch.edu.au*
17.00 – 17.30	*Wrap-up & discussion*

Program for Day 2, Workshop 2 – Wed 27th April 2016

8.45 – 9.00	*General House-keeping*
9.00 – 10.00	**L18: Aquaculture zoning in Western Australia: legislation** *By* Laurie Caporn, *Dept. of Fisheries, Western Australia.* *Email: Laurie.Caporn@fish.wa.gov.au*
10.00-11.00	**L19: Aquaculture Zoning in Western Australia: environmental considerations, and the benefits** *(VBS3.023)* *By John Eyres, Dept. of Fisheries, Western Australia.* *Email: John.Eyres@fish.wa.gov.au*
11.00 – 11.30	*Morning tea and coffee*
11.30 – 12.30	**L20: Monitoring aquatic environmental impacts** *(VBS3.023)* *By Rowan Kleindienst*, Facility Manager, Curtin Aquatic Research Laboratories, Department of Environment and Agriculture *Email:* rowan.kleindienst@curtin.edu.au
12.30-13.30	**L21: Policies to protect the health of our natural aquatic ecosystems** *(VBS3.023)* *By Jeff Cosgrove, Snr. Environmental Officer, Department of Parks and Wildlife, Rivers & Estuaries Division* *Email: Jeff.Cosgrove@dpaw.wa.gov.au*
13.30 – 14.30	*Lunch*
14.30 – 17.30	**Field trips 4 & 5 - TBC** *- Alan Lymbery & Susan Gibson-Kueh* Possibilities: Seafood processing plant/ Ornamental fish quarantine facility
17.30 – 18.00	*Wrap-up & discussion*

Program for Day 3, Workshop 2 – Thurs 28th April 2016

8.45 – 9.00	*General House-keeping*
9.00 – 10.00	**L22: The Biosecurity of a shellfish facility** *(VBS3.023)* *By Richmond Loh, The FishVet P/L, Perth, WA* *Email: thefishvet@gmail.com*
10.00 – 10.30	*Morning tea and coffee*
10.30 – 11.30	**L23: Managing zebra fish facilities** *(VBS3.023)* *By Richmond Loh, The FishVet P/L, Perth, WA* *Email: thefishvet@gmail.com*
11.30 – 12.30	**L24: Koi herpesvirus as a means of biological control for feral carp in Australia** *(VBS3.023)* *By Richmond Loh, The FishVet P/L, Perth, WA* *Email: thefishvet@gmail.com*
12.30 – 13.30	*Lunch*
13.30 – 14.30	**L25: Fish Health Management vs Biosecurity Plans for fish farms** *(VBS3.023)* *By Susan Gibson-Kueh, College of Veterinary Medicine, Murdoch University. Email: S.Kueh@murdoch.edu.au*
14.30 – 15.00	*Afternoon tea & coffee*
15.00-16.00	**L26: Global translocation of significant aquatic diseases and the OIE** *(VBS3.023)* *By Susan Gibson-Kueh, College of Veterinary Medicine, Murdoch University. Email: S.Kueh@murdoch.edu.au*
16.00-17.00	**L27: Global impact of translocation of aquatic organisms** *(VBS3.023)* *By Alan Lymbery, Fish Health Unit & Freshwater Fish Research Group, Murdoch University* *Email: A.Lymbery@murdoch.edu.au*
17.00 – 17.30	*Wrap-up & discussion*

Program for Day 4, Workshop 2 – Fri 29th April 2016

8.45 – 9.00	*General House-keeping*
9.00 – 10.00	**Presentations by students (30%)** *(VBS3.023)*
10.00 – 11.00	*Morning tea and coffee*
11.00 – 12.00	**Presentations by students (30%)** *(VBS3.023)*
12.00 – 13.30	*Lunch*
13.30 – 15.00	*Workshop / Tutorial to kickstart written report (40%)* *Hand in brochure (10%)*
15.00-17.00	**Field trip 6 – Visit to Point Fraser constructed wetlands** *- Alan Lymbery & Susan Gibson-Kueh*
17.00 – 17.30	*Wrap-up & discussion followed by dinner in Perth City – TBA*

Dr. Susan Gibson-Kueh (BIO606 Unit Coordinator)

CV in brief: Dr Susan Gibson-Kueh obtained a PhD in *Fish Pathology* from Murdoch University in 2013, an M.Sc in *Aquatic Veterinary Studies* from Institute of Aquaculture, University of Stirling, Scotland in 2001 and her B.V.Sc from Sydney University in 1990. She currently teaches aquatic animal health and veterinary pathology at the School of Veterinary and Life Sciences, Murdoch University, and has over 20 publications on fish diseases in peer reviewed international journals. Her research is focused on the pathogenesis, epidemiology and diagnosis of diseases of farmed fish. She has a special interest in developing sustainable aquaculture as a means of livelihoods in Australia and SE Asia.

Her previous appointments included as manager of the Aquatic Animal health Laboratory, AgriFood and Veterinary Authority of Singapore from 1995-2007, where she was responsible for overseeing disease diagnosis to support surveillance, disease control and health certification, and laboratory quality assurance under ISO17025. She was the national disease reporting focal person for aquatic animal diseases to NACA/OIE during that period.

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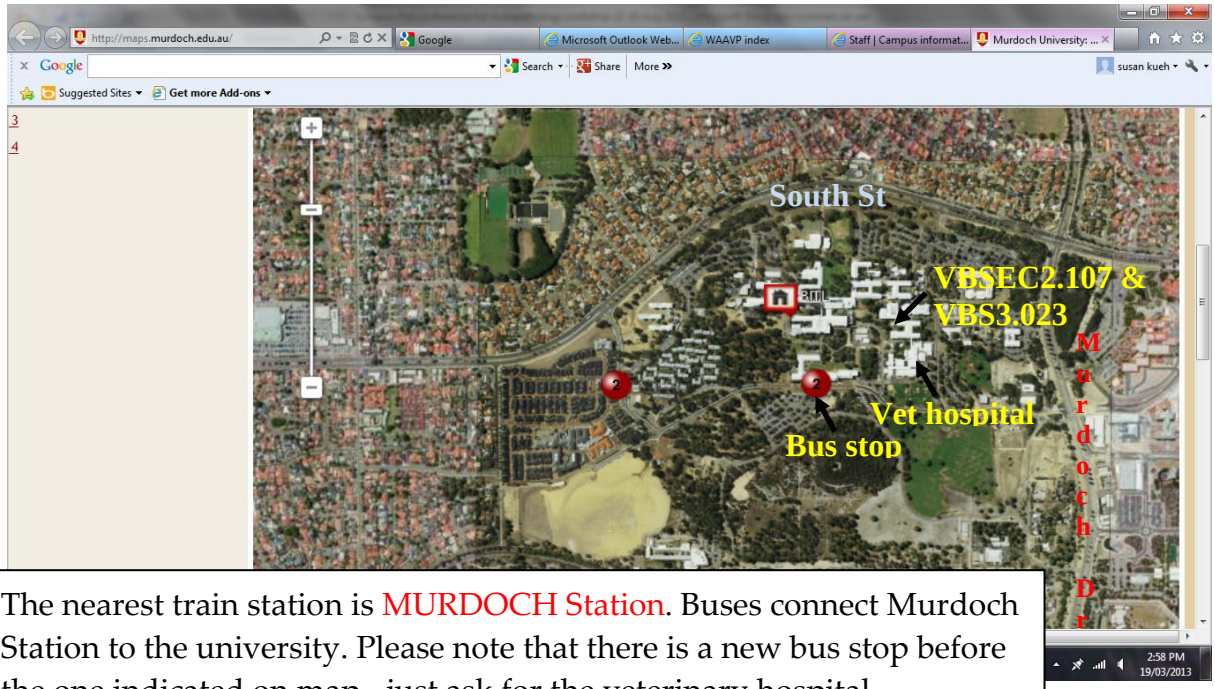
Location of VBS3.023 (lecture theatre) and VBSEC2.107 (lab), Veterinary Biology Building (http://maps.murdoch.edu.au/)



The nearest train station is MURDOCH Station. Buses connect Murdoch Station to the university. Please note that there is a new bus stop before the one indicated on map - just ask for the veterinary hospital.

The university is connected by train from the city, so that accommodation in the city near to a train station will be convenient. The Murdoch train station is the nearest, and is connected by a short bus ride to the university. Another suitable option for accommodation is in Fremantle: Murdoch University is located about 15mins drive from Fremantle, which is a popular place to stay. There is limited accommodation on the campus itself during term time, although there is a student village available on campus.