



Biology Educators' Association of New Zealand  
Te Rōpū Whakaako Koiora o Aotearoa

## Term 2 2017 Newsletter

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**Biology Educators' Association of New Zealand (BEANZ) is a Standing Committee of the New Zealand Association of Science Educators whose purpose is to support and promote Biology education throughout New Zealand.**

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## An Opportunity awaits...

Would you like a chance to work with a small group of educators nationwide? A chance to use and enhance your writing and critiquing skills? A chance to support biology teachers with formative assessment? A chance to grow your network and profile nationwide?

Our editor, co-ordinator and distributor of the BEANZ practice NCEA level 3 examinations has indicated he will be standing down at the end of 2017. This is an opportunity for others to step forward and give back to biology education while engaging in professional learning around assessment to enhance and extend their own practice. BEANZ is working behind the scenes to change distribution in 2018 to an automatic system via our website so we are open to interest from members who would like to know more about the roles separately as well – it may be that there are two or three of you at one school who would like to take this on together. Support will be provided to ensure a smooth transition into 2018. All roles are remunerated. If interested please contact [biologynz@gmail.com](mailto:biologynz@gmail.com) in the first instance.



# ANZCCART Animals in Research assessment QAAMed tasks

## WHO HAS USED THEM?

We're keen to encourage groups like ANZCCART to keep producing resources such as these QAAMed tasks for Biology teachers. If you have received one of these resources/tasks and used it with your class, please get in touch with Sally Birdsall [s.birdsall@auckland.ac.nz](mailto:s.birdsall@auckland.ac.nz) to let her know how useful it was and how you structured your unit of work. Sally is planning to write an article for NZ Science Teacher magazine and needs some "teacher voice" to support the article. Your chance to be in print!! Any comments to Sally are very welcome.

If you have not yet heard of these resources and are interested, see page 9 for more information.

## NZIBO Team's Training Camp

During the recent holidays 25 students from around New Zealand attended the NZ International Biology Olympiad training and selection camp in Hamilton and the Auckland region. Working with scientists from the University of Waikato, Massey University and the University of Auckland, students gained hands on experience in labs and undertook an ecological field trip to Tiritiri Matangi Island and a better understanding of current research. The camp and the selection exams represented the culmination of a year of study of Biology at the first year university level.



The NZ team attending the 28th International Biology Olympiad at Warwick University in the United Kingdom from the 23<sup>rd</sup> to 30<sup>th</sup> of July includes: Bianca Craill (Avondale College), Jim Li (St Peter's College, Auckland), Elinor Wang (Macleans College) and Ben Zhang (Macleans College) and team leaders Dr Heather Meikle (Palmerston North Girls' High School) and Dr Angela Sharples (NZIBO Chairperson, Murupara Area School).

The team acknowledges the tremendous support from the Talented School Students Travel Award administered by Royal Society Te Apārangi and funded by the Ministry of Business Innovation and Employment. Students keen to participate in the 2017/2018 programme should register online at [www.nzibo.org](http://www.nzibo.org) for the entrance exam by 5<sup>th</sup> August 2017.



# NZIBO Teacher scholarship



So that teachers can fully appreciate the post-school parts of the NZIBO programme, NZIBO offers two scholarships to the training and the selection camp. This year Andrea Roberts (Karamu College), and Michelle Isbister from Hauraki Plains College joined the merry NZIBO crew. These scholarships included transport to and from the camp, accommodation and meals at the camp and full participation in all of the learning, trips and labs (just like the students). Here is what they said...

**Andrea Roberts, Karamu College...** "All I can say is WOW!!! As a Biology teacher it is an amazing feeling when you get one or two students in your class super enthusiastic about Biology, but 25!!!! Dream come true! ... Seeing the students learn about and study bird behavior on Tiritiri Matangi Island was one of the best field trips I've ever been on. The Evolution Lab I give two opposable thumbs up..."

"...This program is a well thought-out and intensive Biology experience and I highly recommend all Biologists to get involved, either as a student or teacher... The students were all supportive of each other and seemed like a big family, which is outstanding given this was not only a training camp, but a competition to be one of the final four to represent NZ at the International Biology Olympiad later this year in the UK."

**Michelle Isbister, Hauraki Plains College...** "What an experience! Before I applied for the scholarship, I did not really know anything about NZIBO. The camp let me learn so much and surrounded me with some fantastic people...students who are going to be New Zealand's shining biologists in the near future! (they) ... are not only great students but, more importantly, great people. During their study for NZIBO, whilst also completing their school requirements, these young people are volunteering in their community, helping others, being school leaders and representing their school and country in other areas. Not only this but they really got involved (and sometimes wet/dirty) in any task given to them be it dissection or doing the dishes..."

"...Students sampled the macroinvertebrate life at Kaniwhaniwha Reserve near Pirongia, and compared this to a sample from an inner city stream. They had many chances to refine their microscope skills, preparing slides, staining samples, and drawing diagrams of stems, Paramecium and stages of mitosis. They had a go at using gel electrophoresis and using a spectrophotometer. In the plant labs they got to practise using floral formula and identify (and taste) many fruit types. Dissections included fish, squid, cockroaches, prawn and insect mouthparts – ...(they) had a go at blood counts, learnt about the work of LIC and heard many young enthusiastic biologists talk about ...their biology research which is currently being undertaken, in fishing management, protein structures, and animal conservation in the rainforests of Costa Rica. After fitting all this in to 4 days in Hamilton the students sat a three hour practical examination where they all excelled. Auckland was part two of the camp with more new experiences – seeing my first wild Tuatara, North Island Robin and a Saddleback. Students examined reptile skulls and further developed their biological drawing skills in the evolution lab... for me, I got to try things out along side these awe-inspiring students, helping the students discover new knowledge and skills. I too, got to develop my own skills and learn new ones. And I made new friends..."

Why not apply next year!! You will also get to meet academics and teachers from around NZ. This is a wonderful professional development opportunity and a chance to work with passionate biologists; students, scientists, and university staff.





**CONFERENCE**  
10th -12th JULY 2017  
ST PETER'S SCHOOL, CAMBRIDGE, WAIKATO

Sunday July 9th								
2pm	NZASE AGM							
Monday July 10th								
10.00am	Check-in Commences, Site Tours & Exhibition Opens							
11.45am	Official Welcome							
12.30pm	Light Lunch							
1.10pm	Introductions							
1.30pm	Keynote: Author Sam Kean							
2.30pm	Afternoon Tea							
3.00-3.50pm	Workshops:	Who Cares? Kim Beaton	Africa to Aotearoa – the Longest Journey Lisa Matsuo-Smith	Building Horizontal Connections in Chemistry Sabina Cleary	Variation in a Forest Canopy: Tips and Techniques... Ian Reeves	Q & A Sam Kean	TBC	ABA's eLearning for teachers' Celeste Thomas & Kay McNamee
4.00-4.50pm	Workshops:	Africa to Aotearoa – the Longest Journey Lisa Matsuo-Smith	Using Birds as a Learning Context Mel Galbraith	Google Tips and Tricks for Teaching Kristy Mills	Connecting People Digitally with Office 365 Carmen Kenton	SOLO-Up Your Biology Inquiry Cindy Wynn	Infection Busters Carrie Swanson	Supercharge BIOZONE's NCEA Biology Series Richard Allan
5.00pm	Reception							
6.00pm	Dinner							
7.00pm	Quiz (Supported by Team SciPad)							
8.45-10.30pm	Night-Time Farm Activities							
Tuesday July 11th								
7.30am	Breakfast							
8.00am	Exhibition Opens							
9.00am	Keynote: Associate Professor Michèle Prinsep							
10.00am	Morning Tea							
10.30-11.20am	Workshops:	Human Evolution Alison Campbell	Scholarship Biology - Discussion on How and Why Pru Casey	An Introduction to New Zealand Scholarship Chemistry Scott Franklin	TBC	Junior Science Experiments with NOS Support for Teachers David Patterson	The growing gap between secondary & tertiary education	Taking the Textbook Online with Education Perfect! Bevan Jones & Louise van der Salm
11.30-12.20pm	Workshops:	OK, Get Your Cellphones Out! Nick Major	Infectious (Foodborne) Diseases in New Zealand Nigel French	Teaching tips & learning strategies for L3 NCEA & Scholarship Chemistry Ian Torrie	Empowered Student Research with Windows 10 Peter Sutton	TBC	TBC	Wine Tasting with PASCO
12.30pm	Lunch							
1.30pm	Forums							
2.30pm	Afternoon Tea							
3.00-3.50pm	Workshops:	There's More to Dry Ice Lisa Janek	The Sub-Antarctic Islands Andrea Soanes	Experiments that Work Martine Lewis	Collaborative Projects in Your Classroom Carmen Kenton & Sabina Cleary	Science in Flexible Learning Spaces Suzanne Trask	TBC	Human Evolution: Trends, Anomalies and New Discoveries Richard Allan
4.00-4.50pm	Pop-Up Workshops							
5.30pm	Buses Depart for Conference Dinner Venue							
6.30pm	Conference Dinner at The Atrium (Wintec Hamilton Campus) Featuring entertainment by local band 'The Munroes' and with the theme 'Outstanding in your field'. Join in the fun - come dressed in your best farm gear or own personal take! <a href="#">Venue information here.</a>							
Wednesday July 12th								
8.00am	Breakfast & Exhibition Opens							
8.30-11.00am	Off-Site Experiences							
11.00am	Morning Tea							
11.30-12.20pm	Workshops:	Beekeeping at School Nat Synges	Application of Education For Sustainability Principles in a Biological Context (NCEA L1-L3) Brent Barrett	OneNote and Class Notebook - Microsoft Tools That are Actually Really Useful Nick Major	What Secondary Science Can Learn From Te Whaariki, Early Childhood Educators and Primary School Teachers - Joy, Passion and Play Tony Cairns	Note: Some of the 'Off-Site Experiences' will overlap with this last workshop session so please refer to individual workshop timings.		
12.30pm	Lunch							
1.30pm	Keynote: Sir Ray Avery & Closing							
3.00pm	Conference Concludes							
*The committee reserves the right to amend the schedule for this event as required								

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BioLive-ChemEd 2017 is the tandem biennial conference that combines chemistry and biology educators from across New Zealand. Delegates, speakers and hosts will share conference life at the picturesque St. Peter's School, Cambridge for three days of inspiration, education and FUN! There are still spaces available, head to [www.biolivechemed.co.nz](http://www.biolivechemed.co.nz) to get on board. Registration closes 12 June.

## BEANZ scholarship recipients to BioLive/ChemEd

Thank you to everyone who made the effort to apply for one of these scholarships. The eight recipients are –

**Brent Barrett**- Ao Tawhiti Unlimited Discovery School, Christchurch

**Simon Gannaway** – Amuri Area School

**Chantal Hillier** – Columba College, Dunedin

**Carmen Kenton** – Hagley Community College, Christchurch

**Kenneth Loh** – Ormiston Senior College, Auckland

**Kieran Tibble** – Hauraki Plains College

**Nicola Turner** – Murupara Area School

**Tahlia Whiting** – Lincoln High School



## BEANZ at BioLive

We hope you are all looking forward to BioLive/ChemEd as much as we are and are counting down the days. While the BEANZ executive is separate from the conference organising committee we would still like to draw your attention to the forum and a few workshops which we think will be of immense interest to our members.

Africa to Aotearoa – the Longest Journey workshop. This is an incredible chance for members to hear from the developers of this project and get a first look at the videos that have been produced to support teachers in using the resources. For those of you who attended the BEANZ workshop in Term 4, 2016 you will be able to see how the resources you explored at the time can be further enhanced and built upon this year. Have you seen the Curious Minds article in this newsletter yet? Have a look, it gives the background behind the project in more detail – and yes, some of the free DNA kits will be given out at this conference workshop!

Variation in a Forest Canopy workshop. This workshop directly relates to the BEANZ QAAM task and resources which were offered free to members in 2016. The writer of the original task will guide participants through the practical components, review the teacher resources provided and ensure you feel confident to run this investigation in your own school. It is strongly recommended that you access the BEANZ resource prior to the conference if your school does not already have a copy. You can do this by emailing a “BEANZ QAAM request – Variation in a Forest Canopy” to [biologynz@gmail.com](mailto:biologynz@gmail.com)

BEANZ Forum. This is our opportunity as an executive to connect directly with you, our members and find out what we can do for you. Based on a request at the forum at Scicon in 2016 we have been busy and will have a **new free QAAM task** and associated resources for members ready for distribution at conference – this time directed at Level 3 NCEA. We will also be officially launching the members only area of our website. We thank members for being patient in the meanwhile....lots of things happening in the background to ensure it works well when launched – not long to wait before log-ins can be used!

Last but not least, we will use some of the forum time for our AGM where we will be calling for nominations for Junior Vice President. Interested in what the role involves? Interested in how the role can open doors nationwide in education? If you are please contact Sharyn Varcoe, President, [va@riccarton.school.nz](mailto:va@riccarton.school.nz)

### Biology Educators’ Association of New Zealand

### Te Rōpū Whakaako Koiora o Aotearoa

A Standing Committee of the New Zealand Association  
of Science Educators

Executive Position	Name
<b>President (NZASE Rep)</b>	Sharyn Varcoe
<b>Senior Vice President</b>	Kate Rice
<b>Junior Vice President</b>	
<b>Treasurer</b>	Peter Sutton
<b>Secretary</b>	Helen Mora
<b>Publications Co-ordinator</b>	Holly Brooshooft
<b>Website</b>	Ben Himme
<b>Curriculum Support Team</b>	Terry Burrell Penny Daddy Jo Hurst
<b>Primary Biology Education</b>	Hazel McIntosh
<b>Tertiary Biology Education</b>	Hamish Spencer
<b>Assessment Project</b>	Bill van den Ende
<b>Science Facilitators</b>	Mikhal Stone
<b>Regional Rep. Coordinator</b>	Sharyn Varcoe

# Africa to Aotearoa—the longest journey

(An Otago University – Allan Wilson Research / BEANZ project funded by Curious Minds)

Watch out for your email invitation arriving in schools very soon. The email letters will be directed to the HOD Science/Social Science, BEANZ member at each school.

It will invite teachers and their students to take part in the programme about the evolution of modern humans, their journey out of Africa, around the world, and ultimately across the Pacific to Aotearoa/ New Zealand – the longest and hardest leg of that journey. BEANZ reps have worked with Dr Lisa Matisso-Smith to develop and test this programme, consists of:

1. A DNA kit (value US\$200) for the teacher (one per school) to have her or his DNA analysed by National Geographic in the U.S. (Up to a final total of 250 schools). The results can be used as a real, and therefore more interesting, example for students. You may give the kit to another teacher at your school, provided he or she is going to use it for relevant teaching purposes, and you advise us of their name and subject.
2. Two videos by Lisa explaining:
  - a) The more recent journeys across the Pacific, ending in Aotearoa New Zealand (suitable for Year 9/10 upward)
  - b) The journey of modern humans out of Africa, the evidence of our liaison with Neanderthals and Denisovans, mitochondrial DNA, etc (this will be targeted at Year 13 Biology students)
3. A comprehensive teaching support resource written by Jean Alibone and Caroline Hepburn-Doole.
4. Instructions for students to film each other talking about what they know of their own family history, and how they came to be in New Zealand. Teachers can choose the best to upload to the project website for sharing. When teachers register to receive the DNA kit, they will be sent full instructions for making and uploading videos.

Once teachers receive their DNA kit it needs to be sent off to the States for processing asap (it takes about 6-8 weeks). We anticipate that schools will teach the programme in Term 3. The videos are being produced in June, and will be launched at BioLiveChemEd2017 in the Waikato, 10-12 July. There will be two workshops by Jean Alibone on teaching the programme, particularly at advanced Year 13 level. Some of the free DNA kits are being held over to be distributed as spot prizes to delegates who attend the Africa to Aotearoa workshops at BioLiveChemEd2017 so if you miss out first time around, make sure you get to BioLive for a second chance!

## I.T. IDEAS [Learncoach.co.nz](http://Learncoach.co.nz)

Learn coach is a great website to help revise core concepts. New Zealand made, there are videos which are linked to our NZ curriculum, in an easy to understand manner. Videos cap up with a demo on how to answer exam questions. Also available is worksheets and practice questions free to download and print.



## A PIECE FROM THE PROFESSOR

# Hamish Spencer

TERTIARY REP

### Extinction and Replacement in New Zealand's Fauna

The world's biodiversity is currently going through a mass extinction, the sixth since the Cambrian explosion that gave rise to most of the groups of animals and plants familiar today. This latest extinction event is due to human activities: deforestation, draining of wetlands, overfishing and overhunting, pollution and the introduction of invasive predators, diseases and competitors. Extinction is, of course, a natural phenomenon in the history of the Earth, but the current rate of extinctions is orders of magnitude greater than "normal."

New Zealand's biota has an unenviable record here. Several bird species became extinct very soon after the arrival of humans and extinctions of birds, lizards, snails, plants and many other groups have continued ever since. (See *Extinct Birds of New Zealand* by Alan J. D. Tennyson and Paul Martinson, published in 2006 by Te Papa Press for a fascinating but sobering account of the avifauna we have lost.)

What Professor Jon Waters's group at the University of Otago have recently discovered, however, is that some extinctions in New Zealand have opened the door for the subsequent invasion by a closely related species or a genetically different population of the same species.

Perhaps the clearest case is that of the Yellow-eyed Penguin (*Megadyptes antipodes*), which invaded from the sub Antarctic islands soon after the extinction of its sister species, the Waitaha Penguin (*M. waitaha*). The Waitaha Penguin was slightly smaller than the Yellow-eyed and was first identified as a separate species on the basis of genetic differences, using ancient DNA techniques on bones found in middens. It was found around much of the coast of the South Island, but became extinct at around the same time as several moa species, within ~200 years of the arrival of Māori in New Zealand. Amazingly, after just 20-100 years, the Yellow-eyed penguin had colonized the east coast of the South Island, invading from safer refuges further south. Listen to more at <http://www.radionz.co.nz/national/programmes/ourchangingworld/audio/20171239/waitaha-penguin-out,-yellow-eyed-penguin-in>.

A parallel extinction and recolonization occurred with the New Zealand (or Hooker's) Sea lion (*Phocarctos hookeri*). A distinct genetic lineage was wiped out from the New Zealand mainland at about the same time as the Waitaha Penguin disappeared. The small number of sea lions now breeding on Stewart Island and parts of the Otago coast belong to a sub Antarctic genetic lineage. More detail can be found at <http://www.radionz.co.nz/national/programmes/saturday/audio/2601403/jon-waters-aquatic-mammal-prehistory>.

In a third possible case, the small penguins living in Otago have been shown to be conspecific with the Australian Fairy Penguin (*Eudyptula novaehollandiae*), not the endemic Little Blue Penguin (*E. minor*), which occurs around much of the rest of New Zealand. These two species differ in their genetics, as well as their vocalizations and tendency to congregate in large groups. It appears that the Australian species has replaced the New Zealand species in the Otago region, although just why is not completely clear. See <http://www.newshub.co.nz/home/new-zealand/2016/02/little-penguins-are-recent-aussie-invaders.html> for further information.

Ironically, at least two of these replacement species, the Yellow-eyed Penguin and the New Zealand Sealion, are now themselves under threat. And this threat is not just to their mainland populations: populations in the subantarctic have been declining rapidly. Both species are considered endangered by the Department of Conservation, with the sealion in the most severely threatened category, Nationally Critical, facing immediate high risk of extinction. If either species should become extinct, this time there will be no replacements, as neither has any close relatives.





**ANZCART** is an independent body which was established to provide a focus for consideration of the scientific, ethical and social issues associated with the use of animals in research and teaching. Such use is often the subject of lively debate.

ANZCART (NZ) has supported the development of four NCEA assessment tasks that have received the Quality Assured Assessment materials trade mark (QAAM) from the NZQA for NCEA Achievement Standards (Biology 1.2, 2.2, and 3.2), which integrates biological knowledge to develop an informed response to a socio-scientific issue. The four resources are:

- *Animal research: What's a life worth?* Biology 1.2 Report on a biological issue
- *Animal research: The best thing for human medicine and animals?* Biology 2.2 Analyse the biological validity of information presented to the public
- *Animal research: The ethics of using animals for research and teaching in NZ* – Biology 3.2 Integrate biological knowledge to develop an informed response to a socio-scientific issue
- *Animal research: Predator proof fences* – Biology 3.2 Integrate biological knowledge to develop an informed response to a socio-scientific issue

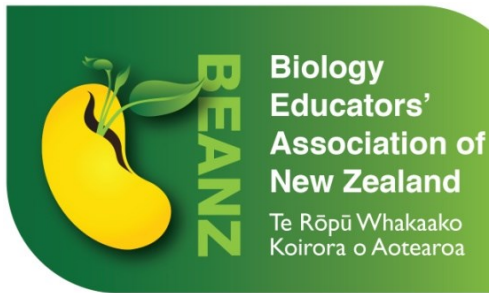
These teaching resources are not available on-line, but can be sent to teachers upon request from **ANZCART New Zealand**, c/o The Royal Society of New Zealand, PO Box 598 Wellington, New Zealand, [anzcart@royalsociety.org.nz](mailto:anzcart@royalsociety.org.nz)

## Biology Educators' Association of New Zealand

### Te Rōpū Whakaako Koiora o Aotearoa

Region	Name	Email Contact
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# ATTENTION BIOLOGY

## Resources available from BEANZ

### 2017 BEANZ 'Level 3 Biology Practice Examination'

Biology Educators' Association of New Zealand is once again providing a package of three NCEA Level 3 'Practice' Examination papers and Assessment Schedules for the External Standards.

Assessment schedules reflect the way present NZQA examinations are assessed.

They include suggested grade boundaries.

This Practice Examination has now been produced for 13 years. The files are set as WORD documents so that your school logo can be added and the paper can be formatted to suit your school examination policies.

Ordering is a 2 stage process:

Money paid into the BEANZ account

Order emailed to [biologynz@gmail.com](mailto:biologynz@gmail.com)

**NB. the exam will be emailed to the person who emails in your order. It will be attached to a 'reply' email. If that person is your office or finance person, they will receive the exam.**

**Cost:** \$ 80.00

**Expected delivery:** late Term 2 (Exam is not to be used in mid-year exams).

**Delivery method:** by 'Reply' email.

**Please ensure that the person who emails in the order is the person to whom the exam should be delivered.**

### 'Secondary School Microscopy' Resource

**Delivered by posted CD. 2017 will be the last year offered.**

First distributed in 2012, this resource is primarily aimed as a teaching resource for **B 2.8 'Investigate biological material at the microscope level'**. It also covers a myriad of ideas for use of microscopes in Junior Science.

If you are interested please make enquiries through our email address [biologynz@gmail.com](mailto:biologynz@gmail.com)

**Cost:** \$ 180.00 (incl. P & P)

**Expected delivery:** Available Now

**Delivery method:** CD with files will be posted

# BEANZ 2017 INVOICE & ORDER FORM

The payment and ordering process involves TWO steps,



## Transfer of funds to BEANZ Account

Transfer the total amount to the BEANZ Account. Add your school name so that we can recognise 'your' payment.

**DO NOT use initials only (e.g. ths, wghs, bhs, ccoll). Please use your school's full name**

Bank:	<b>ASB Bank</b>	NB BEANZ is not GST Registered
Account number:	<b>12 – 3143 – 0168197 – 00</b>	

## Email your order to the following email address:

**biologynz@gmail.com**

Use your school's name in the email subject line.

e.g. Christchurch High School BEANZ order.

**The exam will be emailed by 'Reply' email to the person whose email address used to place this order.**

Include all these details with your order

(or print, complete and scan this completed document and attach to your order)

Name of school	_____
Name of person ordering	_____
Email address of person ordering	_____
Postal address if ordering CD	_____
Date of payment	_____

## Resources ordered:

	<b>\$ 80.00</b>	<b>2017 BEANZ Level 3 Biology Practice Exam</b>
	<b>\$ 180.00</b>	<b>Secondary School Microscopy Resource</b>
		Include postal address for CD please
Tick boxes please	<b>\$</b>	<b>Total</b>