



PARASITOLOGY

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New Zealand Society for Parasitology May 2020 Newsletter

President's Post

The last few months have thrown up plenty of challenges for us all, 2020 is shaping up to be one out of the box. Here in the King Country we have had a drought which has taken its toll on pasture covers and animal condition.

Since the rain we have seen some very high FECs coming back which is all very interesting for us in the clinic but not so good for the farmers or the animals.

Our clinic had an ownership change on the 1st April, the day we went into Alert Level 4 lockdown. This was a surreal experience and one I wouldn't recommend!!

As always though, there are positives in every situation and one for us is that our new team has been forged under tremendous pressure and has come out shining. Moving to Level 3 will not change too much of course but we look forward to getting 'back to normal' whatever that may be! I personally have been hugely grateful to be living on a farm and have felt quite sorry for anyone locked up in town.

The NZSP executive has decided that if we stay in Level One we will go ahead with the October conference.

All the best for the next few months.

Cathryn.

Conference News

The conference as usual will be in October to fit the academic year. Those of you who attended last year should recall we will be, Covid19 willing, in Palmerston North this year.

The Parasite Advisory day is Tue 20th October with the Conference itself on Wed 21st and Thu 22nd October.

More details to follow.

Congratulations

Last year on the 24th November our secretary Nik Palevich and his wife Faith welcomed their first child Mia Rose. All went well; congratulations!

Nik's post doc finishes in August and we will be looking for a new secretary, any takers? Nik promises us it is not too rigorous. Please get in touch if you can help.

Our VP Ash Keown who is with the NZVA is wanting feedback on anthelmintic resistance for the NZVA Member Advisory Group – you can contact him at Ashley.keown@vets.org.nz

AS PART OF COVID-19 SOCIAL DISTANCING

REMEMBER TO STAY 2 METERS APART



WHICH IS ROUGHLY:

13 300 *Schistosoma mansoni* eggs



OR ROUGHLY:

125 *Biomphalaria sudanica* snails



Anthelmintic Capsule Studies

“the devil is in the details” Friedrich Wilhelm Nietzsche 1844-1900
German philosopher and poet

Letter to the NZSP from Dr Ian Sutherland Science Team Leader, Animal Health

C. Christie
President, New Zealand Society for Parasitology

Dear Cathryn,

Dr. Dave Leathwick, of AgResearch Limited, gave a presentation, "Nematode parasites are not a major cause of ill-thrift in adult ewes in New Zealand", at the 2018 New Zealand Society for Parasitology Annual Conference in Palmerston North.

Following that presentation, AgResearch was contacted by Dr. Abi Chase, Technical Sales Manager for Boehringer Ingelheim, who expressed concerns over statements made by Dr. Leathwick regarding Boehringer Ingelheim's BIONIC® product.

In particular, Boehringer Ingelheim objected to one of Dr Leathwick's slides presented at that conference which stated that "on average, lamb survival was lower when ewes were treated with a [BIONIC®] capsule" ("Statement"). Boehringer Ingelheim considers the Statement to be false and misleading as the number of lambs weaned was the same for the BIONIC® group as the control group.

AgResearch's position is that:

- When making the Statement, Dr Leathwick was referring to data from a study published in Miller et al, 2015. That data recorded that the lamb survival from birth to weaning was on average 2.2% lower when ewes were treated with a BIONIC® capsule.
- When speaking to the slide containing the Statement, Dr Leathwick was clear that:
 - ◇ The variation in lamb survival between trials (farms and years) was large and while the average difference was -2.2%, the range of differences was +/-9%. This was the reason for the wide variation in cost-benefit measured in the studies. The point that Dr Leathwick was addressing was that the major driver of dollar return to the farmer is lamb survival, and not any additional kg of liveweight (in lambs or ewes) gained by the anthelmintic treatments i.e. those farms with higher lamb survival gained greater economic benefit of treatment.
 - ◇ The figure of -2.2% was not significant.

Notwithstanding the above, and without any admission as to liability, AgResearch wishes to clarify to the New Zealand Society for Parasitology, that given the result from the Miller et al, 2015 study was not significant (-2.2%), the lamb survival rate where ewes were treated with the BIONIC® capsule cannot be considered different to zero.

I would be happy to discuss this with you further should you find that helpful.

Dr Ian Sutherland
Science Team Leader, Animal Health

Congratulations to Seer Ikurior

Seer is a PhD candidate at Massey University in Wellington. He won the inaugural Falling Walls Lab New Zealand event in Wellington in September 2019 and a journey to represent New Zealand at the Falling Walls Lab Finale in Berlin. Seer holds a Masters degree in Veterinary Public Health from the University of Glasgow and is a Nigerian-trained Veterinarian. Seer has spent many hours observing lambs and has found measurable differences in resting and grazing time between infected and non-infected lambs, making it possible to identify and treat just those lambs showing 'wormy behaviour'. He now uses ear-tag accelerometers and GPS monitoring devices to track grazing and movement as a marker for the level of parasitism. While his research to date has been on lambs, it is likely the approach could apply to other ruminant animals, including cows.

Seer's Story

The bus ride from Wellington to Palmerston North felt shorter than the three hours it actually took. It was September 10, 2019 and I was returning home from pitching my research to a great audience at Royal Society Te Apārangi in Wellington. I spent the entire bus trip recounting the day's Falling Walls Lab New Zealand event, recollecting all the inspiring three-minute pitches I had heard from 19 other presenters, and felt still largely unrecovered from being selected to represent New Zealand at the Falling Walls Lab in Berlin. I was thankful for the opportunity ahead of me to visit Berlin to present my work. My research uses remote sensing technologies, such as GPS and activity sensors, to study behavioural movement and activity patterns in lambs to identify animals that have worm infections from those that do not. Worm infections are a major animal health problem for grazing lambs. Overuse of chemicals, called anthelmintic drugs, usually administered to all animals to control these worms, has led to an alarming rate of drug resistance development. Identifying and treating only infected animals will help preserve these drugs as well as reduce the chemical footprint on the environment. My work has taken the first steps towards developing a user-friendly decision support tool to assist farmers, advisors and veterinarians make targeted worm treatment decisions on individual lambs. This is what I was heading to Berlin to share. Nothing prepared me for what would come in the weeks leading to my travel to Berlin. I was interviewed on a radio station, a local newspaper visited me in my lab for an extended interview and random people at parks and supermarkets called me "the worm guy". I attended a



farmers advisory day and a participant handed me an article of myself that read "NZ's worm detective". It was a massively humbling experience.

On November 8, 2019, I made a two and a half minute presentation on my research to an audience attending/participating in the Falling Walls Lab Finale at the beautiful Futurium, Berlin. The atmosphere was electric; alongside me were 99 other innovators and researchers from around the globe who also presented their "wall breaking" research innovations. Afterwards, I had the honour to sit down for coffee with the New Zealand Ambassador to Germany, and chat about the impact of my work. The discussions were very practical and useful for how I think about the potential scope of my research. A second meeting organised by the New Zealand Embassy in Berlin, was a sit-down with the Director General of the German Sheep Farmers Association. The discussions from this meeting resulted in an invitation to revisit Berlin and present my work at a conference.

Outside the Falling Walls Lab and the two meetings cited above, it was exciting to experience Berlin at a time marking the 30th anniversary of the fall of the Wall. Visiting the Berlin Wall Memorial and Documentation Centre was a moving experience, a stark reminder of what was and hopefully what should never be. Aside this, I travelled through Berlin's vast rail network to some amazing sites, including the Reichstag, Potsdamer Platz, Checkpoint Charlie, Brandenburg Gate, the Berlin TV Tower and the Holocaust memorial.

When it was over, I transited through Sweden and that was the icing on the cake. Suffice to say this trip is fondly etched in my memory as the biggest adventure I have undertaken yet.

Source: Royal Society Te Apārangi

The Oldest Known Parasites

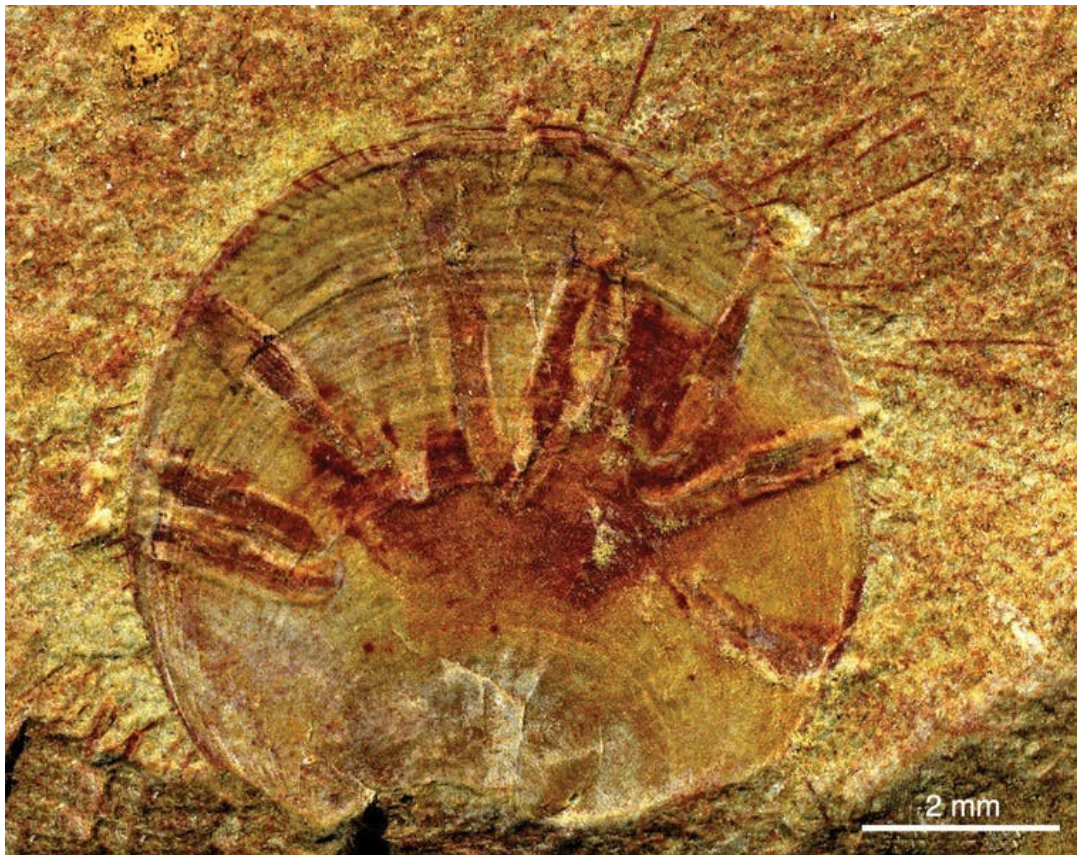
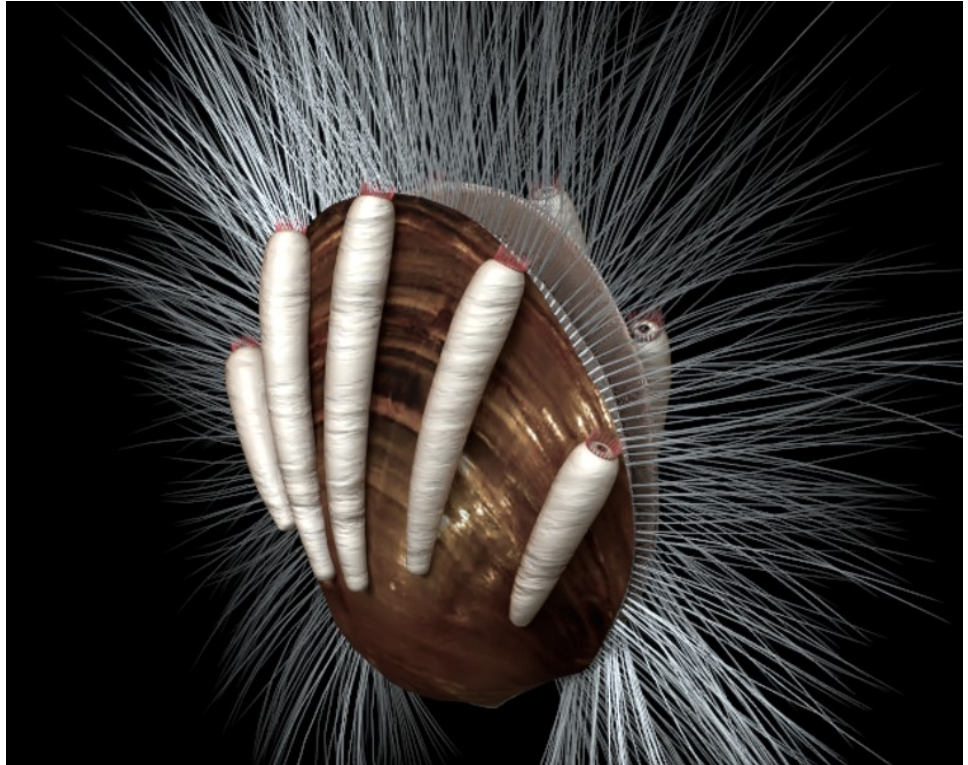
Parasites on the surface of 515-million-year-old fossils from southern China belonging to organisms called [brachiopods](#) (*Neobolus wulongqingensis*). Brachiopods are marine invertebrates that resemble clams but are actually quite different. They are rare today, but were much more common in the geological past.

Research revealed the hardened tubes encrusting the surface of fossil brachiopod shells were once occupied by parasitic worms.

Researchers know the worms were parasites because they identified a clear negative effect on the host, as brachiopods without parasites grew larger than those with them.

While the parasites in question were almost certainly worms, they don't know exactly what type of worm. What they do know is the worm would have been attached to its host brachiopod for its entire life.

Based on the orientation of the tubes, they also know the worms were [kleptoparasites](#), meaning they stole food from the host before it could be ingested.



To read the original article go to

<https://theconversation.com/a-515-million-year-old-freeloader-this-nutrient-stealing-marine-worm-is-the-oldest-known->

The following
75th Birthday Tribute to the late
Wallie Clark
Parasitologist,
Nematologist and Teacher

Written in 2001 by his friend and former
PhD student the late Gregor W. Yeates
Formerly of Landcare Research, Private Bag
11052, Palmerston North, New Zealand.

The tribute was sent to the Society by Judy
Yeates who wrote "*My connection with Wallie
is that in 1962 I emigrated from a job at
Rothamsted in the UK, working with nema-
todes for Basil Goodey, to become Wallies'
technician at Entomology division in Nel-
son. Some years later he introduced me to his
PhD student Gregor, by inviting me to see his
new microscope and then disappearing so his
student had to show it to me!!*

Wallie was obviously a very interesting charac-
ter whose story illustrates that a lack of early
formal education is no barrier to success.

Walter Clive Clark was born (22 Octo-
ber 1927) when his family lived at Jacks Bay,
South Westland (in the South Island of New
Zealand), and his mother died when he was
about eight. His father brought him up, and
later remarried, but Wallie never hit it off much
with his stepmother. His Dad was a bush-
whacker by trade, so Wallie grew up wander-
ing the bush glades and the seashore, eating
kiekie and pipis. This probably kindled his in-
terest in natural history.

Wallie didn't ever go to secondary
school, but got his School Certificate by corre-
spondence. In 1946 he was working as a
switchboard operator on the Wellington toll
switchboard, but he had been a clerk of some
sort in the Post and Telegraph Department
before that. Later he was at Christchurch
Teachers' College. He didn't have University
Entrance, but entered University on what was
called 'provisional entrance' when he turned
21. Thus he earned his B.Sc. in zoology, and
his first appointment was as assistant lecturer
in biology at Christchurch Teachers' College
(1954-55). Perhaps it was from those years
that his great skills as teacher emerged.

In the Zoology Department, Canterbury
University College, he was assistant lecturer
(1956-57) and completed his masterate thesis
on the intertidal gastropod *Melagraphia*. One

of the papers which arose from that was the
description of the parasite *Cercaria
melagraphia* (Trematoda).

After appointment to DSIR's Entomolo-
gy Division, Wallie made collections of nema-
todes from many soil types throughout New
Zealand and embarked for England. His PhD
in nematology at Imperial College of Science
and Technology and Rothamsted Experi-
mental Station (1958-61; under Prof. B.G. Pe-
ters, Dr J.B. Goodey, F.G.W. Jones) work cen-
tered on Mononchoidea and is now commemo-
rated in the genus *Clarkus*. Why mononchids?
"Because they were the easiest to see", he
said in 1966.

Returning to Entomology Division in
Nelson, Dr Clark was very active in nematolo-
gy describing species in various Orders; he
also continued his work on the marine pyc-
nogonids. He compiled a list of plant-parasitic
nematodes recorded from New Zealand and
raised awareness amongst horticulturalists of
their importance. Some 20 papers on plant
and soil nematodes can be attributed to his
PhD and time with Entomology Division. The
zooparasites came later.

As Professor of Zoology at Massey
University (1964-67) Wallie had not only su-
pervised three nematology students (Pat Dale,
Funke Egunjobi, Gregor Yeates) but also over-
saw dramatic growth in teaching and research
in the Zoology Department, as it changed from
an Agricultural College to a multi-faculty uni-
versity. He encouraged links with parasitolo-
gists in the School of Veterinary Science. He
shouldered a heavy teaching load so younger
staff could advance their scientific careers.

His incisive editorial skills were utilised
as the zoological editor for the Royal Society
of New Zealand (1968-1978), and he served
on the Editorial Advisory Board of the *New
Zealand Journal of Zoology* from its inception
in 1974 until 1988.

In 1967 Wallie returned to the Zoology
Department of the University of Canterbury as
Reader and, free of administration, but still
with a significant teaching burden, there was a
resurgence of personal scientific output. As
far as his beloved nematodes were concerned,
there were at least 10 papers describing new
taxa from New Zealand arthropods and wild-
life. As a teacher, Wallie conveyed to many
students an extreme enthusiasm for coming to
grips with animals and their parasites and
many researchers (e.g. Frank Wood, John
Marshall, Sandra Zervos, Dave Leathwick) can
trace their interest in parasitology to his influ-
ence.

Wallie was a strong supporter of the New Zealand Society for Parasitology from its inauguration in 1972. In addition to a meeting ground for parasitologists Wallie also saw the Society as bringing together all those who worked on nematodes, be they parasites of plants, invertebrates or vertebrates. He designed the Society's logo, served as its second President (1976-77) and was elected an Honorary Member Life in 1989. Wallie's wider biological interests can be seen in a series of papers 'The ecological implications of parthenogenesis' (1973), 'Interpretation of life history patterns in the Digenea' (1974), 'Hermaphroditism as a reproductive strategy for metazoans; some correlated benefits' (1978) and 'Sperm transfer mechanisms: some correlates and consequences' (1981). In this time he continued teaching, running courses at the university's Edward Percival Marine Laboratory (Kaikoura) and supervising research students. Many parasitology conferences were treated to expositions on nematode life cycles and anatomy - including memorable sets of scanning electron micrographs of nematode spicules and accessory apparatus.

Wallie regarded himself firstly as a teacher. In 1987 he wrote "In a life time as a teacher one often deludes oneself into thinking – "Today I've done something!" or "I got that across." "I helped so and so to an understanding" and so forth but when the hour is still and hopefully only honest voices speak, few say that one was ever really effective. As I come near the end of my time as a teacher (on salary, that is) I often wonder how little real effect I have had, and yet it is as a teacher that I would most like to be remembered. Perhaps I really did bend at least one twig. For that I am glad." Like many dedicated teachers, Wallie declined to have his name on his students' publications. Like Wallie, the students had to stand on their own two feet.

In a personal capacity and reflecting his fly-fishing interest, he was an active member of the North Canterbury Acclimatisation Society. Wallie represented the University of Canterbury on the governing council of the Christchurch Teachers' College for 17 years. He was appointed to a personal chair, the highest accolade for research by a New Zealand university staff member, in 1978. He served as chairman of the Zoology Department in 1978-88. While the 1994 paper 'Origins of the parasitic habit in the Nematoda' brought together many aspects of Wallie's scientific work over the years, much is yet unwritten.

Although he formally retired to his garden at Woodend (some 25 km north of Christchurch) in 1988 he continues his interest in

nematodes. Through his active contributions to NZ Fish and Game Council and his letters to various newspapers he ensures that ministers and bureaucrats are reminded of their foibles.

As a long-time friend and colleague of Wallie's wrote in 2001, "he is an example of the sort of independence and unselfish dedication that has kept this country going". A man who calls a spade a spade.

In the twenty-first century, as zoologists seek better understanding of nematodes as animals they are again turning to the well-founded publications of W.C. Clark. Wallie's students are still teaching and researching. At the time of his 75 th birthday they wish to acknowledge his contributions to science and wish him many more years of fishing, gardening and reflection.

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