

## WILD SIDE

### Newsletter of the AVCB

### A Special Interest Group of the Australian Veterinary Association

SPRING 2015

## Veterinary biochemistry and conservation biology: A story of moose, tigers, and extreme cold

Philip Stott

I learned something from Alan Snoswell during those biochemistry lectures – that the purine degradation pathway in mammals extends to allantoin except in humans and a few other primates. Fortunately the particular neurones dedicated to the maintenance of that memory have escaped the ravages of senility because the knowledge managed to surface 45 years later and may be leading towards greater understanding of the means by which the moose and perhaps other species adapt to extreme cold. Along with its tolerance of extreme cold, the moose has an intolerance of heat.



Source: Wikimedia Commons

But what's it all got to do with conservation biology? Once upon a time, the moose and the Amur tiger overlapped throughout Heilongjiang Province, China, and in adjacent areas of Russia. We know that it occurred in prehistorical times because of a saddle ornament from the iron age. However, they no longer overlap geographically except in a small area of the Sikhote-Alin mountains in Russia. We also know that the tigers prefer the largest

available prey because they positively select bulls when they prey on cattle (albeit the small Yanbian breed). Now, the prey base of the tigers is made up of red deer, roe deer, and wild boar. Because of the preference of the tiger for large-bodied prey, it seems likely that there was a survival advantage accruing from predation on the larger-bodied moose.

But why don't the tigers and the moose overlap any more? The range of the tiger in China is restricted because of poaching of the prey base. And the range of the moose is contracting northwards because of climate change.

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## AVA Conference 2016—Adelaide

The AVCB interim working group is busy preparing the draft program for our stream at next year's AVA annual conference in Adelaide (22-27 May 2016). Thanks to members who responded with suggestions

for speakers or topics they would like to see at the conference. Initial speaker nominations will be submitted to the scientific committee before the end of September, and then the final program will be developed over

the coming months incorporating common topics between AVCB and other SIGs. We look forward to seeing many AVCB members in Adelaide next May!



## Who What Where?

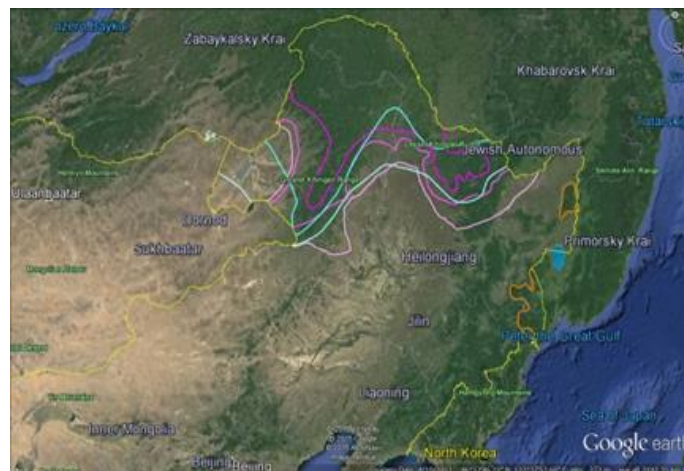


Are you able to identify this animal, what plant it is sheltering under in such good camouflage and in which environment? See Page 3 for answers.

## Veterinary biochemistry and conservation biology:

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In the map below, the range of the tiger in China is outlined in orange, the northward contraction of the moose in mauve through to purple, and the contraction of the permafrost is outlined in deepening shades of blue. Each polygon is completed by the national border in yellow.



So where are the purines in this story? I found that moose do not excrete allantoin – they retain uric acid. So the biochemistry textbooks aren't quite right. In humans, current thinking is that uric acid is retained to protect the brain from oxidative damage over a long life span. But moose are not

known for either long lives or intelligence. However, they are known for their tolerance of temperatures of  $-50^{\circ}\text{C}$ . Likely the uric acid protects the moose from oxidative damage associated with the high metabolic rates necessary to cope with cold.

Red and roe deer both excrete allantoin and while they overlap with the moose to some extent, their ranges are further to the south. It seems that uric acid in the moose counters any ecological advantage that the smaller ungulates might have in colder areas.

Having cornered the world market in moose urine, I'm now attempting to do the same with reindeer urine.



## Who What Where? Answers

The photographs were taken this month in the Simpson Desert Regional Reserve (SA).

Enjoying the warm sunshine in the camouflage of the leaf litter is a Painted Dragon

(Ctenophorus pictus) under a flowering Acacia.

<http://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:38ed6d0f-6dbb-42d2-91ed-3d4a102ef2b5>

## Conservation Biology Review

Michael Banyard

In the last few years our SIG (AVCB) has been less active than we would like. This is despite significant ongoing input from a number of committed members including Bo Raphael, Geoff Dutton, Philip Stott and Bruce Parry.

A review is currently underway to reinvigorate the group and we thank members who responded to our

recently emailed Status Report and Invitation to Members. The working group will put forward proposals at our meeting at AVA Conference May 2016. Because a formal meeting has not been held since 2010 the executive functions of the SIG are currently being managed by a Working Group comprising: Michael Banyard, Bruce Parry, Robert Johnson, Bo Raph-

ael, Laurie Dowling and Philip Stott. Interim Newsletter editor is Michael Banyard. Please feel free to contact any member of the working group directly or via Michael [mbayard@netspeed.com.au](mailto:mbayard@netspeed.com.au)



Sunrise over Coongie Lakes SA

## Just Released

[http://awsassets.wwf.org.au/downloads/mo038\\_living\\_blue\\_planet\\_report\\_16\\_sep15.pdf](http://awsassets.wwf.org.au/downloads/mo038_living_blue_planet_report_16_sep15.pdf)

