The 9th Leading Seminar Report

Lecturer:	**Dr. Philip Cowan** (Science Team Leader, Wildlife Ecology and Management, Landcare Research, New Zealand)
Date:	July 9, 2014, 14:00-16:00
Venue:	Lecture Hall
Number of participants:	52 名
Student organizer:	Jun Moriwaki (Laboratory of Wildlife Biology and Medicine, DC4)

● Seminar title

"The management of wildlife and bovine tuberculosis in New Zealand"

● Abstract

New Zealand, apart from two species of bats, has no native terrestrial mammals. It has, however, many species of invasive alien mammals, and spends >US$100 million annually controlling them. The main pest species are the Australian common brushtail possum; four species of rodents (Norway rat, ship rat, Pacific rat, house mouse); three species of mustelids (ferret, stoat, weasel); seven species of deer; feral pigs; and two species of lagomorphs (European rabbit and brown hare). These pests are controlled to mitigate browsing damage to native forests, predation of native animals, and damage to agricultural crops. The possum is also the principal wildlife host for Bovine Tuberculosis (TB) which it spreads to farmed cattle and deer. Deer, feral pigs and ferrets are also often infected with TB. Although they are mainly spill-over hosts, they each play some role in the maintenance of Tb infection in wildlife.

The principal methods used to control these species are aerial poisoning and ground control using poison baits and traps, and shooting for the ungulate species. Research into pest ecology, population dynamics and control methods has better quantified the required pest population levels of reduction to protect native biodiversity, and resulted in significant improvements in the cost-effectiveness of control and in reducing the risks of pest control to non-target species. For control of Tb in wildlife, research-based computer models of disease and host dynamics have been critical is assisting the management agency, TB free New Zealand, to reduce the number of infected cattle and deer herds from >1700 in the 1990s to less than 100 in 2013. Based on this success a National Strategy to eradicate TB from livestock and wildlife in New Zealand was implemented in 2012.

Improvements in control tools and strategies for their use has also enabled New Zealand to

eradicate pest mammals from many offshore islands, allowing the protection and reintroduction of endangered native species. Recent research on eradication of TB and pest animals on islands has focussed on improved detection methods and complex statistical approaches to declaring successful eradication. The extensive nature of mammal pest control concerns many people in New Zealand so research has increasingly focussed on improving ways of engaging with communities over issues such as acceptability of pest control methods, animal welfare in pest management and alternatives to lethal control, such as fertility control.

Dr. Cowan during lecture

● Question and Answers (partially paraphrased)

Q: When and how did possum get TB in NZ at first? It was from cattle from Australia?
A: TB and possum almost safe and negative to TB from cattle. Although Australia had Bovine TB, but it was eradicated a number of years ago. There're not any possum in Australia might have infected with TB. So, TB in NZ possums might have infected either by cattle or potentially from deer which have been infected by cattle.
But it was certainly not brought from Australia and the possums were only imported from Australia to NZ between 1858 and about 1910, so there have been no introduction of possum to NZ from Australia since 1910.

Q: In the UK there were recent papers, badgers eventually increase TB prevalence in cattle. Does that scenario is present or absent in NZ? Possums increase the prevalence of the cattle TB?
A: Possums were killed for pest control, so now only few possums left. Possum are not a social animal like badgers. After population control, few possums will be left which will increase the size of home ranges. Particularly male possums move to find female possum. Before controlling, you'll find possums male or females' ranges overlapping and after controlling, you will find fewer

surviving possums clustered together and it is usually, always male and females clusters but they do not move long distances. We control possums in two different kinds of habitat; we controlled them mainly in large areas of forests so it wouldn't matter any possums to contact more cattle within the forest. We control possums in farmland. Farmland retained to live in small patches of vegetations that has been left behind, so the number of possums of any one particular place on farmland is described as quite small and so there will be very few animals moving if they did move and controls carried out of large areas much larger than scales. Badger control has been carried out in UK. Possums do not cause the same problem that badgers are causing in UK.

Active discussion following the lecture

[From student organizer]

Fortunately, I had a chance to become a student organizer of Leading Seminar and thus conducted the 9th Leading Seminar as a chairman on July 9, 2014. Previously, Leading Seminar lecturers were mostly selected by faculty members, but the selection was gradually shifted to PhD students. However, most of these lecturers didn't accept our offer, so it was harder to invite some lecturers. Fortunately, Dr. Cowan kindly accepted our offer to come and give lectures, about the pest management of NZ which was a very important countermeasure against introduced species. The most difficult task for me was to negotiate with Dr. Cowan by e-mail because writing mails in English were difficult for me. So, I spent a lot of time preparing letters in English which sometimes made me delay in replying his e-mails. Thanks to the Leading Office staffs and Assistant Professor Mr. Michael Henshaw, who helped me for replying e-mails with good English to Dr. Cowan. The most regrettable part was that we couldn't have a BBQ party outside in the evening after his lecture because of the rain. In New Zealand, it is winter now, so Dr. Cowan could have enjoyed it more,

however, could not go as planned. Thanks to the assistance of Professor Ishizuka from the laboratory of Toxicology for giving us an opportunity to visit an aquarium in Otaru and also thanks to Dr. Takaesu for an informative tour of Maruyama zoo, Sapporo. I hope Dr. Cowan was content with our tours. We got agreement with Dr. Cowan to collaborate on the international conference about introduced species in Sapporo, 2015 as well as explore the possibility of internship for graduate school student from our school.

Finally, I would like to express our gratitude to Leading Office staff Maki-san, Hashimoto-san, Leading Program coordinator Professor Horiuchi and Laboratory members of Wildlife Biology and Medicine for helping to make the Leading Seminar successful. Thank you.

Jun Moriwaki (Laboratory of Wildlife Biology & Medicine, DC4)

Group photo with Dr. Cowan