



1080 Poison

Impact on Invertebrates



“New Zealand has a distinctive and diverse land invertebrate fauna, with 22,000 arthropod species described and at least that number again awaiting discovery.”

“Approximately 80% of these species are endemic being found nowhere else in the world. Less than 20% of endemic species have adequate scientific descriptions. Systematic studies on poorly known groups are revealing the presence of many new species, as well as species introduced mainly through the actions of humans.”

- Landcare Research

“New Zealand has an estimated 1,400 native species of slugs and snails – many of them endangered.”

- Te Ara, The New Zealand Encyclopaedia



***Insect populations are rapidly declining globally,
largely due to habitat loss and pesticide use.***

When poisons such as Sodium Monofluoroacetate (1080 poison) or Brodifacoum are used the whole food chain is impacted. Whether aerially or in bait stations, poisoned food-baits are not only consumed by targeted species like rats and possums, but also by other native wildlife, including an exceptionally large number of forest invertebrates. Secondary (or tertiary) poisoning also occurs when non-target species, including invertebrates and birds, come into contact with lethally (or sub-lethally) poisoned species, or contaminated water.

This series of photos was taken by a New Zealand bushman at night inside several different 1080-poisoned 'drop zones' within the Wellington region. They show over a dozen different types of invertebrates eating or climbing on 1080 poisoned baits that have been aerially dropped over the forests and waterways. Some images show dead honey bees, spiders, different types of weta, dead beetles and slugs with green dye (legally required in order to identify the poison) clearly visible through their soft translucent bodies.

These poisoned baits persisted in the environment for months, while weta, slugs, spiders, worms and other insects fed on the baits at night. The insects became loaded with poison, making them a toxic meal for other native species, including kiwi, fantails (piwakawaka), tomtits (miro miro), morepork (ruru), weka, kingfisher (kotare), New Zealand robin (toutouwai) and more. Rare native bats, gekos, frogs and tuatara also eat many different insects and can suffer a fate of secondary poisoning.





*Extract from Dr J.C. Pollard, BSc (Hons), PhD, Zoology, Independent Scientist
article: A Scientific Evaluation of the
Parliamentary Commissioner for the
Environment's view on 1080*

The lack of knowledge on the effects of 1080 on invertebrates was identified by ERMA's Agency (now the EPA) as a "data gap" (App. C), and some ecologists have warned of severe effects. Notman (1989) considered that:

"The impact of 1080 on invertebrates is likely to be far-reaching, considering both the wide range of invertebrates reported as being susceptible to 1080 and the variety of microhabitats in which 1080 is available to insects. Invertebrates that eat the baits are likely to be poisoned, leaf feeders are vulnerable to translocated 1080, root feeders are at risk from poison adsorbed on roots, and soil-dwelling organisms might be poisoned from leached residues".

In 1994 entomologist Mike Meads found a severe impact of aerial 1080 on invertebrates, persisting for at least a year in some species, and warned that "It would be reasonable to assume that populations of those insects with short life cycles (springtails) would recover far more quickly than those that have life cycles of 3 years and more (some beetles, cicadas, hepialid moths)" (Meads, unpubl.). Meads' study was initially supported by peer reviews but later discredited by DoC and has still not yet been followed up with a comprehensive, replicated trial on invertebrates.

A pilot trial comparing invertebrates at a site where there had been regular animal control (bait stations, and aerial 1080 in 1997) for many years, and a control site where there had been no poisoning, found a significant difference between the sites (Hunt et al., 1998).

These authors stressed the need for a full study comparing invertebrate abundance and diversity between randomly selected treatment and non-treatment areas. They recommended that such a study should be carried out over two seasons before the toxin is applied, and for the subsequent four years (Hunt et al., 1998).

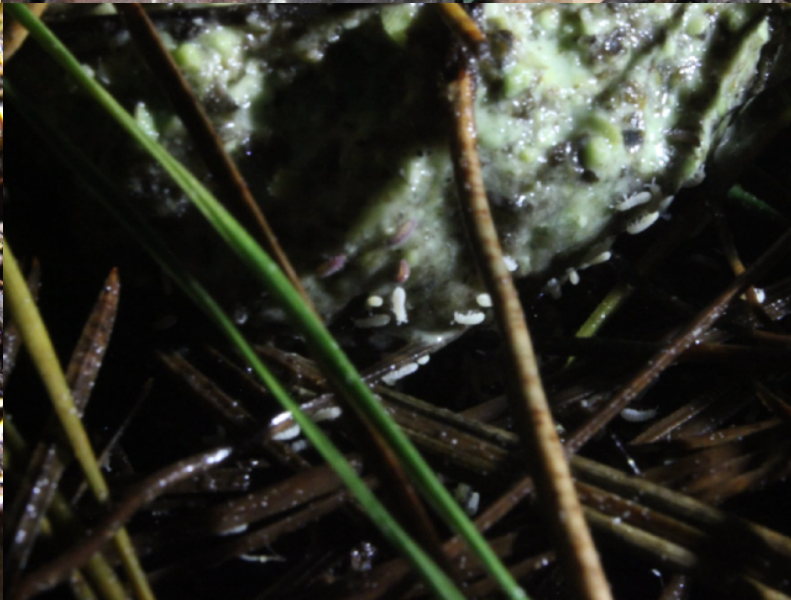
Entomologist, Peter Notman's study found species affected by 1080 included native Kauri snails, ants, moths, beetles, cockroaches and mites. He also stated:

"Larvae are susceptible—the disruption of larval growth and numbers will have an effect on future invertebrate populations and if there is significant disruption—lizards and insectivorous birds might starve. Reduction of soil and litter-dwelling decomposers may affect nutrient cycles."

"extermination is seldom achieved and repeated applications (of 1080) are necessary. The dilemma of using 1080 for animal control is that a large variety of non-target animals is prone to secondary poisoning."

"In the light of the evidence of the effect of 1080 on invertebrates and the complex role that invertebrates play in the ecosystem, the unrestricted use of 1080 is likely to be disruptive to the environment and where endangered invertebrate species are known to be present, 1080 should be used judiciously, if at all."





















What do Government agencies say...?

*“Due to the level of uncertainty in the (1080) toxicity data for invertebrates, and the lack of information on amounts of bait likely to be eaten, **the Agency has not attempted to assess direct exposure to invertebrates.**”*

- Environmental Protection Agency

“More than 180 different invertebrate groups have been found feeding on baits...”

“Invertebrates that have fed on pellets represent a potential source of secondary exposure to insectivores (animals that eat insects). Similarly invertebrates that scavenge the carcasses of poisoned animals may also acquire residues.”

“To date, there have been no field-based evaluations of the potential risk presented to insectivores by 1080 in this context.”

- OSPRI

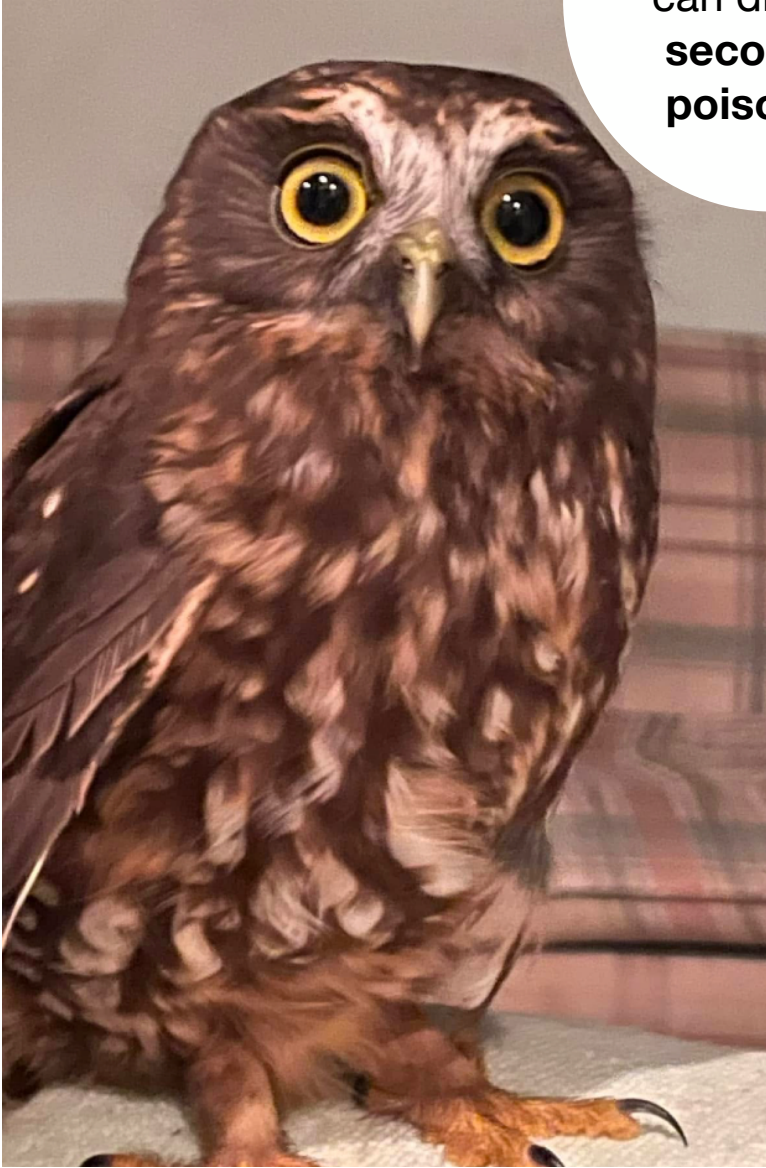
“Studies show that 1080 has no detectable impact on invertebrate populations. 1080 in water does not affect the adults or larvae of insects such as caddisflies, mayflies and midges.”

- Department of Conservation

The Department of Conservation provided no link to the studies mentioned in the quote above. As the great scientist Carl Sagan stated: *“Absence of Evidence is not Evidence of Absence.”*



A few of the
native birds that
can die from
**secondary
poisoning.**



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Page 16: Examples of a few of the many native birds affected by secondary poisoning. (Images not from poisoned forests.)

References:

1. <https://1080science.co.nz>
2. Appendix N: Exposure and Risk Assessment (1080): Non-Target Species
- NZ EPA
3. Pest Control and Invertebrates - OSPRI
4. Paddy Ryan, 'Snails and slugs', Te Ara - the Encyclopaedia of New Zealand, <http://www.TeAra.govt.nz/en/snails-and-slugs/>
5. <https://www.landcareresearch.co.nz/discover-our-research/biodiversity-biosecurity/plants-invertebrates-fungi-and-bacteria/invertebrate-systematics/> - Landcare Research

Invertebrate Photographs

These photos have been reproduced with permission of the photographer, a New Zealand Bushman who is passionate about documenting what he has witnessed in a number of poisoned forests throughout the country.

He states:

"These baits lay on the ground where they were dropped for three months, I'm photographing only three or four pellets if I can still find them late at night inside the zone, they drop millions of them on each drop zone."

"The biggest problem I'm having is finding the target species, hours and hours looking for them, and not finding anything that would warrant that sort of treatment."

Other Photographs:

Claire Oligwy - North Island Robin

Gilly Jackson - Ruru in rehab

Torri Taber - Baby kiwi

Asha Andersen - Kauri Snail



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If you are a citizen scientist documenting the impacts of chain-poisons, please share your findings by emailing us at:
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