15 fantastic facts about our famous arthropod New Zealanders

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1. Avondale spider, our Hollywood star!

- In 1989/90, 374 Avondale spiders were sent to Hollywood to star in the Steven Spielberg movie **Arachnophobia**. *Delena cancerides* is harmless to humans, but it looks fearsome and therefore suited its movie role as a "killer spider".
- It has a body length of up to 30 mm, and its legs can span 200 mm.
- Avondale spiders live in colonies with their extended family and friends; no other spider in New Zealand has this lifestyle.

2. Weevils: the longest and smallest in the world

- The weevil family has more species in it than any other group of organisms: about 50,000 species.
- About 1,500 species are known in New Zealand, and 2 of them represent the longest species and the smallest species known in the world!
- The longest species is the giraffe weevil, *Lasiorhynchus barbicornis*, and it is up to 80 mm long.
- The smallest species is only 0.7-0.8 mm long! *Myrtonymus zelandicus* is a blind species living around the finer roots of all native species of Myrtaceae such as pōhutukawa, kānuka, and mānuka, in the top 40 cm of the soil.

3. Long-lived adult of Poor Knights weevil

- The adult of the Poor Knights weevil, *Hadramphus pittospori*, has been recorded as living for 3 years: most adults of weevil species of the world do not live more than 1 year.
- The adult is 16-20 mm long.
- The 6 larval stages last about 1 year, and grow inside their host plant karo (*Pittosporum crassifolium*).
- The pupal stage lasts about 3 weeks, then the adult hatches.
- The long adult life of these weevils is unusual. It is perhaps one explanation why populations of large-sized weevils related to this species are so badly affected by introduced predators such as rodents.

4 A bat-fly with high level of social behaviour

- The wingless bat-fly, *Mystacinobia zelandica*, lives in large communities in roosts of the short-tailed bat, and requires temperatures of around 30° for development and survival (much higher temperatures than those outside the roost).
- Adults and larvae feed on bat guano.
- Dispersal of bat-flies to other bat colonies depends on transport by the bats: as many as 10 bat-flies may be found in the fur of 1 bat when it leaves its roost to feed at night.
- The bat-fly has a level of social behaviour unknown in any other fly (Diptera) in the world, including:
    - parents live side by side with their progeny;
    - mutual grooming between adults and larvae;
    - males have an extended life-span to produce a sound-producing guard (soldier) caste.

5. Fairy flies

- "Fairy flies" are some of the smallest insects in the world.
- There are about 160 species in New Zealand, about 10% of the world's known species.
- Fairy flies are not true flies (Diptera) but actually tiny mymarid wasps (Hymenoptera), which lay their eggs in the eggs of other insects.
- All the young stages of the mymarid develop within the host egg, and hatch as adults from the host eggs.
- Some fairy flies are less than 0.4 mm long.

6. A wasp that eats ladybirds

- The euphorine wasp, *Dinocampus coccinellae*, is found throughout the world. It arrived in New Zealand during the early days of European settlement.
- This wasp lays an egg in the body of an adult ladybird.
- When the egg hatches, the larva grows through 4 instars while feeding on the living ladybird.
- The mature larva then severs the main nerves of the ladybird's legs, and burrows its way out of the ladybird.
- Next the mature larva ties the ladybird's legs together and pupates underneath.
- The pupating wasp enjoys the protection provided by the ladybird's bright warning coloration as well as the deterrent properties of "reflex bleeding"; a mechanism ladybirds use to produce toxic and foul-tasting fluids from their joints to repel would-be predators.

7. Thieving wasps

- New Zealand has 2 native species of gasteruptiid wasps, also known as signal wasps.
- These wasps lay their eggs on the eggs of our native solitary bee species.
- When the wasp larva hatches from its egg it eats the bee egg and then all the food that the female bee has left for her offspring.
- Because of this thieving behaviour these wasps are called kleptoparasites ("klepto-" means "thief").

8. Wētā weighing 71 grams!

- A female of the Little Barrier Island giant wētā, *Deinacrida heteracantha*, has been weighed as 71 grams: the heaviest weight reliably reported for any insect in the world.
- She had been reared in captivity and didn't lay her eggs when they were ready; instead the eggs were retained in her abdomen.
- The average weight of an adult without eggs is about 19 grams, and the normal weight of a female with eggs is about 43 grams.
- Some beetles are more likely to be heavier, like the goliath beetle, but they have not been reliably weighed.

9. Our largest and smallest native spiders

- The largest native spider in New Zealand is a cave-dwelling spider, *Spelungula cavernicola*, known only from the Golden Bay and Buller area. It has a leg span of 130 mm and a body length of 24 mm.
- The largest spider in the world is the goliath or bird-eating tarantula, *Therophosa blondi*. It has a leg span of 250 mm and a body length of 90 mm.
- The smallest spider in New Zealand belongs to the family Mysmenidae and has yet to be given an official scientific name. Adults have a body length of less than 0.5 mm.
- The smallest spider in the world is a web-building spider, *Patu marplesi*, from Samoa, belonging to the family Symphytognathidae. Adults have a body length of 0.43 mm.

10. Katipō spider

- The katipō spider, *Latrodectus katipo*, has the reputation of being dangerous as it is the only native spider poisonous to humans. All spiders have venom that kills their prey, but only a few species in the world have venom that is poisonous to humans.
- The katipō lives in coastal areas and is usually found under driftwood and hiding in clumps of grasses growing on sand. It is now an uncommon species, and much of its natural habitat has been modified by human activities.

- Only the female is capable of biting and will do so only while protecting her eggs or herself.
- The fully grown female has an black, round abdomen the size of a garden pea. There is a bright red stripe all the way down the back, and a red hourglass underneath.

11. Food of the New Zealand blue blowfly maggot

- Blow fly maggots usually feed and grow on carrion (decaying dead animals).
- Maggots of the native New Zealand blue blowfly (*Calliphora quadrimaculata*) living on mountain tops are unusual in that they may develop normally without feeding on carrion.
- Their food can be the wet layer of fermenting leaf sheaths of snow tussock grasses!

12. Kōwhai leaf-miner moth: one of world's smallest moth

- New Zealand's kōwhai leaf-miner moth (*Stigmella sophorae*) is amongst the smallest moths in the world, with a wingspan of 2.5-3.5 mm.
- The minute caterpillar completes its whole growth inside just one of the little leaflets of a kōwhai tree, making a tiny track or 'leaf-mine' as it eats its way along.
- It then comes out and spins a tiny silk cocoon on the ground or on a leaf.
- The moth that hatches out is so small and beats its wings so fast it is almost invisible when flying.

13. Huia louse: extinct before being discovered!

- Most New Zealanders have heard of the huia (*Heteralocha acutirostris*), a beautiful bird that became extinct in the early part of the 20th century.
- But did you know that the huia had its own special species of louse (*Rallicola extinctus*)?
- When the huia went extinct, so did its insect companion.
- Specimens of the louse, which would have crawled around in and fed on the feathers of the bird, have been recovered from 100-year-old huia skins preserved in museums.
- Because the louse was only recently discovered on the old huia skins, nobody has ever seen it alive.

14. Longest appendages

- The Poor Knights cave wētā (*Gymnoplectron giganteum*) has the longest appendages (legs and antennae) of any New Zealand insect or spider.
- From the tip of the antenna to the end of the hind legs it can measure an enormous 450 mm, although the body is only 50 mm long.
- It hides in caves and rock piles during the day and comes out at night to feed on flowers and lichens.
- It is only found on the Poor Knights Islands (Tawhiti Rahi and Aorangi).

15. Rarest moth?

- *Titanomis sisyrota* is probably the rarest moth in New Zealand.
- *Titanomis* is quite big, with a wingspan of 55-63 mm.
- Only 10 have ever been found, and none since 1959, when 1 was caught at floodlights on the Waipapa Dam.
- Some other moths are known from fewer specimens, but most of these are very small, and easily overlooked.
- So unusual is *Titanomis* that experts don't even know which group of moths it belongs to!

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