You will hear part of a programme. Read through the notes below and complete them by filling in the gaps with the exact words you hear (1 to 3 words). Gap 0 is an example. MARK

ANTS, THE GARDENERS OF THE FOREST

An interview with James O'Hanlon, researcher at the University of New England, who is fond of them

According to James O'Hanlon, ants are responsible in forests for gardening tasks such as turning over or fertilizing the **0. __SOIL___**.

When ants carry out routine tasks such as collecting and bringing food into their nests, they are giving 1._____ to the soil.

The expert says that certain tree species have especially 2. _____ to be dispersed by ants.

These trees have seeds which contain ant food, that is, fatty 3._____ an attractant for ants.

Ants make it possible for Australia to be the country with more different types of

4._____-_____ plants on the planet.

Ants protect seeds from fires by allowing them to be some centimeters 5. _____ _____ _____

Ants' nests are quite interesting to make the soil more fertile as there is usually tons of stuff such as dead and 6. _____ things on them.

Other strategies plants use is having big, colourful 7. _____ _____ to attract animals.

The expert explains that stick insect eggs have a food reward on them and they want ants picking up their eggs and 8. _____ them in their nests.

James says that there is some mystery in that the stick insects may be 9. _____ ants as a way to get out of an ant's nest.

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Robyn Williams: And from wasps to ants, still with love, two researchers who are very fond of them. The first at the University of New England in Armadale, James O'Hanlon, is a postdoctoral research fellow, and we're sitting there by the woods thinking of ants as little gardeners.
James O'Hanlon: Yes, think about what you would do keeping a garden. You would do things like turning over the soil, you would fertilise the **soil**, you'd water it, you'd get tree seeds, dig little holes, put them underground, look after it. We are surrounded by these lush forests teeming with life and nobody is there doing the gardening, nobody is tilling the soil...well, at least people aren't. The fact is that ants are doing all these for us, they're the gardeners of our forests. By burrowing into the soil they are aerating it, by bringing soil up from the bottom of their burrows to the surface they are turning it over. When they collect food and bring it into their nests they are actually giving **nutrients** to that soil and, believe it or not, they actually plant tree seeds.
Robyn Williams: Do they carry them specifically because they want to, or do they just happen to be easy riders or come along for the trip?
James O'Hanlon: There are lots of plant species whose seeds are just sort of picked up by ants every now and again. But there are other types of trees that are specifically **evolved** to be dispersed by ants, and they actually have a little food reward on their seeds. So if you have maybe an Acacia in your backyard or a wattle bush, go out after flowering season, look for the seed pods, open up the pod and you'll see the black round, oval shaped seeds. On one end of it will be a bright yellow-white blob. That blob is ant food, it's fatty **acids** that's an attractant that causes the ant to pick them up, carry them away and take them into their nests.
Robyn Williams: And you can see that if you look at your website and you've got little pictures of them and there's the little knob and...yes, it's quite fascinating, isn't it.
James O'Hanlon: Yes, and they are really, really successful in Australia. So Australia has more different types of **ant-dispersed** plants than anywhere else on the planet.
Robyn Williams: Impressive. And what about these forests, what if the ants weren't there, what do you think they might look like?
James O'Hanlon: Probably have a lot less plants in them I guess. So the big question is why do you want an ant planting your seed. A couple of ideas. First of all, in a place like Australia we know we have a lot of fires. So if you can...instead of dropping your seed just on the bare ground, if you can get that seed underground, then next time a fire goes through, hopefully it's going to be protected by being a couple of centimetres **underneath the surface**.

Secondly we have lots of seed predators, lots of things like rodents and birds running around that might eat your seeds. Again, being inside an ant nest you are protected from that. Also, interestingly, in Australia we have very low nutrient soils, they're not great for plants to grow in. But inside ants' nests there's tonnes of stuff, there's **decomposing** things, there's dead things, so it's actually this little area of strangely high nutrients. So in a way not only are ants planting seeds underground, they are planting them in areas where there is nutrients for their seeds to grow, so it's a really, really clever strategy, in Australia particularly.
Robyn Williams: It makes one wonder, if you look at a forest, how many of those trees... as we look around, can you see any ones which are likely to have been planted by ants?
James O'Hanlon: What you're looking for is things that have those seeds with the little blob on it. So other strategies that plants use, think about things that have fruit, big, colourful, **fleshy fruit**. They are there to attract animals to eat the fruit and carry away the seeds. These other plants that are attracting ants are doing the same thing, they are essentially making a special little type of ant fruit, if that makes sense.
Robyn Williams: It certainly does. How long have you known this? How long has it taken you to discover that?
James O'Hanlon: I actually got interested in this in an indirect way. There's another strange thing going on where ants, as well as carrying tree seeds to their nest, are actually picking up the eggs of stick insects. It turns out if you look at these stick insect eggs, they look remarkably like tree seeds. Stick insects have a food reward for ants on their eggs. So they actually want ants picking up their eggs and essentially **incubating** them inside their ant nests.
Robyn Williams: Isn't it cunning! And the stick insects as they hatch and grow, don't the ants leap on them and in some ways interfere with their growth?

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James O'Hanlon: Well, that's the big mystery. So, as far as stick insects go, we are really only scratching the surface of what is going on. It's possible that these little tiny stick insects are **mimicking** ants maybe as a way to get outside of an ants nest.
Robyn Williams: Fascinating work too. My God, isn't nature wonderful!

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