

Problem Ants part 2

Participant Workbook



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Target audience

The ***Problem ants part 2*** workshop is designed primarily for **Biosecurity, Environment and Agriculture officers** who may directly encounter invasive ants in the course of their work or may have ants sent to them for preliminary identification. The workshop follows on from ***Problem ants part 1***.

Objectives

By the end of this workshop participants should:

Exercise 1: Where do invasive ants come from?

- Be able to use the resources contained in the PIAT to identify potential source countries and pathways for invasive ant species

Exercise 2: Identification

- Be able to use the resources in the PIAT to identify all of the 5 most unwanted invasive ant species in the Pacific and be aware of their potential impacts
- Be able to use the resources in the PIAT to identify some of the 18 most unwanted invasive ant species in the Pacific

Duration

1-1.5 days

Materials required

- white board
- A3 sheets for collaboration
- whiteboard marker
- permanent marker or sharpie
- laptops for participants
- laptop with AV
- workbooks printed in colour
- pencils / pens
- USB, CD or online access to the PIAT
- labels for participant / facilitator names
- USB, CD or online access to PIAkey / Antkey
- microscope
- resin block(s)
- preserved worst 5 ants species
- preserved life-stage specimens
- dissection kit (minimally forceps)
- petri dishes
- extra ethanol / propylene glycol

Credits

Ant images are used under license from Alexander Wild (alexanderwild.com).

Exercise 1: Where do invasive ants come from?

Duration: 0.5 hours

Use the PIAT (**Problem ants → Invasive ant distributions**) to find and download the Excel spreadsheet of ant distributions. Once the Excel sheet is downloaded, you must click “enable editing” to use the filters.

You know that little fire ants are an ant that you don’t want in your country. You know it causes some really bad problems. Now you need to work out where it might come from. Imagine your country only imports goods from the following countries:

Argentina, Bhutan, Costa Rica, Denmark, Egypt, French Polynesia, Guam, Hungary and Iran.

Q1. Using the Excel spreadsheet identify which of these countries the little fire ants *might* have come from. Circle the countries in the list above.

Q2. If you wanted to find out all countries that Red imported fire ants are absent from, how would you do this?

Q3. How would you use the distribution database to find out what other invasive ants might be coming from the countries that you trade with? Choose a country (or a few countries) to make a list.

Exercise 2: Identification

Duration: full day

Imagine you have received some ants that look like the one pictured below. The ant is reported to be in low numbers around a port area.



Have a look at the **Problem ants → Identification** page. Use the information in this section to try to identify the ant. Note that this ant has a single waist segment (the petiole).

Start with deciding what family the ant belongs to. Read through the instructions on **Identifying a sub-family in 5 easy steps** in the **Identification** page.

Q1. What sub-family is the ant in? How many steps did it take to decide?

Now have a look at the Pacific Invasive Ants Taxonomy Workshop manual (there is a link near the bottom of the **Identification** page).

Q2. Could you identify the ant species pictured above?

Your group has also been given a resin block containing specimens of five different invasive ant species. Use the microscope (follow instructions in the PIAT **Identification** section) and resin block to compare the ant in the photo with the reference specimens in the resin block.

Q3. Were you able to identify the ant using the resin blocks? What ant species was it?

Q4. Was it easier using the resin block to identify the ant? Why?

Now let's try to identify other sub-families of ants. You have been given vials with the four different sub-families colour coded. Use the guidelines in the **Identifying a sub-family in 5 easy steps** in the **Identification** page and the microscope to identify the four sub families.

Q5. What were the different sub-families? What characteristics do each sub-family have? Write the details in the table below.

Colour code	Sub-family	Characteristics
Green		
Yellow		
Red		
Black		

Your group has been given numbered vials with examples of the five worst invasive ant species, together with one other species.

Q6. Use the resin blocks and vials to identify the 4 other 'worst' ant species (leave room in the boxes below to answer Q10 later).

Q7. Were you able to tell which vial had the species that was not one of the ‘worst 5’?

Q8. Approximately how many species of ants are there in the world?

Q9. As there are many ant species in the world, how difficult do you think it would be to tell if an ant is invasive just by looking at it?

The PIAkey can help you identify invasive ants. You can use the PIAkey to find pictures and key diagnostic *characters* of each of the ant species above. These characters are what specialists use to tell apart the 12,000 different species of ants.

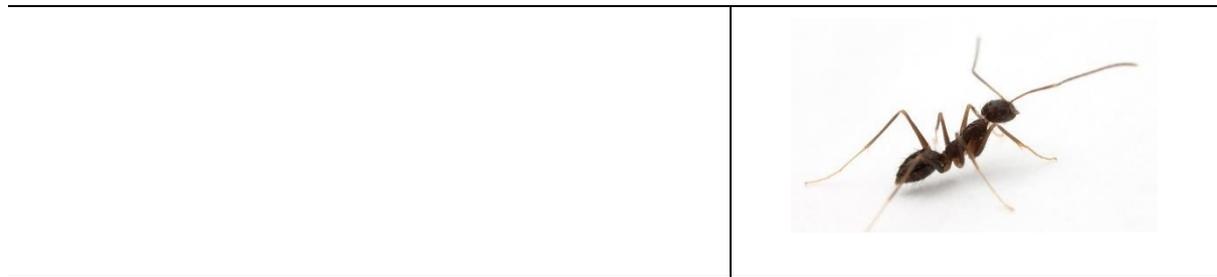
Q10. Look up the ants above and list these characters next to your identifications above. Hint: you might need to use the scientific name.

You might notice that the PIAkey has fact sheets and identification information for 44 pest ant species and the PIAT has information for 18, but there are over 12,000 species of ant. So it is very likely that the ants you find in your area will not be among those covered in the PIAkey or PIAT, and that you may need to look for help with identification.

The PIAkey offers videos showing the foraging behaviour of the worst five threat ants to the Pacific. Watch the videos for each of these five species - discuss how their behaviour differs. Familiarity with these videos is particularly useful when you are identifying live ants in the environment.

Imagine you have received a specimen of an ant that is causing a nuisance in a village on the other side of the island. You have looked through the PIAT, PIAkey and Pacific Invasive Ants Taxonomy Workshop Manual, but are not able to identify the ant. This may be because it is not among the 18 species the PIAT focuses on, because the specimen is damaged in some way or because you aren't sure about your identification.

Q11. Can you use the PIAkey / Antkey / Taxonomy workshop notes to identify the ant that wasn't in the resin block?



You have been given a series of vials with different types of fire ants. These are all closely related species, but only two of them are considered problem ants in the Pacific.

Q12. Can you identify the Red imported fire ant? Was it easy to tell the different ant species apart?

Videos can be really useful to identify ants that you have seen alive. Have a look at some of the videos of ant behaviour (online in the PIAkey or on the USB in the folder piat.org.nz → videos → Eli Sarnat videos). Look at the *Solenopsis invicta* video. This is the Red imported fire ant.

Q13. Can you identify the Red imported fire ant in the tube from the video?

Q14. What was most difficult about identifying the ants?

Q15. Is there anyone in your country that you know could identify ants for you? If not, use the Getting Help section of the PIAT to come up with a list of sources of help. Write some of them here.

Q16. List some ways you can use so that the expert can identify the ants.

Q17. If someone gave you a few ants how difficult do you think would it be to tell if they were one of the 18 harmful ants?

Q18. If you knew they weren't one of the 18 harmful ants what would you do to help get the ants identified?

Q19. Do you think any of the 5 worst ant species are in your country? How would you find out for sure?

Q20. What about the 18 most harmful, do you think any of them are in your country? How would you find out for sure?

Finally, being good at identification is difficult. Not everyone wants to learn how – and not everyone needs it to be a good biosecurity officer.

Q21. Would a 'masterclass' in ant identification be useful for you? This would involve learning how to use dichotomous keys and you would be able to identify many species of ants. It is very difficult though.

Version control

author	description	date
Allan Burne	First draft v0	30 Sep 2016
Monica Gruber	Revision v1	4 Nov 2016
Souad Boudjelas	Review v1	10 Nov 2016
Monica Gruber	Revision v2 – incorporating feedback from Kiritimati training	12 Jan 2017
Monica Gruber	Revision v3 – incorporating feedback from Tarawa training	3 Mar 2017