

## Lesson Plan for PIAT Ants and Ladder (45mins)

### Prior Skills and Knowledge:

- Understand that they play a role in their community.
- Work well together in groups.

### Instructional Objectives:

At the end of the lesson, students will able to:

- Identify an ant as a living thing.
- Understand that not all ants are invasive.
- List the positive and negative impacts of ants on our environment.
- Use the skills of self-management, responsible decision-making and problem-solving and exhibit the values of care, respect and social-awareness.

Resource Preparation Guide		
Item no.	Description	Remarks
1.	Computer, Projector, Powepoint slides.	For showing of powerpoint slides / Slides to be printed out – 1 copy per 3 students if computer/projector not available
2.	Board or Paper and markers	To use for recording student – teacher interactions during brain storming.
3.	Annex 1a – Te Kinnongo & Te Kaintamwarake (Ants and Ladder Game)	Print out sufficient copies of the ants and ladder game. (Annex 1b – English version of Ants and Ladder Game.)
4.	Dice and counters	Annex 2 – Make your own dice Annex 3 – Make your own counters

Est Time	Learning and Development	Resources
2 mins	<p><b><u>Tuning in</u></b></p> <p>Slide 1 - 2: Teacher to introduce the lesson and the lesson outcomes for the day.</p>	Computer, Project, Slides
	<p>Slide 3: Teacher to share with the class what an ant is.</p> <ul style="list-style-type: none"> <li>- An Ant is a living thing, it needs air, food and water.</li> <li>- An Ant is an insect.</li> <li>- It has 3 body parts and 6 legs,</li> <li>- It in the same family as wasps and bees,</li> <li>- The queen can lay thousands of eggs a day.</li> </ul>	

3 mins	<p><b><u>Introduction</u></b></p> <p>Slide 4: Teacher introduces the life-cycle and structure of ants.</p> <ul style="list-style-type: none"> <li>- Ants are “social insects”. This means that they divide egg production and other tasks such as foraging for food, tending young and defence between different castes.</li> <li>- It is important to note that only queens lay eggs, and while they can fly for short distances they are not capable of making the flight between Pacific Island nations.</li> </ul> <hr/> <p>Slide 5: Teacher to introduce the concept of an invasive ant. At this point, teacher use the question(s):</p> <ol style="list-style-type: none"> <li>1) Has anyone seen an ant before?</li> <li>2) Where can you usually find ants?</li> </ol> <p>Teacher goes on to explain that there are ants that are found outside of their natural home such as the fire ants in the slide.</p> <p><i>Note: Teacher may make use of the Board or paper and markers to record the responses of the students.</i></p>	Computer, Project, Slides, Board/Paper and markers
15 mins	<p><b><u>Development 1</u></b></p> <p>Slide 6: Teacher to ask the question(s):</p> <ol style="list-style-type: none"> <li>1) Do you think there is anything different or unusual about the five ant species pictured?</li> <li>2) Are you able to tell just by looking if they are good or bad for our environment?</li> </ol> <p>Teacher introduces the top five worst invasive ants in the Pacific. Looking at these pictures it is difficult to see what makes them any different or any worse from other ants.</p> <p>Teacher to ask the question(s):</p> <ol style="list-style-type: none"> <li>1) What are some ways invasive ants harm our agriculture?</li> <li>2) What are some ways they harm our wildlife and environment?</li> <li>3) What are some ways they harm humans?</li> </ol> <p><i>Note: Teacher may make use of the Board or paper and markers to record the responses of the students.</i></p>	Computer, Project, Slides, Board/Paper and markers

Slide 7:  
Teacher to ask the question(s):

1) Where do you think the invasive ants came from?

Teacher to introduce the countries and the different species of invasive ants that originated from them:

- Africa, Asia, Central American and South America.
- The African big-headed ants came from Africa.
- The yellow crazy ants came from Asia.
- Little fire ants came from Central America.
- Red imported fire ants and Argentine ants came from South America.

Slide 8:  
Teacher to share how ants enter the country:

- Ports
- On ships
- Airports
- Unloading areas
- Storage areas

Teacher provides further information on why they are found in these places and why they are there.

- When cargo, especially sea containers, vehicles and appliances are brought in to the country invasive ants that have been hitching a ride on them will go in search of food or a new place to nest.

Slide 9:  
Teacher introduces the term biosecurity and what the people in biosecurity do:

- Biosecurity is where people come together to make sure unwanted living things such as ants do not come into our environment and harm it.
- When the ways in which ants use to enter a country have been identified (e.g. fresh produce, vehicles etc.), it is important to check those goods for ants at the border.
- There is always a chance that something might escape, it only takes one queen ant to start an invasion!

Teacher shares that the community can play an important role too by:

- Make communities aware of the problems ants can cause. Community members can be on the lookout for invasive ants.

- There is always a chance that something might escape, it only takes one queen ant to start an invasion!
- If the community knows what to look for, they can report any new or problem ants they encounter. Posters are a great way to let the community know what you are looking for and who to call if they find it.

Slide 10:

Teacher shares that when invasive ants reach high abundance, they can be a major nuisance in three ways:

1. They farm scale insects, aphids and other honeydew producing bugs, which damage crop plants, reduce yields and spread crop diseases.
2. They can kill or injure local wildlife including birds, crabs, lizards, and insects and can make it difficult for stock animals like pigs and chickens to feed.
3. Many invasive ants sting or bite when disturbed. Stings can form blisters and become infected. Sometimes the ants can grow to such high numbers that people cannot eat, work or sleep because there are always ants crawling all over them.

Slide 11:

Teacher shares that:

- Only some introduced ants cause problems.
- Some ants are only bad in great numbers.
- Most ants do **good things** for the environment. They cycle nutrients in soil and eat the larvae of household pests like flies and cockroaches.
- Ants perform a number of tasks that are good for the environment. Perhaps most importantly they assist in the breakdown of organic materials and nutrient cycling. (Animals that assist in decomposition)
- Even ants that are introduced outside of their natural range can benefit the environment.

Teacher gives an example of an invasive ant species:

- The ant in the picture is *Odontomachus similimus*. It is one of the biggest introduced ants in the Pacific and while it can give a nasty bite and has a painful sting,
- It is not aggressive. It is a slow moving solitary hunter that rarely causes people ant bother.
- Some ants only become a problem when they reach high numbers.
- Others cause problems because they sting or spray acid.

20 mins	<p><b><u>Development 2 – Ants and Ladder game</u></b></p> <p>Slide 12 - 13: Teacher introduces the ants and ladder game to the students.</p> <p>Slide 14: Teacher to go through the rules with the students.</p> <p>Slide 15 – 19: Teacher to share with the students that there are positive and negative actions they can take for biosecurity.</p> <p>Teacher to go through the positive and negative actions present on the gameboard. (Slides 16-17 are in Kiribati and Slides 18-19 are in English) before starting the game.</p>	Computer, Project, Slides, Annex 1a, 1b, 2 and dice and counters.
5 min	<p><b><u>Conclusion</u></b></p> <p>Slide 20: Teacher to recap the lesson key points:</p> <ul style="list-style-type: none"> <li>• Ants are insects. They have 3 body parts and 6 legs.</li> <li>• They are in the same family as wasps and bees and the queen can lay thousands of eggs everyday.</li> <li>• An ant is invasive when it has left its home range and damages the natural environment of its new home.</li> <li>• Not all ants are invasive. Most do good things for the environment like helping decomposition.</li> <li>• Some ants are bad because they can cause harm to our farms, human and our environment.</li> <li>• Biosecurity is important and everyone can play a part to prevent invasive ants from entering Kiribati.</li> </ul>	Computer, Project, Slides

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Adapted from:

[http://piat.org.nz/uploads/PIAT\\_content/pdfs/learning\\_teaching/Invasive%20Ants%20Lesson%20plan%20new%2002.pdf](http://piat.org.nz/uploads/PIAT_content/pdfs/learning_teaching/Invasive%20Ants%20Lesson%20plan%20new%2002.pdf)

<http://piat.org.nz/learning-and-teaching/i-kiribati-outreach-resources>