

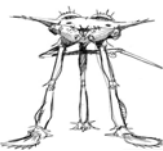








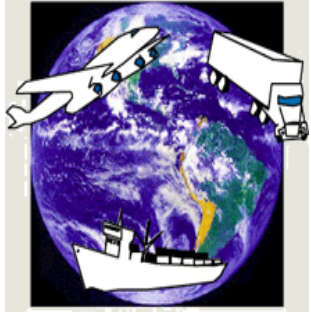





Visitors – welcome and unwelcome

An invasive species is non-native to the ecosystem under consideration and causes or is likely to cause economic or environmental harm or harm to human health. Islands are particularly vulnerable to invasive species.

STRATEGY	Suggested ideas:
ANALYSIS	<ul style="list-style-type: none"> ▪ Analyse some of the integrated pest management strategies that your island has in place; at a cultural, physical-mechanical, biological and chemical level. Describe each tactic and give your opinion as to which is the most effective against which pest. ▪ The management of weeds costs Australia for example, AUD \$3.5 billion yearly. The management and the prevention of the introduction of new <u>invasive species</u> are key environmental and agricultural policy issues for the Australian Federal and State governments. How is this money spent on the island of Tasmania for example? Are similar and proportional amounts of money spent on other islands? If the issue was resolved, what could this money be used for?
SYNTHESIS	<ul style="list-style-type: none"> ▪ Invent a way of minimising or eradicating invasive plants in your local area. Share this via a poster or webpage.
PARADOX	<ul style="list-style-type: none"> ▪ <i>A weed is a plant whose virtues have not yet been discovered.</i> Ralph Waldo Emerson. Are there any good points to an invasive weed or pest on your island? Do a PMI (plus, minus, interesting) chart and share it with other islanders. ▪ Is there any such thing as a helpful invasive species, including those that may be found to have some economic value? Find examples on your island and compare these with possible examples on other islands. ▪ Sometimes, to control invasive species, other species are introduced to control the first one, such as a cane toad. Can you find examples of this happening on your island? Write a brief report to describe the species and what happened. Was the strategy successful or not? ▪ Rabbits are the source of such wonderful and lovable creatures for film and story, such as Thumper, Bugs Bunny, Peter Rabbit and the Easter Bunny. However many people across the world consider rabbits to be an invasive species. Conduct a poll of people of different ages, to see how they generally view the presence of rabbits on the island – as a pet, a harmless creature, or an invasive species. Analyse the results and share your findings. Are there any islands without rabbits? 
ATTRIBUTE LISTING	<ul style="list-style-type: none"> ▪ Create a poster of invasive species on your island. Include pictures and information about the species and compare your list to those from other islands. Discuss any differences. ▪ Report on one of the species from the <i>Invasive Species 100 Worst invasive alien species list</i>: http://www.invasivespecies.net/database/welcome/content.asp Prepare a talk about one such species that is already on your island and the threats posed by this invader. ▪ List any species from your island that has left to invade other islands. Describe the environmental consequences. ▪ List species on your island that are now endangered because of introduced species.
ANALOGY	 <ul style="list-style-type: none"> ▪ In what ways are invasive species like aliens? Create a comic strip about an invasive species on your island. 
DISCREPANCY	<ul style="list-style-type: none"> ▪ Domestic animals that have gone wild or were brought in for recreational use or were introduced as <u>biological control</u> of another pest may be considered feral animals. Many of the larger ferals cause damage to the landscape, including erosion and prevention of regeneration. Which feral animals are causing most public concern on your island? Do other islands have similar problems?
PROVOCATIVE	<ul style="list-style-type: none"> ▪ Explore the relevance of quarantine in protecting island ecosystems. Do your own

<p>QUESTION</p>	<p>quarantine laws go far enough? Compare your quarantine restrictions with those of other islands.</p> <ul style="list-style-type: none"> ▪ Is a bounty a useful way of eradicating invasive species? ▪ Can people be unwelcome visitors? <p>Explore the nature of refugees located on islands around the world.</p> <p>Explore the use of islands as immigration stations</p> <p>Research Angel Island, the Pacific US immigration station that processed, and in many cases, detained, nearly 200,000 immigrants in the early 20th century.</p>  <ul style="list-style-type: none"> ▪ An island famous for being a gateway for immigration was Ellis Island. Read more about the island and consider why the island was seen as both a gateway to freedom and a new life but also a source of misery and fear: http://library.thinkquest.org/20619/Eihist.html / http://www.ellisland.com/ ▪ Currently and in the future will some islanders be environmental refugees? Communities on drowning islands throughout the Pacific are faced with a looming homeless crisis due to rising sea levels. Consider the plight of people on these islands. Where will they go? Include in your research Papua New Guinea's Carteret Islands, Tuvalu and Fiji. <ul style="list-style-type: none"> ▪ Some people consider tourists to be an invasive species. Prepare a debate on this topic. What are the issues that contribute to the debate? Undertake the 'Save the Coral Reef' Webquest at http://www.swlauriersb.qc.ca/english/edservices/pedresources/webquest/oceans/oceans.htm to deepen your thinking about this question. 
<p>EXAMPLES OF CHANGE</p>	<ul style="list-style-type: none"> ▪ Research and discuss ways in which invasive species might be stopped from invading. For example, the following articles outline how ship ballast might be treated to prevent 'stowaways': <ul style="list-style-type: none"> http://news.nationalgeographic.com/news/2002/01/0109_020109TVballastwater.html and http://www.bayareamonitor.org/mar00/ballastwater.html ▪ Debate the wisdom of relocating species to an island. Conduct the debate within your school or as part of an online forum. 
<p>EXAMPLES OF HABIT</p>	<ul style="list-style-type: none"> ▪ Research a bird which migrates to your island. List its appearance, habits and map its migratory path. Set up a blog where people around the world might notify you when and where they see the bird. Use the following site as a guide: http://www.birds.org.il/wings/show_item.asp?itemId=2313&levelId=806&template=209
<p>SKILLS OF SEARCH</p>	<ul style="list-style-type: none"> ▪ Can invasive species be stranger than fiction? Locate some of the weird and wonderful species that have arrived at your island. Create an ePostcard with a painting of the species and send it to students on other islands. ▪ On a world map, demonstrate the travels of an invasive species on your island. Make a passport for your invasive species with border stamps showing its travels; include details of how they arrived on your island. ▪ Research a local invasive species. Meet with experts who know about the species and work on ways in which the problem can be solved. Research how and when it arrived, how it has affected biodiversity and the environment, what adaptations enabled it to become established and whether it is beneficial or harmful. Share your ideas and action plan with local communities and other island communities. ▪ Undertake a search of exotic aquatic species by exploring five themes: origin, distribution, movement, consequences and solutions. Present your findings in a: <ul style="list-style-type: none"> ○ Dramatic performance. Create costumes and innovative dialogue to present key messages to a real and / or online audience; or ○ A mural or diorama; or ○ A clay animation; or ○ A comic strip. ▪ With a group, investigate a local area on your island. Undertake an inventory of all the plants you find and animals that you see. Chart the names of the species and where the species came from. Are they invasive species? If so are they having a negative or positive 

	<p>effect on the local environment? How can you tell? Find resources and undertake experiments to help you reach a decision. How might you assist in the management of any invasive species that are having a negative impact on your local area?</p> <p>When your group is satisfied with the amount of research, arrange the information into a presentable format. Using PowerPoint or making a wildlife book are a few examples of how you could present your information, but you may use other formats as well. Share your work with students on other islands.</p>
<p>TOLERANCE FOR AMBIGUITY</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 25%;">  </div> <div style="width: 50%;"> <p>What if.....</p> <ul style="list-style-type: none"> ▪ pythons were released in Ireland or on your island? ▪ foxes were introduced to your island? ▪ an invasive weed spread so quickly that it prevented food crops from growing? ▪ the Indian Mynah bird took over the local bush area and prevented the local birds such as magpies and parrots from nesting? ▪ the <u>crown-of-thorns starfish</u> devastated the famous <u>Great Barrier Reef</u>? ▪ your island's population trebled due to the unauthorised arrival of refugees? <p>Can you add to the list of 'what ifs' and find island examples where these are reality?</p> <ul style="list-style-type: none"> ▪ Have any species been mislabelled? Not all non - native species are recognised as invasive. Are there any non-native species that you believe should not be labelled as invasive? Research your island's species and make a case to support your opinion. </div> <div style="width: 20%; text-align: right;">  </div> </div>
<p>INTUITIVE EXPRESSION</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 25%;">  </div> <div style="width: 75%;"> <ul style="list-style-type: none"> ▪ Imagine that a range of children's soft toys on your island were modelled on your island's endemic animals. What would they look like? Design a range of toys or mobiles that promotes these animals. Think of traditional toys such as rocking horses and create a rocking parrot or r create an absolutely new toy. </div> </div>
<p>ADJUSTMENT TO DEVELOPMENT</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 25%;">  </div> <div style="width: 75%;"> <ul style="list-style-type: none"> ▪ Possums in New Zealand, foxes in Tasmania, crazy ants on Christmas Island; islands are extremely fragile ecosystems due to their long isolation. Introduced species are rapidly destroying island endemic species. Read about these issues and develop a project that addresses the need to halt the effect and spread of alien species. Underpin your project with a catchy slogan and logo. http://www.parks.tas.gov.au/features/fox/fox.html ▪ Introduced species can cause havoc with the local ecosystem. Collate the headlines recording such damage on islands around the world to convey the extent of the problem. ▪ Design your own experiment/s to test the effect of ballast water in your island's waters. Brainstorm the variables and have design an experiment to test for one variable. Present your experiment and conclusions to the class. Connect to local and international scientists who are working in this scientific area. </div> </div>
<p>EVALUATIVE SITUATIONS</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 75%;"> <ul style="list-style-type: none"> ▪ What are the best ways of controlling or preventing an invasive species on your island? Develop a poster that clearly outlines these strategies. ▪ What is the impact of the invasive species on your island? Can you find ways of estimating the cost involved? ▪ Should we focus on species or pathways? Debate this question, based on research. What are some important pathways for aquatic and land invaders to your island? Draw a poster to illustrate these pathways. Compare the pathways with those on other islands. ▪ Identify the 'top ten invasive species' on your island. Decide what the top ten invasive species are in your region. Present your findings to the community. Select one or more avenues to inform the public: published article, forum or presentation in the community, poster(s), website, etc. </div> <div style="width: 20%; text-align: right;">  </div> </div>
<p>CREATIVE</p>	<ul style="list-style-type: none"> ▪ Read about how invasive species – such as rabbits and rats – are threatening the

<p>READING SKILLS</p>	<p>wandering albatross on Australia's Macquarie Island and Heard Island. An estimated 100,000 introduced <u>rabbits</u> live on Macquarie Island. Introduced <u>feral cats</u> were declared totally eradicated in 2002. Prepare a list of possible solutions to the rat and rabbit problem and forward to your local politician.</p> <p>Find some before and after photographs of both islands that show the damage to the environment of the introduced species.</p> <p>Is there evidence of similar damage on your island?</p> <div style="display: flex; justify-content: space-around;">   </div> <p>L. Undamaged slope with tussock R. 2005 removal of vegetation by rabbits and erosion.</p>
<p>CREATIVE LISTENING SKILLS</p>	<ul style="list-style-type: none"> ▪ Create an interesting documentary of the invasive species on your island. Include interviews, music, information sections and helpful advice.
<p>CREATIVE WRITING SKILLS</p>	<ul style="list-style-type: none"> ▪ Undertake the webquest of 'Invasion island', with a group of other students (on your island or other islands) http://www.upei.ca/~fac_ed/tlit/webquests/invasion/invasion.htm to research the impact of humans on the ecosystem of islands. ▪ Sometimes what appear to be islands rising out of the water are actually drifting masses of peat, mud, and plants. In extreme cases, these 'floating islands', which range in size from a few metres across to hundreds of hectares, can contain trees more than 20 metres tall and 8-12 centimetres in diameter. These phenomena are in fact world-wide, witnessed in such places as Florida, Argentina, Australia, Finland, India, Japan, Kenya, South America (the floating islands of Uros) and Papua New Guinea. These islands can drift and cause problems and they may also carry invasive species. Research floating islands at: http://aquat1.ifas.ufl.edu/guide/tussocks.html and at: http://www.floatingislandinternational.com/ Write an advertisement that markets the virtues of floating islands. ▪ Complete 'An invasive species webquest'. Follow or adapt the procedures found at one of the following webquest projects. <ul style="list-style-type: none"> ○ Invaders http://www.people.virginia.edu/~bc2j/webquest/index.html ○ Invasive Species Webquest http://web.mala.bc.ca/webquests3/invasivespecies/intro.html
<p>VISUALISATION</p>	<div style="display: flex;">  <div style="margin-left: 20px;"> <ul style="list-style-type: none"> ▪ Create a 2007 calendar with photographs and information of your island's main invasive species. Share your calendar with others. ▪ Write and produce a video documentary titled 'Invaders of my island'. Show the program to the local community as well as share with other islands. ▪ Create an invasive species brochure of flora or fauna on your island. ▪ Undertake a poster design project warning of the threat posed by a particular species. ▪ Develop a board game or computer game that helps others to learn about your island's invasive species and their impact on the local environment. ▪ Develop a video that treats invasive species like aliens. Write a script and develop characters that treat the topic of invasive species in a humorous and entertaining way that engages the audience but also provides important information about your island's invasive species. </div> </div>
<p>STUDY OF PEOPLE</p>	<ul style="list-style-type: none"> ▪ Develop a series of online forums where local experts on invasive species lead discussion and respond to questions from the local community. ▪ Join the fight against invasive species. Read about people who are leading action in this area. http://www.great-lakes.net/teach/pollution/ans/ans_6.html .