

**LORD HOWE ISLAND**  
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Citizen Science on World Heritage Lord Howe Island

Lord Howe Island Tourist Association  
Ian Hutton



**LORD HOWE ISLAND**

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World Heritage - Landscape





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World Heritage - Biodiversity



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World Heritage - Biodiversity





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World Heritage - Biodiversity





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# World Heritage - Biodiversity





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World Heritage - Geology





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World Heritage - Evolutionary processes





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Tourism on Lord Howe Island began 1900



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Adventure on a far flung remote island



160.

EAST COAST FROM JIM'S POINT.  
LORD HOWE ISL.



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Boating to remote beaches



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fishing





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Visitors came for a getaway holiday



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With World Heritage Listing there has been a progression to nature based ecotourism





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More professional guided activities



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With increased facilities for specialised tourism





*“responsible travel to natural areas that :*

- conserves the environment,*
- sustains the well-being of the local people,*
- and involves interpretation and education”*



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*The Friends of Lord Howe Island ecotour model*





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1988

First volunteer weeding  
half day during nature  
tours



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Friends of Lord Howe Island formed and  
between 1995 and 2018 - 85 ecotours





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with mornings weeding





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program of afternoon walks





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good interpretation



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evening lectures

### WINGS

*Compared with most land birds, a seabird's wing are longer, narrower and more pointed. This wing shape is useful for soaring and gliding along the sea's surface. Albatross and shearwaters have the most extreme form of this wing shape and are superb gliders, often soaring over large distances without taking a wing beat.*

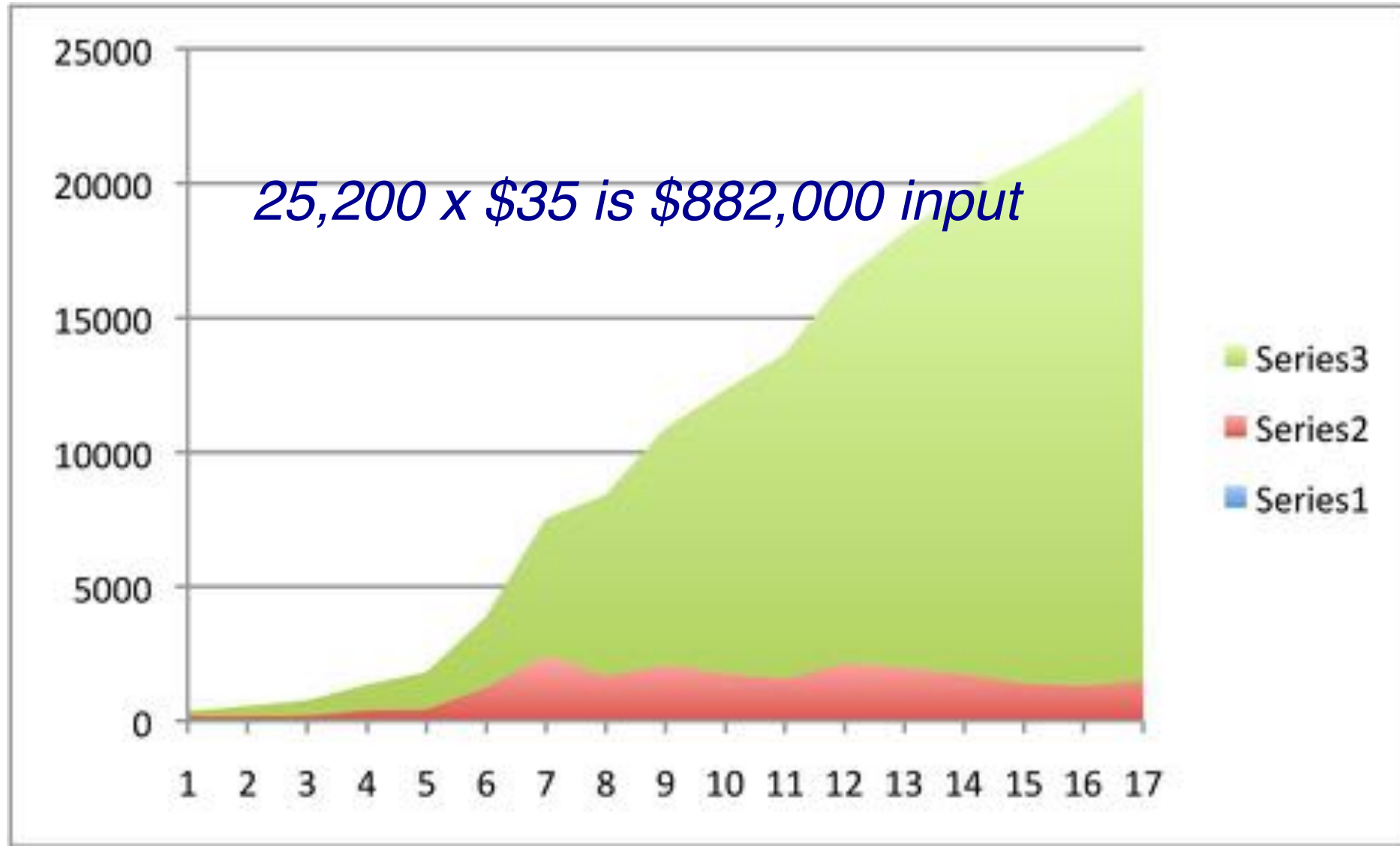




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25,200 volunteer hours  
contributed 1995-2018



## High customer satisfaction shown in high numbers of repeat participants

Trips	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
number	574	88	29	15	14	11	9	9	2	5	4	6	5	7	2	4	1
total	574	176	87	60	70	66	63	72	18	50	44	72	65	98	30	64	17

1626 persons

*\$ value to tourism industry - \$3,557,200*



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*a partnership creates the experience for success*



*weeders*

*Friends LHI*



*LHI Board*



*Island environment*



*LHI Nature Tours*

*Island hospitality*



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**Scientific interest** May 1788 drawings of Island birdlife  
by Arthur Bowes Smyth, Surgeon of the 'Lady Penrhyn'

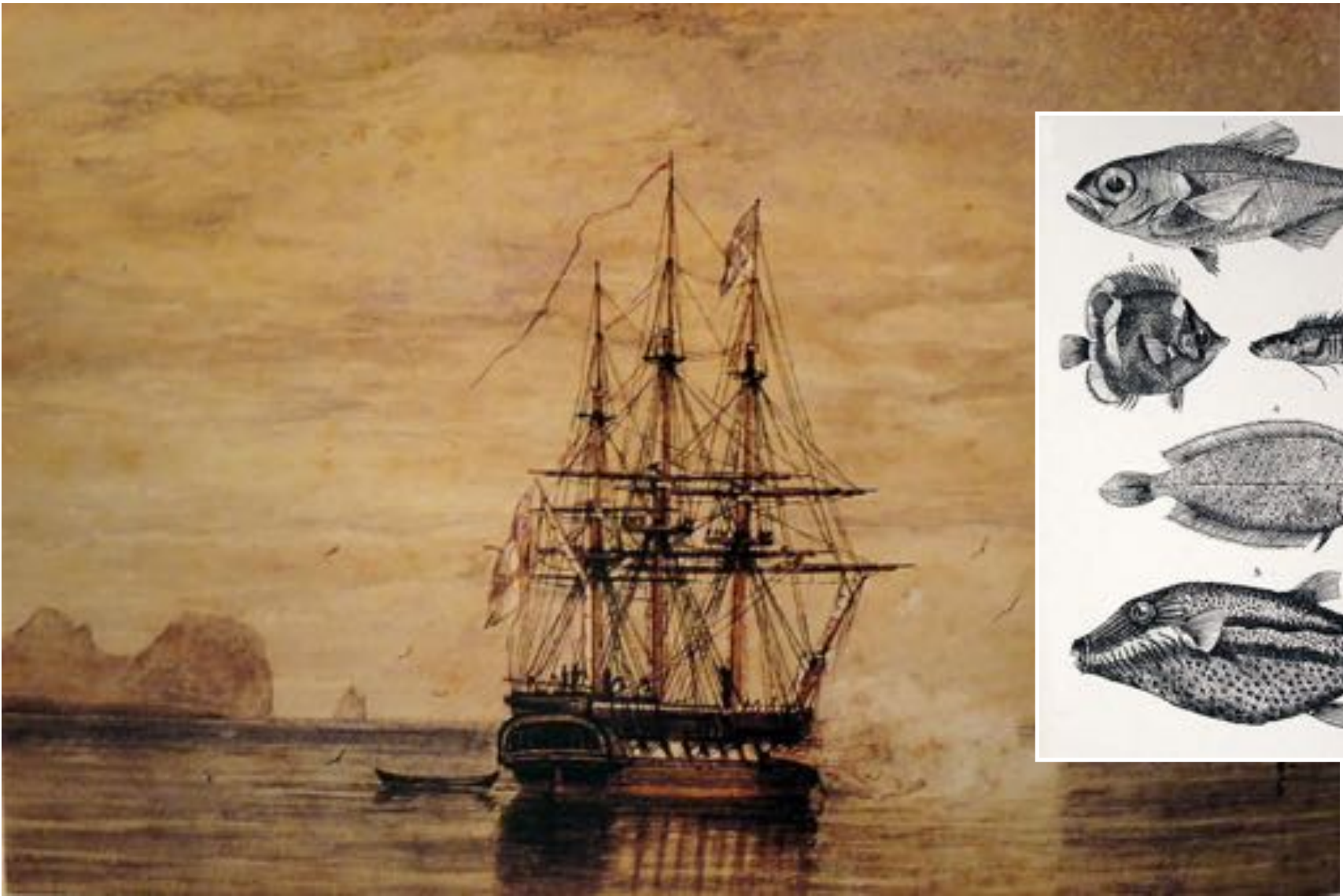


*Representation of a Bird of the Soot kind, found at Lord Howe Island, in the South Sea*



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1853 British Museum scientists studied  
the treasure trove of natural history on  
Lord Howe Island



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Australian Museum  
from 1869 to present





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Fossil turtle recovery 1970's



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## Freshwater fish surveys





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Frog surveys



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Coral research





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Invertebrate surveys



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Coral reef surveys





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Owl surveys



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Offshore islet seabird surveys





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## Palm evolution studies



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## Seabirds and plastic research





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Climate change monitoring





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Rare plant surveys





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Shearwater population census



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Often scientists relied on the help of locals – for transport





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Locals guiding into remote areas



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And sometimes to do the delicate tasks !!





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Friends of Lord Howe Island ecotours began Citizen Science— monitoring plastic in seabird colonies



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Friends of Lord Howe Island ecotours—  
collecting whale bones





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Friends of Lord Howe Island ecotours –  
microplastics surveys



# Winter 2018 Citizen Science programs



*community*



Department  
Primary Industries  
**Marine Parks**





# Beetle surveys



Surveys of beetle species. Beetles are a major component of Lord Howe Island's invertebrate fauna, with over 530 species recorded. Some areas are under-collected and this project is to carry out sampling in these areas. Collecting of beetles will be with a device called a malaise trap. The beetles collected will then be sorted into groups for later identification. This project will form part of pre rodent eradication monitoring.



# Ghost crab surveys



Surveys of Ghost crabs. Lord Howe Island has two species of Ghost crabs *Ocypode ceratophthalma* lives along the high tide line of sandy beaches while *Ocypode cordimana* inhabits sandy soil within 30 metres of the beach margin. Rodents predate on ghost crabs, and these surveys are being done pre rodent eradication; to compare with post rodent eradication numbers and determine what impact rodents were having on these two species on Lord Howe Island.





# plastic surveys



Our seabirds are being impacted by ocean plastic debris and this project monitors ocean plastic by collecting rubbish off beaches, which is sorted and classified into various categories and recorded into a national database. This is to be done in two phases with both macro plastics and micro plastics being monitored and provides valuable data to help understand the issue and support solutions.



# Turtle surveys



Visual surveys of the size, age and species of turtles at the Lord Howe Island Marine Park. There are four species of turtles which occur in the LHI Marine Park – the Green and Hawksbill turtles, and less commonly the Leatherback and Loggerhead turtles. All four are globally vulnerable or endangered, little is known about the local sea turtle populations on the Island. There will also be surveys of the frequency and nature of human interactions with turtles in the Marine Park.





# Palm surveys



Pre rodent eradication surveys of Howea palms. Rodents impact heavily on our endemic palms by consuming both seeds and seedlings. As a measure of the impact that rodents are having on our Howea palm forest, surveys of population structure are being carried out pre rodent eradication to compare with surveys post rodent eradication.



# Seabird rescue course



Seabird first responders course. Lord Howe Island is a haven for breeding seabirds, with fourteen breeding species, in numbers of hundreds of thousands. Many of these birds are vulnerable to anthropogenic impacts such as pollution, marine debris and oil spills. Learning about the potential impacts and guidelines for the effective first response provides participants with an understanding and knowledge of how to assist in seabird rescue, care and emergency response. A one-day course where participants will be engaged by the State's leading experts.





# Algae surveys



Walking and snorkelling excursions to survey and collect specimens of algae, followed by workshops on how to process, identify and preserve specimens for a reference collection (herbarium). The Lord Howe Island Marine Park has an unusual mix of coral and algae, not seen anywhere else in the world. There are over 300 species of macroalgae in the Marine Park with around 50 being endemic. Participants will help build a reference collection, with the expert supervision of Professor Gerard Kraft who has authored two books on local macroalgae.





# Anemone fish surveys



Snorkeling surveys of McCulloch's anemonefish (*Amphiprion mccullochi*). This endemic fish is found only within Lord Howe Island Marine Park and nearby Elizabeth and Middleton Reefs. It is locally abundant in the lagoon at LHI where its host anemone is also abundant. The lagoon at LHI represents the last remaining stronghold in the world for this anemonefish, and is a key indicator species for the Lord Howe Island Marine Park. Participants will need to be physically fit and a confident at snorkelling.





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*There is opportunity to regard LHI as a partnership between people and nature, for harnessing the knowledge and expertise of the community in the great task of deepening the conservation of the island's unique natural values.*



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The goal to create highly enjoyable and productive working relationships among the community and scientists, based on mutual respect for their differing knowledge and experience:  
*a partnerships for knowledge-sharing*





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There is the opportunity for all ecotour operators to engage clients and community in Citizen Science programs



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Endless study subjects: birds, fish, frogs, lizards, water quality, erosion, weeds

- Find a local researcher
- Contact a university, museum or research facility
- Contact Citizen Science Association
- Contact Birds Australia
- Contact Atlas of Living Australia





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As experienced interpretation guides you have the skills to engage with the public.

Ingredients to make basalt,  
mixed and heated under the  
earth's crust to 3,000°F

Silicon dioxide - $\text{SiO}_2$	49.97%
Aluminium oxide - $\text{Al}_2\text{O}_3$	15.99 %
Iron oxide - $\text{Fe}_2\text{O}_3$ and $\text{FeO}$	11.3%
Magnesium oxide - $\text{MgO}$	6.84 %
Calcium oxide - $\text{CaO}$	9.62 %
Sodium oxide - $\text{Na}_2\text{O}$	2.96 %
Titanium dioxide - $\text{TiO}_2$	1.87 %
Potassium oxide - $\text{K}_2\text{O}$	1.12 %



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good field interpretation engages the public

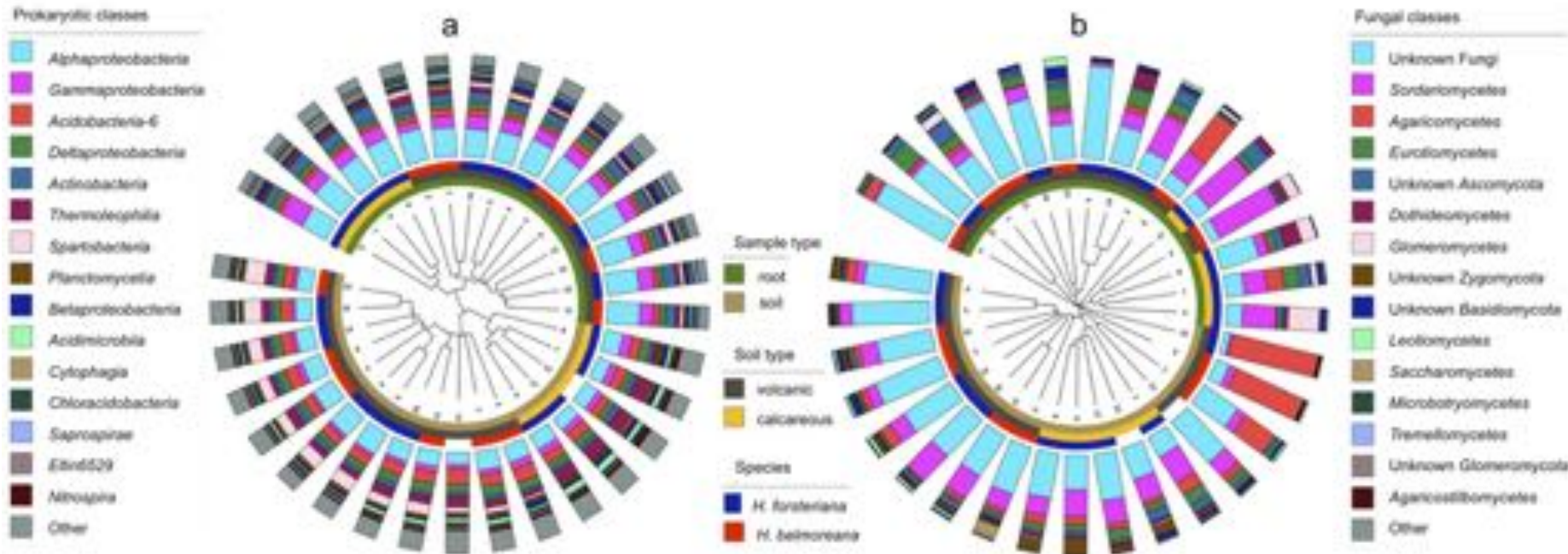




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Diagram explaining the causal distribution of two palm species on different soil types





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as an interpretive guide you can take people out to  
see, touch and feel the story, and engage people





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Citizen science involves public participation and collaboration in scientific research with the aim to increase scientific knowledge





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# SCIENCE SHARED

When communities and  
researchers work together

PAGE 32

# nature

THE INTERNATIONAL WEEKLY JOURNAL OF SCIENCE



## Deeper outcome goals

- reclaim two dimensions of the relationship between citizens and science: 1) that science should be responsive to citizens' concerns and needs; and 2) that citizens themselves could produce reliable scientific knowledge.
- work undertaken by scientists with citizen communities to advance science, foster a broad scientific mentality, and encourage democratic engagement, which allows society to deal rationally with complex modern problems.

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Community participation reduces mistrust, improves dissemination and cooperation. Stakeholders who are supposed to benefit from a strand of research become active partners in conducting it.





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The growth in political populism and rising public dissatisfaction with policies which some people see as excluding their interests have made it more important for researchers to produce research that is both beneficial and relevant to society



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Coproduction can take people out of their comfort zone but the pay off comes in the form of enhanced trust and communication. Importantly the research has a much better chance of making a difference to people involved.





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Everyone gains when researchers partner with the public and policymakers. The knowledge generated is more likely to be useful to society and should be encouraged.



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# Winter 2019 Citizen Science programs



Department  
Primary Industries  
**Marine Parks**

*community*





# Intertidal surveys



Intertidal fauna surveys. Walking at low tides on the intertidal rock platforms, trialling various search methods to validate the most effective methods. Identification sheets will be supplied showing the most common animals species to be found, and a trained observer will be on hand to verify species. These surveys will also provide data on species distributions within different habitats.





# Coral Identification



Tutorials on how to use the Coral Finder © toolkit and a follow-up snorkelling excursion. Lord Howe Island Marine Park contains the worlds southernmost coral reef and a unique mix of tropical and temperate marine species, including a high level of species found nowhere else in the world. Leading coral biologist Professor Morgan Pratchett will be leading workshops on basic coral identification and taxonomy that can be applied to any coral reef ecosystem around the planet.





# plastic surveys



Our seabirds are being impacted by ocean plastic debris and this project monitors ocean plastic by collecting rubbish off beaches, which is sorted and classified into various categories and recorded into a national database. This is to be done in two phases with both macro plastics and micro plastics being monitored and provides valuable data to help understand the issue and support solutions.



# Snail surveys



Lord Howe Island has diverse landsnail species, with 67 described species, and 37 undescribed species. For most of these snails little information is available about their abundance, distribution, taxonomy and ecology. The lack of knowledge about many of these species, including some of those listed as endangered, limits conservation efforts. The project will collect snails from various habitats and form part of pre-rodent eradication surveys to compare to post eradication surveys and monitor changes to populations and their distribution.





# landbird surveys



Lord Howe Island has 18 landbirds species breeding on the island, and a number of winter shorebirds visiting. Following rodent eradication it is expected that all landbird numbers will increase, and these surveys in 2019 are to give a baseline prior to rodent eradication. Surveys repeated post eradication will document the changes. You can record bird numbers at set locations and bring completed surveys sheets with observations to the Museum.







See you in  
2019