



Science Rocks
Career Expo 2020
ONLINE
STUDY GUIDE



botany
conservation ecology
threatened flora (plants)

Great Southern Science Council Pro Files series – connecting science professionals and our community

Dr Sarah Barrett

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Pro File video interview Watch the Pro File video *Sarah Barrett - Botanists explore diverse places for threatened species* to learn more about this STEM professional, why they chose to work in this field and their pathway to it, their typical work day, favourite part of the job, common myths about their field, and more.



Banksia brownii



Sarah Barrett with *Banksia montana* (mountain dryandra)



Andersonia axilliflora

EXTENSION MATERIAL – science professionals answered these questions to extend your interest and study in their topic area

FREQUENTLY ASKED QUESTIONS in this topic/job	FAQ 1 Have you had a plant named after you?	Yes – just one <i>Hibbertia barrettiae</i> https://florabase.dpaw.wa.gov.au/browse/profile/49220
	FAQ 2 How will threatened plant species respond to fire?	It is complex and depends on the species particular fire response (eg re-seeder or re-sprouter) and the fire regime (i.e. time since last fire, season & intensity)
	FAQ 3 Do you get down about the ongoing decline in the environment and threatened flora?	Yes, at times but you just have to focus on small steps & achievements, that's all you can do.
YOUR TURN	What question could you ask this person?	
LEARN MORE	Sarah recommends this <i>Landscape</i> magazine article about threatened banksias of WA's south coast:	Cochrane A, Barrett S, Crane C, Dunne C, Hartley R, Freebury G (2011). Last chance to see: banksias of the south coast of Western Australia. <i>Landscape</i> 26(4) , pp. 17–22
	Sarah says this website has excellent resources about this topic:	https://florabase.dpaw.wa.gov.au/
DO MORE	A citizen science or interactive project that community can be involved in to learn more about this topic	Albany Wildflower Society, Albany Threatened Flora recovery program w www.wildflowersocietywa.org.au e albanyherb@dbca.wa.gov.au

<p>INNOVATE One, Two, Three...solved!</p>	<p>One Big Problem we are trying to understand in this topic area Two innovative ways we are already trying to solve the problem Three ideas for the problem solving wishlist that anyone could help develop</p>	<p>1 Management of plant disease- in particular, Phytophthora dieback & aerial canker-causing fungi. 2.1 Investigating the use of the fungicide phosphite, microhabitat and disease resistant [genetic] lines of species to [produce plants to] restore dieback infested habitat. 2.2 University of Queensland researchers are investigating the use of RNA vaccines to manage Phytophthora Dieback disease. 3 Problem Solving Wishlist – techniques to manage both Phytophthora dieback & aerial canker-causing fungi.</p>
<p>YOUR TURN</p>	<p>Using your new insights for this topic and its issues, please add another idea for the Problem Solving Wishlist. Then think of a research question to test possible solutions. <i>eg Idea: brainstorm a fungicide delivery system to kill specific plant pathogens for Stirling Range banksias. Question: could a drone efficiently deliver fungicide treatment to plants in the Stirling Range?</i></p>	
<p># CURRICULUM LINKS #</p>	<p>#exploring interactions between organisms such as predator/prey, parasites, competitors, pollinators and disease#</p> <p>Botanists investigate plants, which are, in the vast majority of species, stationary. Use your knowledge of plants to discuss the biological advantages and disadvantages of being stationary in the context of interactions with predators, parasites, competitors, pollinators, and disease.</p> <p>Can you think of a plant that is not stationary? HINT consider plants that live in water. Can you see how the environment of these plants facilitates a mobile habit?</p>	

<p>FAMOUS BOTANISTS</p>	<p>Do some research to learn more about a famous botanist, for example Joseph Banks.</p> <p>What are they famous for?</p> <p>How has their work changed how we view plants?</p>
<p>KNOWLEDGE + IMAGINATION What would it be like?</p>	<p>What would we do without plants? Do you think that it is possible to live without plants? Write a short story about life on another planet where there are no plants.</p>
<p>OUR PATCH THE EXTRAORDINARY FLORAL DIVERSITY OF THE AUSTRALIA'S SOUTHWEST</p>	<p>Southwestern Australia is known as a global biodiversity hotspot because of its immense range of unique plants, animals and habitats, and the alarmingly rapid rate of species extinction.</p> <p>List the features that allow a region to be designated a global biodiversity hotspot, then list three other global biodiversity hotspots and the reasons they are losing species. What do these areas have in common with southwestern Australia? What are the big differences?</p>