## COST-EFFECTIVE RESOURCE ALLOCATOR: A DECISION SUPPORT TOOL FOR THREATENED SPECIES MANAGEMENT

Appendix S2. Tutorial with spreadsheet screenshots for each step.

Please begin by viewing the 'Process Flowchart' cover sheet, which provides an overview of the tool's components.

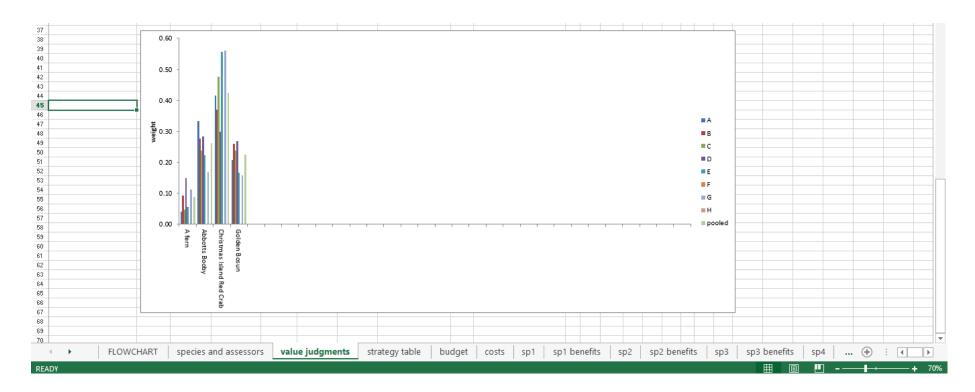
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1. Define your species of interest, their generation length, and list the identity of the assessors within the 'species and assessors' worksheet. Please only write in the green cells.

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	SPECIES	D	L L	ASSESSORS	E	r.
	Common name	Scientific name	Generation length	A	В	С
	A fern	Pneumatopteris truncata		Amy	Ben	Carla
4	Abbotts Booby	Papasula abbotti		Amy	Ben	Carla
5	Christmas Island Red Crab	Gecarcoidea natalis	12	Amy	Ben	Carla
6	Golden Bosun	Phaethon lepturus fulvus	11	Amy	Ben	Carla
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2. Some species may be more important than others for ecological or economic reasons. This spreadsheet has the option of specifying different species 'values' by filling out the 'value judgements' worksheet. If you are compiling multiple assessors' answers, collect the responses of different assessors using Appendix S3.

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7 Abbotts Booby	-	•	•	-	•	•	-	Abbotts Booby	8	) 75	50	95	40		30	
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3. List the candidate strategies required to manage your species of interest in the 'strategy table' worksheet (in no particular order). If certain strategies must be carried out together, group these under the same strategy (by adding a dot under the same strategy number). If they are independent, specify them as independent strategies. Define which species are impacted by which strategy by filling in the table at the bottom of the same worksheet.

	Α	В	C	D	E	
1	RETUR	IN TO FLOWCHART				
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3			STRATEGY			
4		CANDIDATE STRATEGY	Strategy 1	Strategy 2	Strategy 3	
5		YCA survey and control	•	-	-	
6		Forest rehabilitation	-	•	-	
7		Cat eradication	-	-	•	
8		Cat control	-	-	-	
9		Rat control	-	-	-	
10		Fern Propagation and planting	-	-	-	
11		Fern Weed management	-	-	-	
12		Road management	-	-	-	
13		Red crab Community education	-	-	-	
14		Eradicate false curry bush	-	-	-	
15			-	-	-	
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			Abbott			-			•		-	+
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	FLOWCHART	FLOWCHART species and assessors	FLOWCHART       species and assessors       value judgments	Christmas Island R Golder	Abbotts Booby         Christmas Island Red Crab         Golden Bosun         Golden Bosun	Christmas Island Red Crab Golden Bosun Golden Sosun Golden Golden Golden Golden Golden Golden Golden Golden Golden Golde	Christmas Island Red Crab Golden Bosun Golden Soun Golden Soun Golden Gosun Gosun Golden Gosun G	Christmas Island Red Crab Golden Bosun Golden G	Christmas Island Red Crab       •         Golden Bosun       •         Golden Bosun	Christmas Island Red Crab       •         Golden Bosun       •         Golden Bosun       -         -	Christmas Island Red Crab       •       •       •         Golden Bosun       •	Christmas Island Red Crab       •       •         Golden Bosun       -       -       -         -       -       -       -       -         -       -       -       -       -       -         -

4. Define the budget and planning time-horizon by filling in the green cells in the 'budget' worksheet. Divide your total budget into the salary resources required for one year and the additional cash that you expect will be allocated over the course of one year.

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5			per person-day						\$0.38		
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8			Annual budget						\$882.61		
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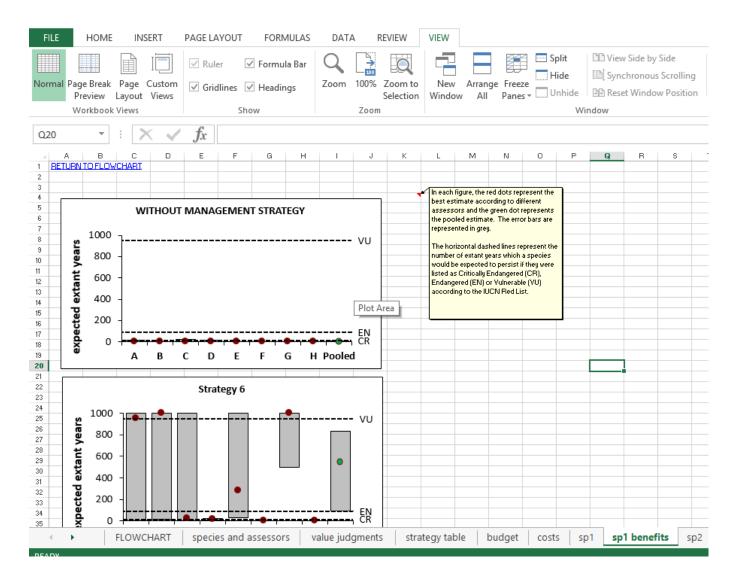
5. Estimate the costs of each candidate action within the 'costs' worksheet. It is not essential to fill in all the columns. 'Set-up costs' refer to the additional costs required when setting up a particular management action (in the start), 'operating costs' refer to the regular costs required each year to carry out the action, and 'maintenance costs' refer to the extra costs required to maintain the tools/vehicles required to carry out the action.

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Cateradication					-	5			0.00				\$2,147.6
Cat control					1	10			0.00				\$636.28
Bat control					-	10			0.00				\$582.2
Fern Propagation and planting					1	10			5.00				\$343.80
Fern Weed management					1	10			0.00				\$281.1
Road management					1	10			0.00				\$2,550.1
Red crab Community education					1	10			5.00				\$124.2
Eradicate false curry bush					1	10			0.00				\$1,124.5
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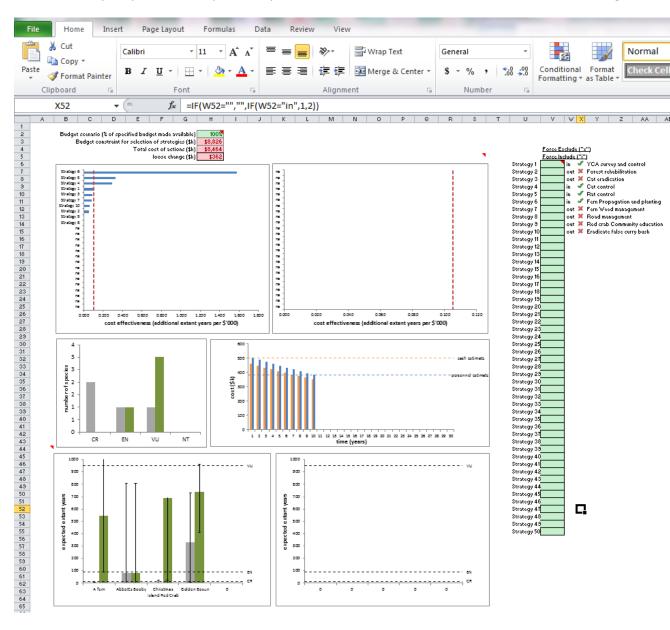
6. Define the benefit of different strategies by answering the questions in each 'species' worksheet, e.g. 'sp 1'. Please fill in all the parts (in italics) to each question (see Appendix S5 for further information regarding these questions). If you do not know the answer to one, leave all its parts blank. You are required to fill in at least one out of the two questions. If you are compiling multiple assessors' answers, please collect their responses using Appendix S4. Repeat this step for each species worksheet.

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18	A	how confident	are you the truth will lie	e between your nominated worst ca	se and best case scenarios	s ?(as a percentage	>50%)	60	60	50	80	70	70	50			60 60	) 50	80	70	70	50		upper	1.0000	1.0000	1.0000
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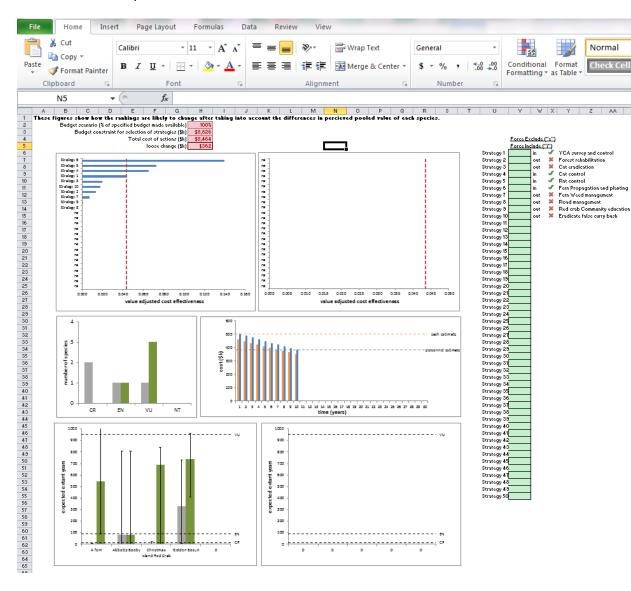
Move onto the next worksheet to view the benefit of carrying out different management strategies on a particular species (e.g. 'species1 benefits' worksheet). Your responses have been converted into the number of additional years that we would expect the species to survive (known as 'expected extant years') if no management strategy were applied, and following each management strategy in turn (see Appendix S5 for details on how these were calculated).



7. View how the strategies rank based on their cost-effectiveness in the 'outcomes – all species equal' worksheet. The top strategies are the most cost-efficient. The only strategies that can be carried out under the specified budget are those that either cross over or simply touch the red vertical dashed line (e.g. the top left figure in the screenshot below illustrates that it is possible to fund Strategies 6, 5, 4 and 1). The figures below provide additional information on how the strategies will impact your chosen species. Optional: force the inclusion or exclusion of different strategies.



Move onto the next worksheet ('outcomes – pooled values') to view the cost-effectiveness ranking of different strategies when these are weighted according to the importance of the species they benefit. The figures below provide additional information on how the strategies will impact your chosen species. These results can be viewed according to the 'pooled' values for each species (i.e. averaged across all assessors), or according to the values perceived by each assessor (subsequent worksheets).



8. Return to the initial 'budget' worksheet and change the budget or time-planning horizon to view its impact on cost-effectiveness outcomes following management action (in the 'outcome' sheets), or simply alter the 'budget scenario' cell (H2) in the 'outcomes – all species equal' worksheet to see the effects of increasing or decreasing the budget by a particular percentage across all 'outcome' sheets.

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