



Prioritizing marine pests by traits

Framework for managing the unknown

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Invasive species impact assessment framework

- Global pool of **potential NIS** very large
- Over 30% of NIS have no prior history

To quickly prioritize **unknown NIS** we need to:

- Have traits that are easily identified
- Make comparisons against known species
- Be able to make quick assessments



Traits related to *impacts*







1. Trophic feeding level

2. Habit

3. Toxicity

4. Size

5. Fecundity

Species 1		Species 2	
2°	Herbivore/ filter feeder Heterotrophic organism extracting food from the water column or micro/macroalgae	3°	Predator Heterotrophic predator feeding on higher trophic levels
	Sessile or epifaunal Attached flora and fauna or epifaunal		Free living Mobile organisms, or organisms living within the water column
	Toxic to marine life Possesses toxins capable of causing mortality to marine organisms		Toxic to marine life Possesses toxins capable of causing mortality to marine organisms
5-20 cm	Medium size Organisms generally between 5-20 cm	< 1 cm	Very small size Organisms generally less than 1cm in size
	Moderate fecundity Reproductive output generally between 20,000-100,000 propagules per annum		Low fecundity Reproductive output generally between 5,000-20,000 propagules per annum



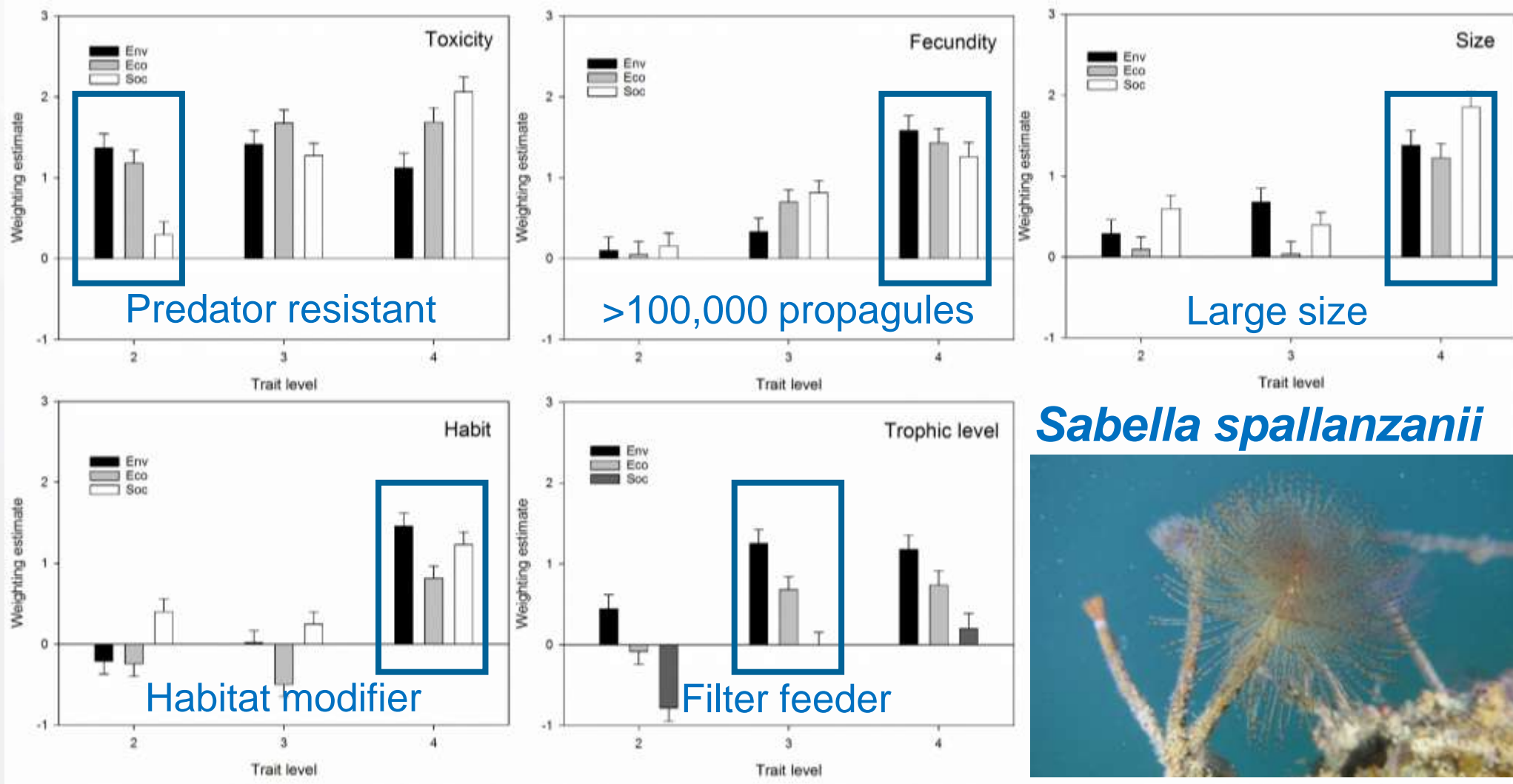
Values of marine ecosystems

- **Environmental values:** ecosystem health, resilience, integrity, ecosystem services
- **Economic values:** fisheries, infrastructure, aquaculture
- **Social/cultural values:** aesthetic values, recreational harvesting

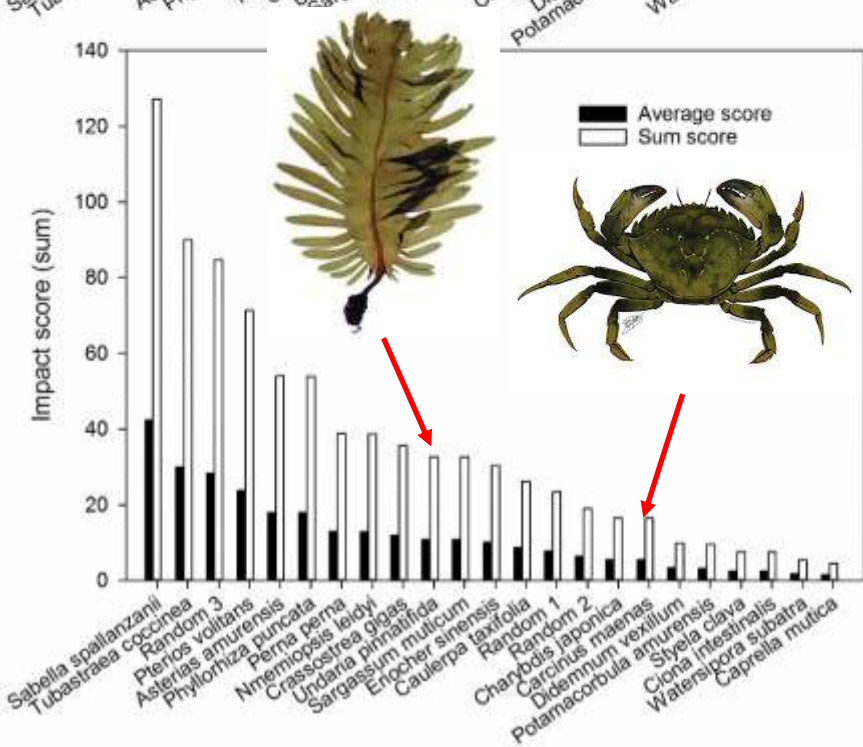
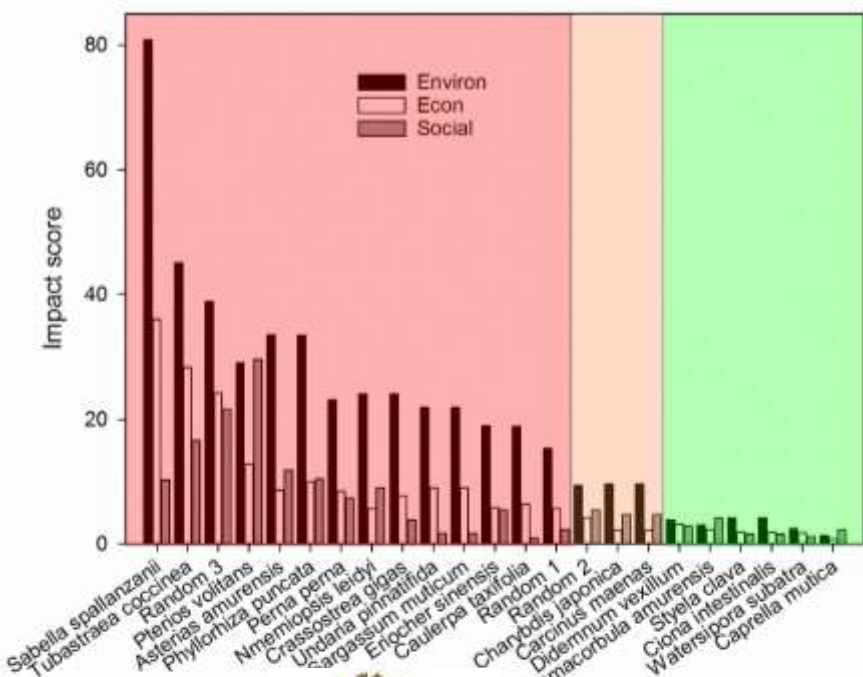
Expert elicitation survey

- 77 responses
- 8 countries
- 5 respondents with 20+ years experience (15 with 10-20 years)
- 3 areas of specialist research

Expert elicitation results



Prioritization framework in use



- Using trait weighting we can then run the weightings across species traits
- ***New arrival***- we would then enter the traits into the framework and compare against invaders with known impacts
- ***NOTE: Known invaders heavily weighted towards those that have had measurable impacts***

To participate in the survey

https://www.surveymonkey.com/r/NIS_impacts

“underscore”

OR

To participate in the next stage please email me
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NIWA: Chris Woods, Kate Davies

ALL survey respondents thus far

