Australian Government
Department of Agriculture, Fisheries and Forestry

Pest Risk Analysis in Australia

Dr Paul Pheloung

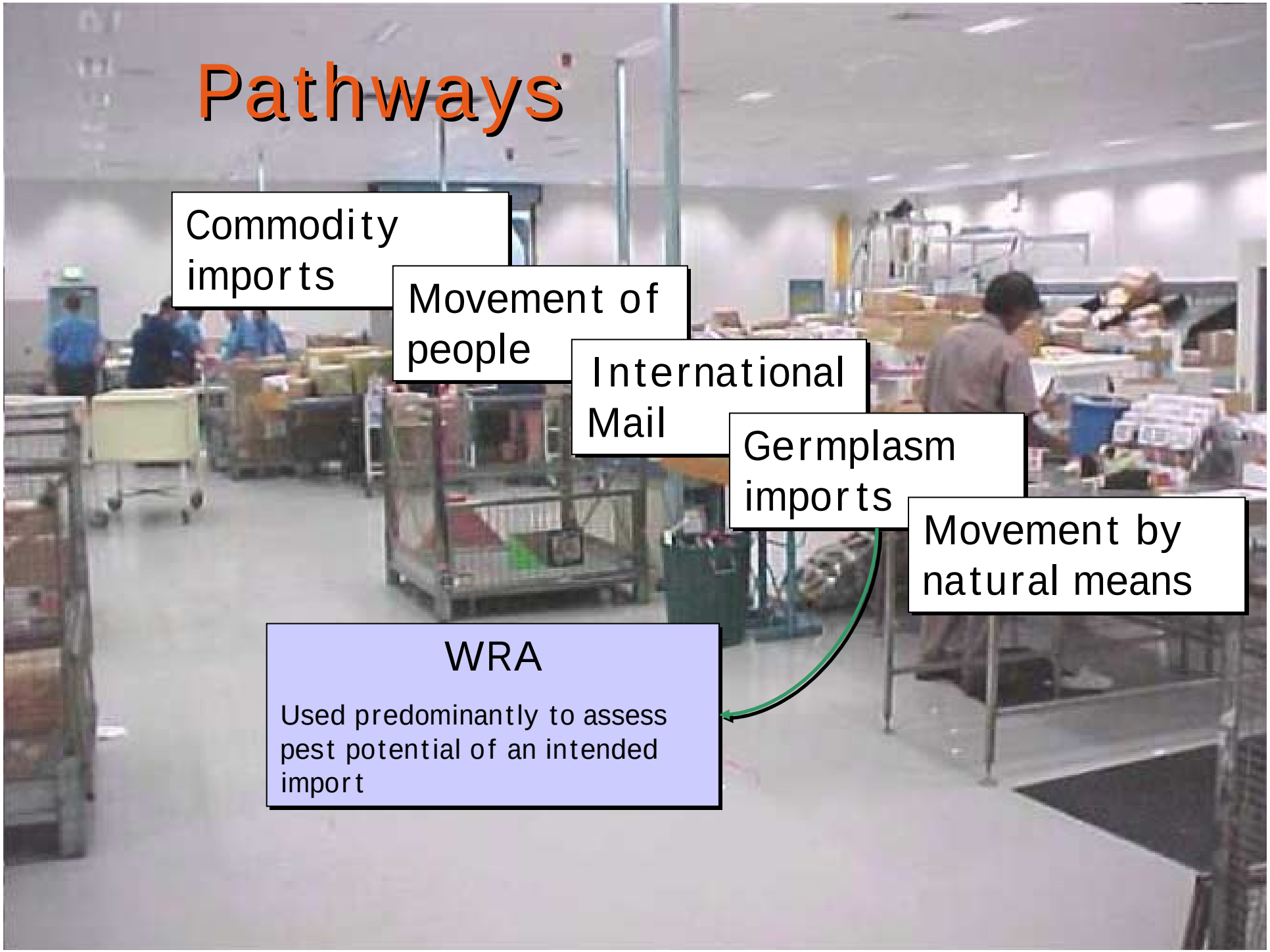
Office of the Chief Plant Protection Officer

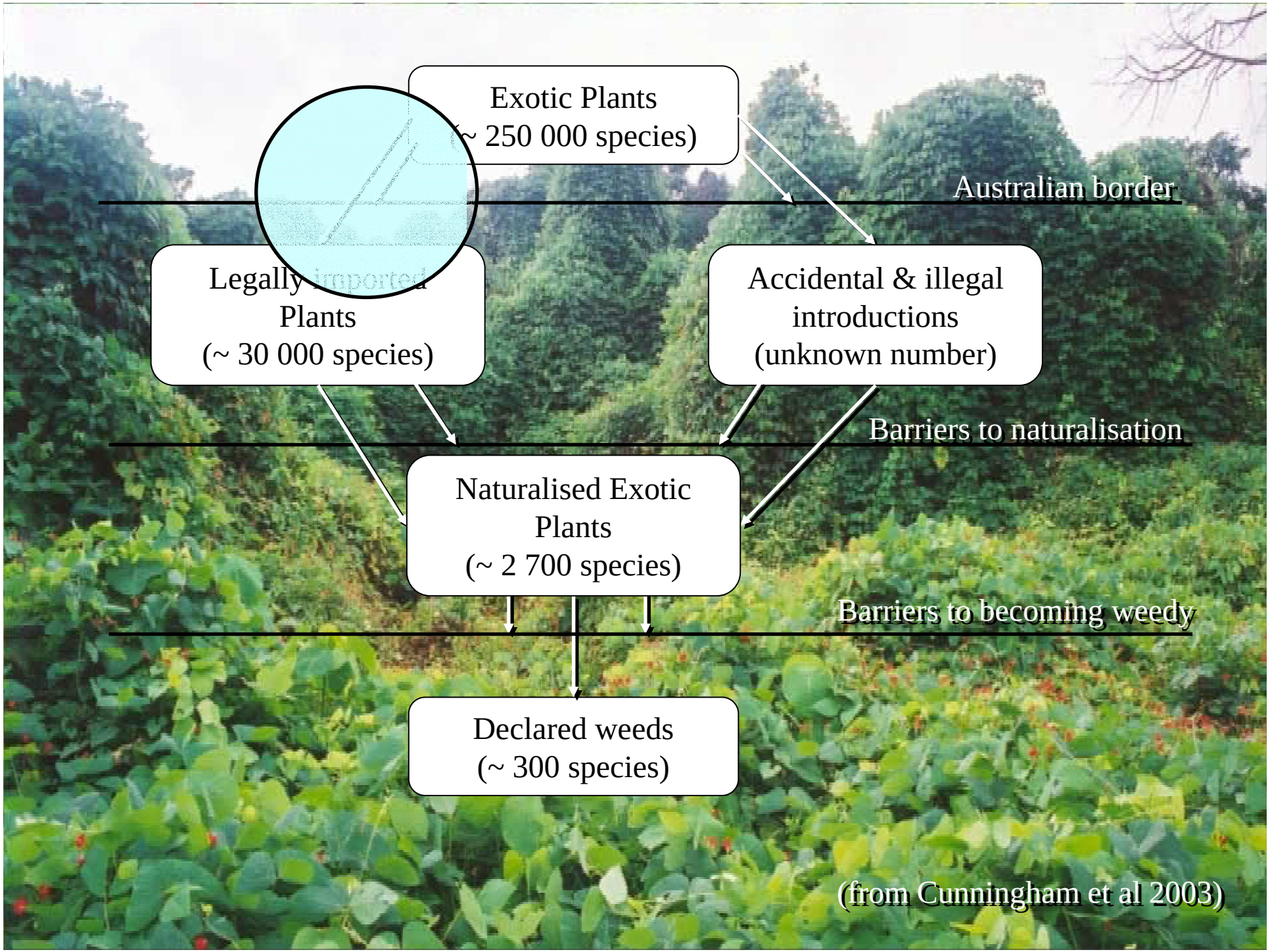
Australian Government Department of Agriculture, Fisheries and Forestry

Roles and Responsibilities

PRA and WRA

- Australia uses ISPMs in undertaking PRA of biosecurity risks associated with trade
- Exotic pest = Invasive alien species
- Risk = Likelihood of entry x impact
- A range of methodologies are suited to particular scenarios
  - I will talk about Weed Risk Assessment (WRA)


Pathways
Commodity imports
Movement of people
International Mail
Germplasm imports
Movement by natural means
WRA
Used predominantly to assess pest potential of an intended import


Exotic Plants
(~ 250 000 species)
Australian border
Legally imported Plants
(~ 30 000 species)
Accidental & illegal introductions
(unknown number)
Barriers to naturalisation
Naturalised Exotic Plants
(~ 2 700 species)
Barriers to becoming weedy
Declared weeds
(~ 300 species)
(from Cunningham et al 2003)

Weed Risk Assessment for Intentional Plant Introductions

PRA issue		WRA
Initiation		
Identification of pathway	Request is made to import an organism	Pathway is certain
Identification of pest	Request is made to import an organism	The organism itself is the pest candidate
Pest Risk Assessment		
Pest categorisation	Identity, status in Australia etc	WRA tier 1
Probability of introduction		Introduction is certain, including placement in a situation condusive to growth
Probability of establishment		✓
Probability of spread		✓
Potential Economic consequences (including environmental impact)		✓
Pest Risk Management		Three outcomes: Accept Reject Further evaluate

Weed Risk Assessment

Highly domesticated?

Climate suitable?

Weed Elsewhere?

Undesirable attributes?

Weedy taxonomic group?

Multiple modes of reproduction?

Multiple modes of dispersal?

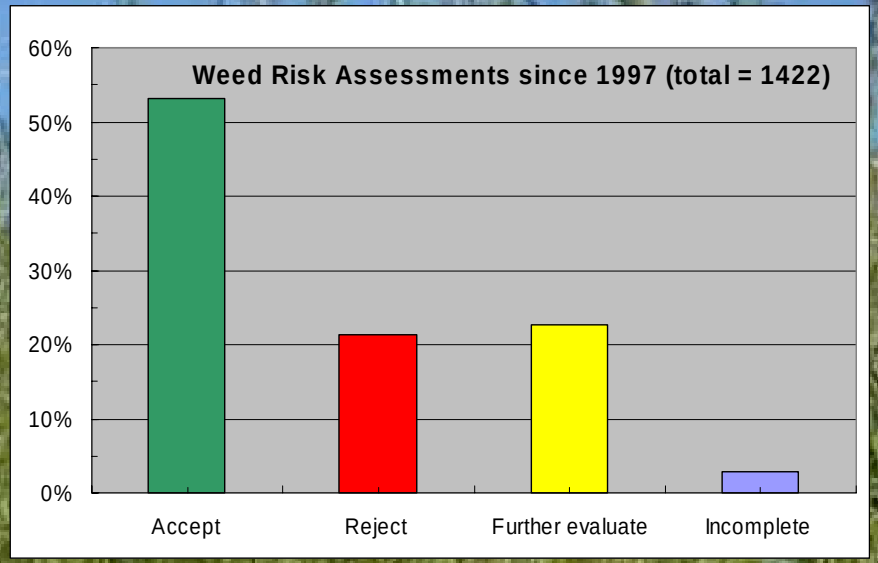
Persistent attributes?

Reject

6

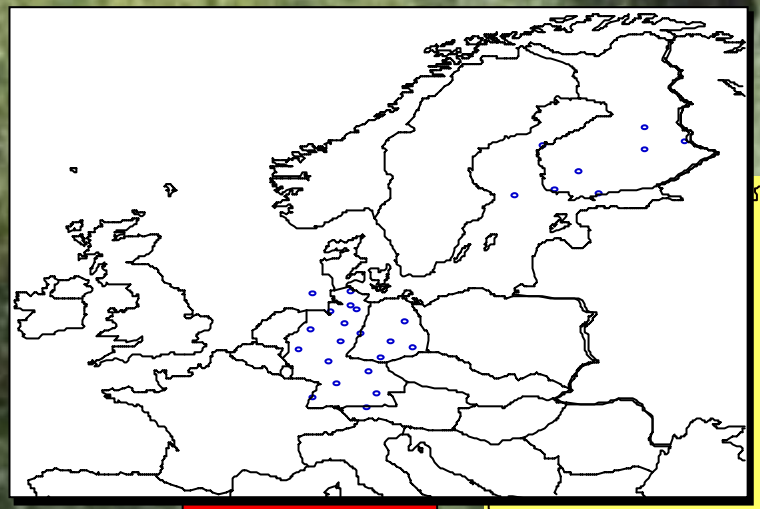
0

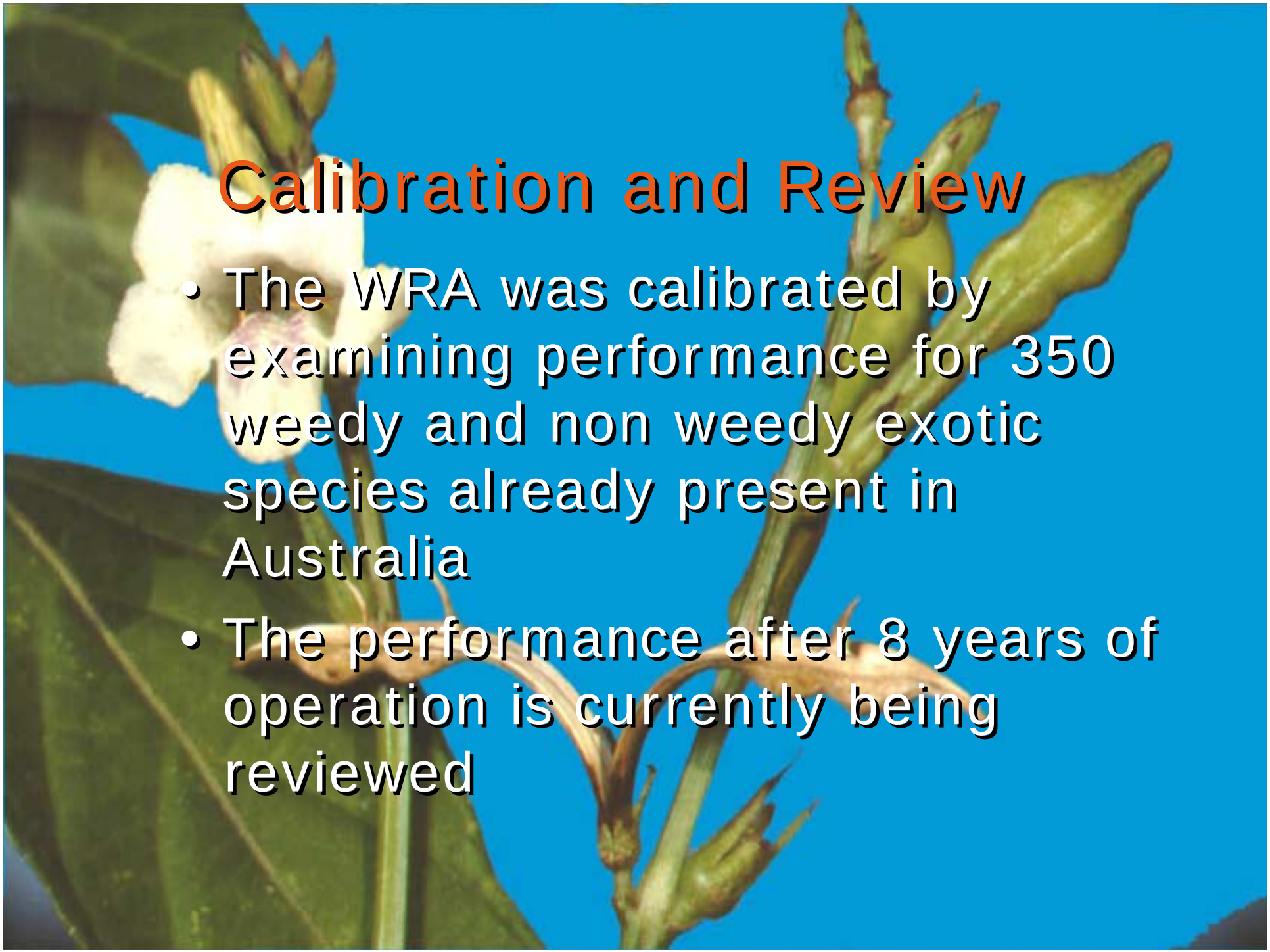
Accept



Climate similarity analysis

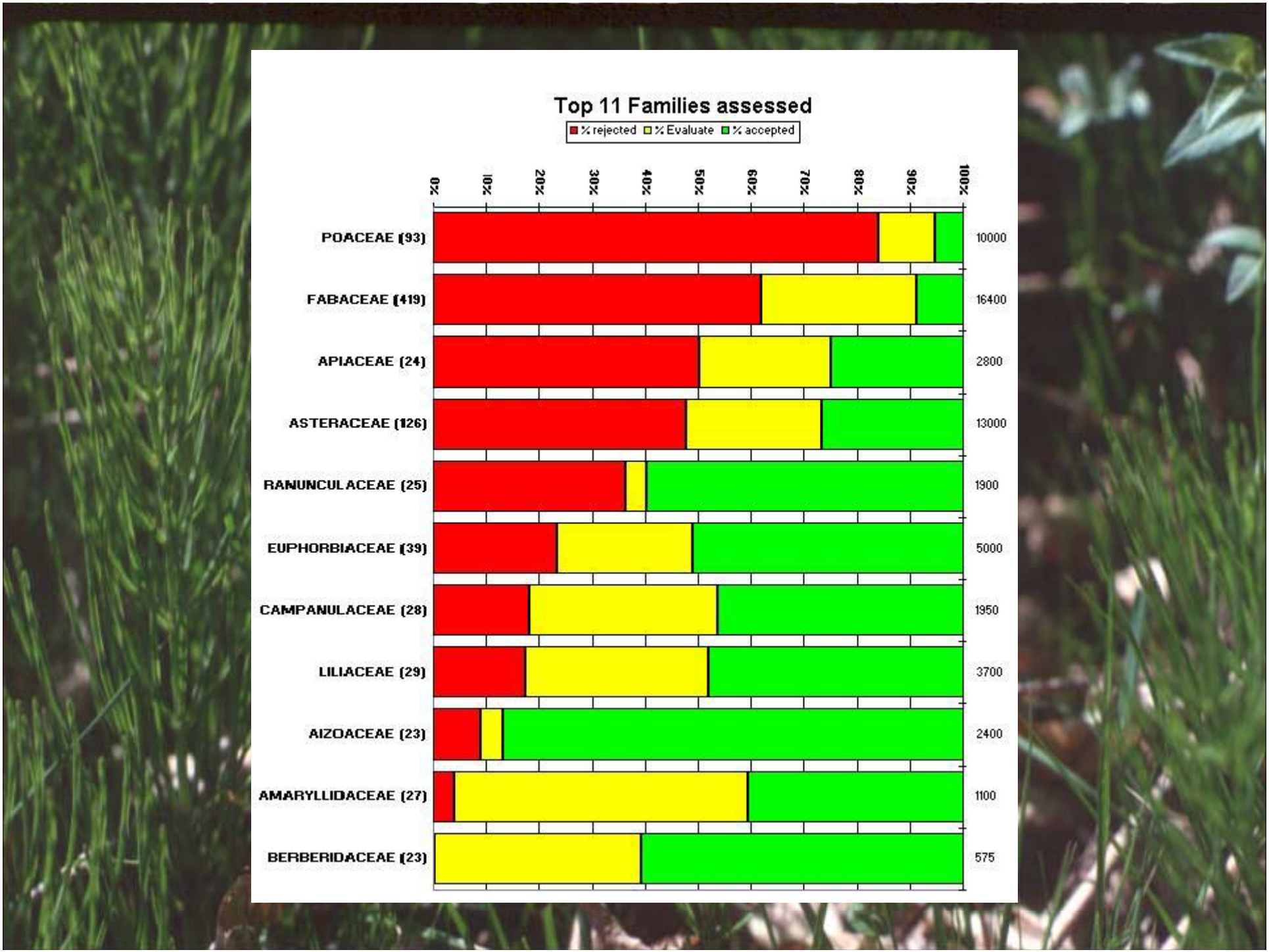
Salix myrsinifolia

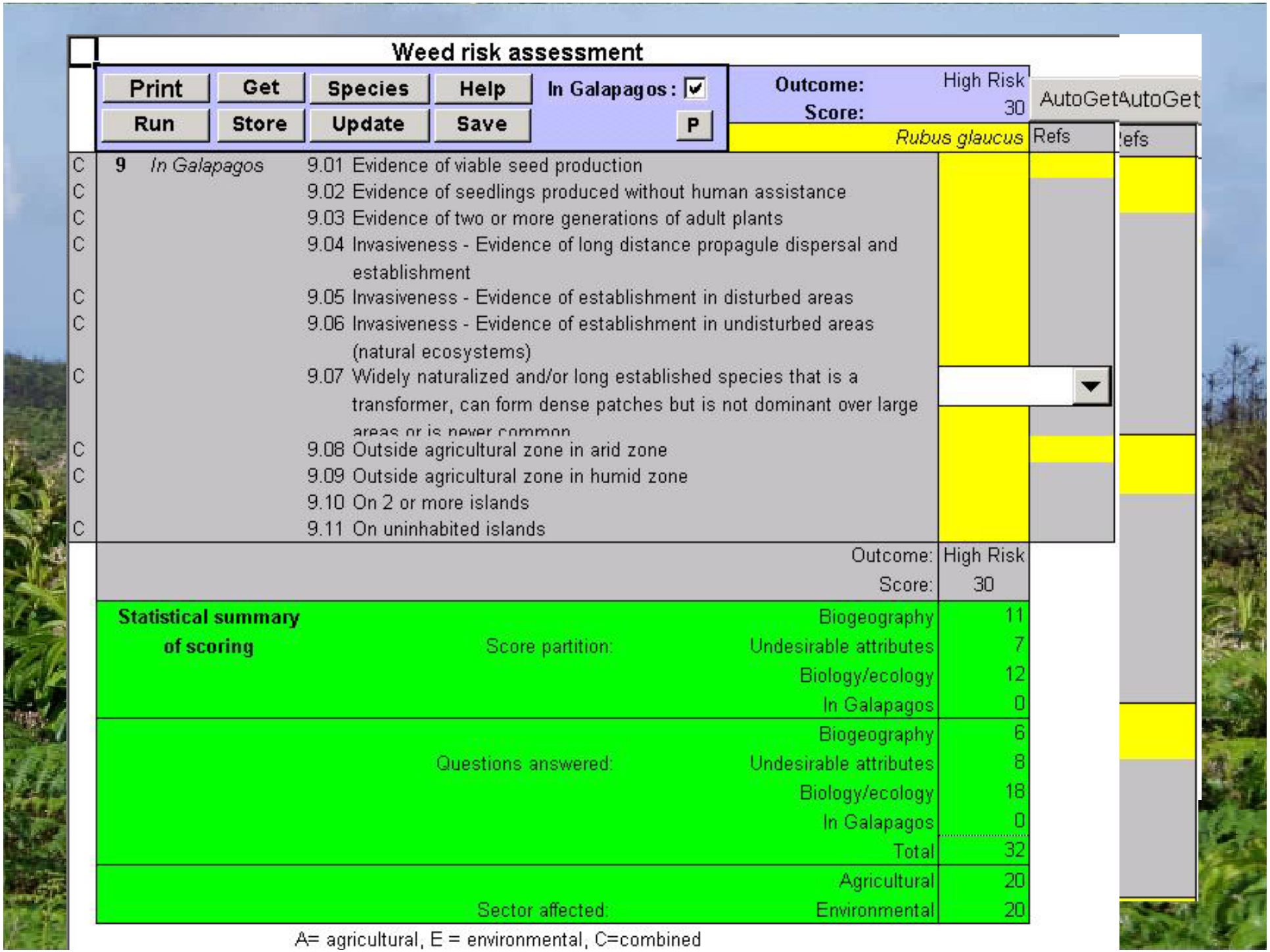




Calibration and Review

- The WRA was calibrated by examining performance for 350 weedy and non weedy exotic species already present in Australia
- The performance after 8 years of operation is currently being reviewed


Top 11 Families assessed
% rejected
% Evaluate
% accepted
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
POACEAE (93)
FABACEAE (419)
APIACEAE (24)
ASTERACEAE (126)
RANUNCULACEAE (25)
EUPHORBIACEAE (39)
CAMPANULACEAE (28)
LILIACEAE (29)
AIZOACEAE (23)
AMARYLLIDACEAE (27)
BERBERIDACEAE (23)
10000
16400
2800
13000
1900
5000
1950
3700
2400
1100
575



Weed risk assessment

Print | Get | Species | Help | In Galapagos: ☑
Run | Store | Update | Save | P

Outcome: High Risk
Score: 30

AutoGet AutoGet

Rubus glaucus | Refs | efs

C	**9** *In Galapagos*	9.01	Evidence of viable seed production	
C		9.02	Evidence of seedlings produced without human assistance	
C		9.03	Evidence of two or more generations of adult plants	
C		9.04	Invasiveness - Evidence of long distance propagule dispersal and establishment	
C		9.05	Invasiveness - Evidence of establishment in disturbed areas	
C		9.06	Invasiveness - Evidence of establishment in undisturbed areas (natural ecosystems)	
C		9.07	Widely naturalized and/or long established species that is a transformer, can form dense patches but is not dominant over large areas or is never common	
C		9.08	Outside agricultural zone in arid zone	
C		9.09	Outside agricultural zone in humid zone	
		9.10	On 2 or more islands	
C		9.11	On uninhabited islands	

		Outcome:	High Risk
		Score:	30
Statistical summary of scoring	Score partition:	Biogeography	11
		Undesirable attributes	7
		Biology/ecology	12
		In Galapagos	0
	Questions answered:	Biogeography	6
		Undesirable attributes	8
		Biology/ecology	18
		In Galapagos	0
		Total	32
	Sector affected:	Agricultural	20
		Environmental	20

A= agricultural, E = environmental, C=combined

Australian Government

Department of Agriculture, Fisheries and Forestry