Lessons learned from grass trials and invertebrate studies at Australian airports.

PLENARY SESSION 1 - PASSIVE MANAGEMENT

AAWHG Workshop – Sydney International Airport

23rd July 2019

The role of grass management programs in making airports as unattractive as possible to wildlife, in an environmentally responsible way.

(PASSIVE MANAGEMENT)

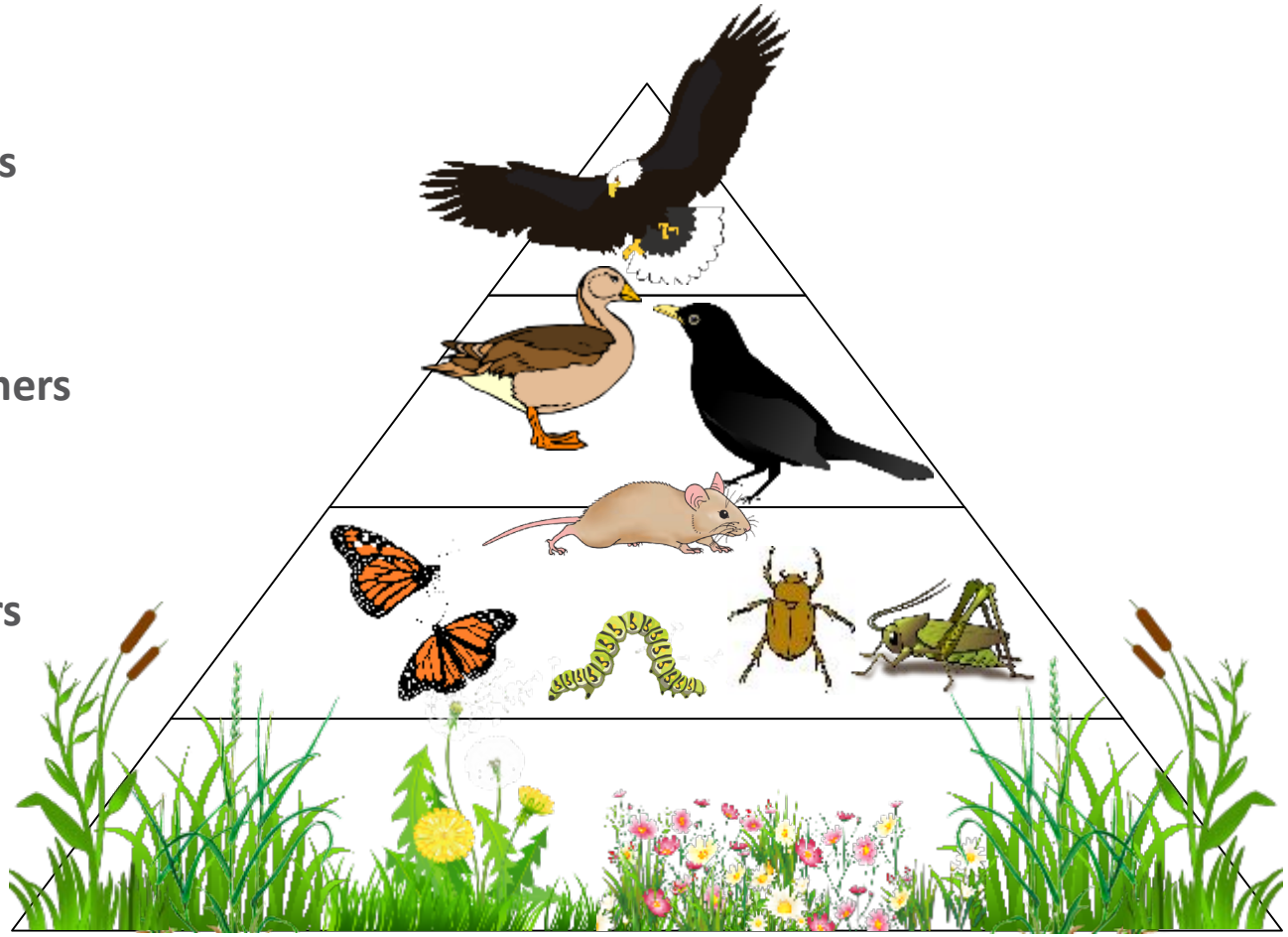
PRODUCER CONSUMER FOOD PYRAMID

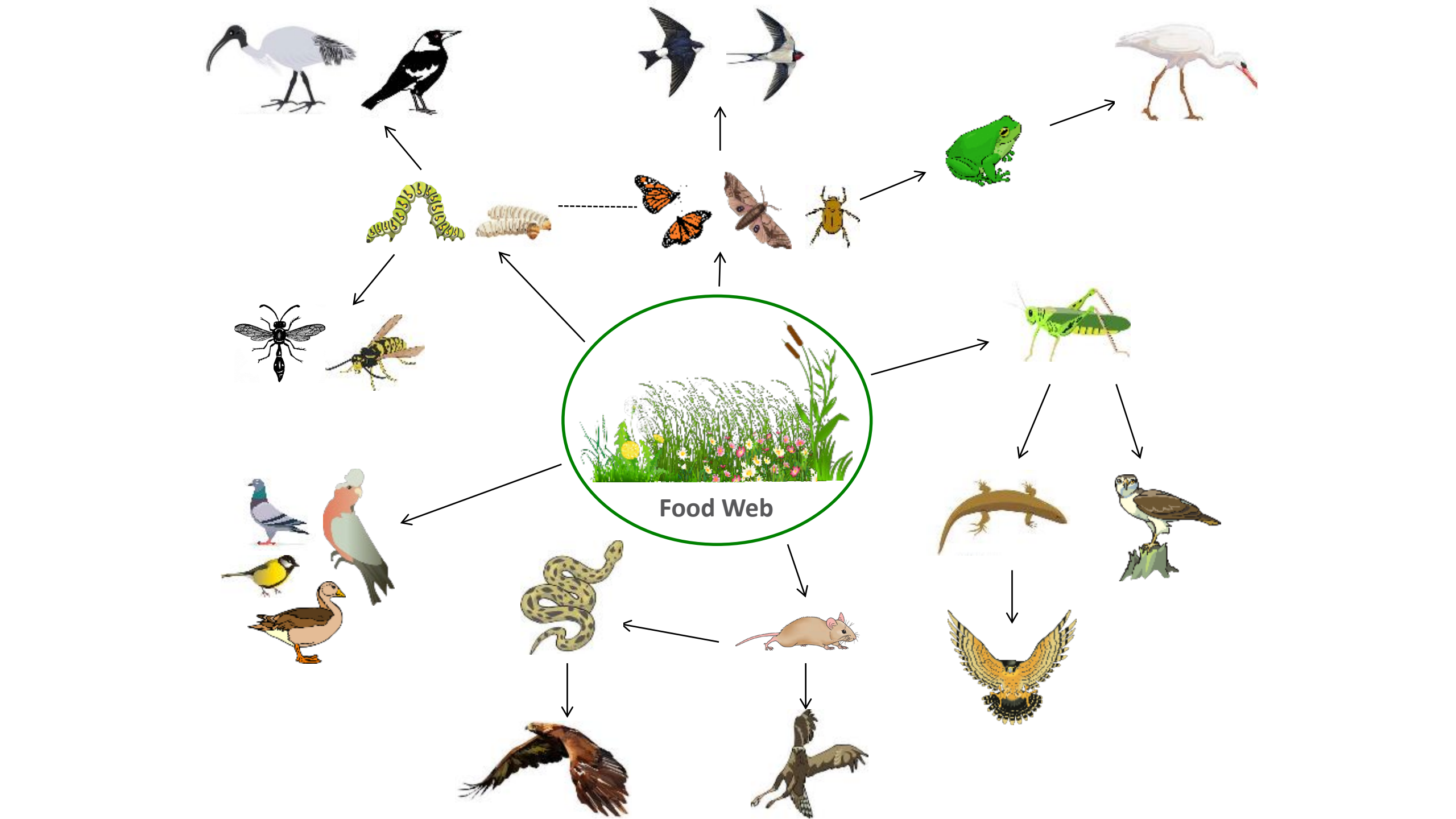
Tertiary Consumers

Secondary Consumers

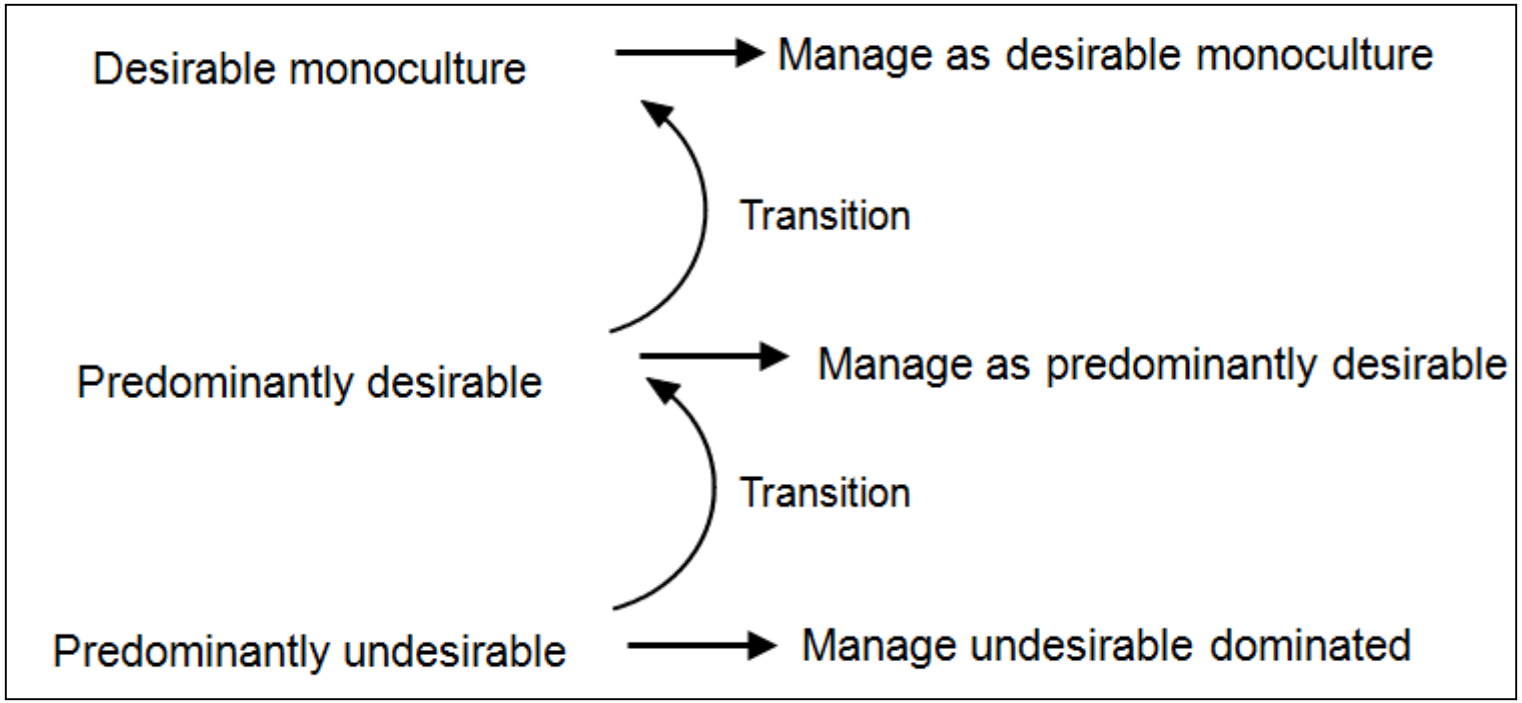
Primary Consumers

Producers




Food Web

VEGETATION CLASSIFICATION MODEL



DARWIN INTERNATIONAL AIRPORT
GRASS MANAGEMENT TRIAL PROGRAM

Darwin International Airport

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Grass Management Trial Program

Darwin Airport has highest birdstrike rate in nation, whistling kite downs helicopter in NT

By Carmen Brown and Xavier La Canna

Updated 2 Feb 2017, 10:59am

More than 16,000 birdstrikes were reported to the Australian aviation authority between 2006 and 2015, and it is Darwin Airport where the dangerous clash is most common, a safety report has revealed.

The new figures from the Australian Transport Safety Bureau's (ATSB's) report into wildlife strike statistics show Darwin Airport recorded the nation's highest rate of birdstrike incidents over the past decade.

The ATSB report shows an average rate of 11.15 strikes per 10,000 plane movements in Darwin during the 2006-2015 reporting period, with 1,560 individual incidents recorded across the state.

PHOTO: Airport staff try to harass birds to keep areas clear in an effort to prevent birdstrikes.
(Supplied: Australian Transport Safety Bureau)

Melbourne Airport had just 3.05 birdstrikes per 10,000 movements and Sydney Airport had 3.63.

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Increased Activity of Kites Associated with Mowing at DIA

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Grass Clippings Causing FOD on Taxiway after Night Mowing at DIA

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TRIAL OBJECTIVES:

1. **Reduce bird activity and wildlife risk**
2. **Reduce post mowing wildlife harassment**
3. **Reduce frequency of mowing/slashing rotations**
4. **Reduce man-hours spent on mowing/slashing operations**
5. **Reduce vegetation biomass and post-mowing clip/debris (FOD)**

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Grass Management Trial Program

TOOLS	TARGET & FUNCTION
Plant Growth Regulation	Reduces the growth of all grasses
Selective Herbicides	Reduces the seed-head production of some grasses
	Controls Broadleaf weeds
Weed Wipe	Controls taller-growing weedy grasses
Selective Insecticide	Controls target insects e.g. caterpillars and beetles

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Date	Control Plot	IVM Plot
8 November 2018	Mow	Mow
17 January 2019	Mow	
25 January 2019		Mow
22 February 2019	Mow	
22 March 2019	Mow	
1 April 2019		Mow
15 April 2019	Mow	
13 May 2019	Mow	
TOTAL MOWING ROTATIONS	6	3

Mowing Activities in the IVM Plot reduced by 50%

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WEEDY GRASSES:

These grasses are taller-growing and trigger mowing activities more often. They also produce a large amount of biomass and cause more issues with FOD around runways and taxiways.

Area	May 2018	January 2019	March 2019	May 2019
Control Plot	**20.0%**	**20.7%**	**12.9%**	**20.2%**
IVM Plot	**12.9%**	**13.4%**	**14.4%**	**6.4%**

Weedy Grasses in the IVM Plot reduced by 50%

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BROADLEAF WEEDS:

These weeds tend to attract wildlife (i.e. insects and birds) more than other plant species.

Area	May 2018	January 2019	March 2019	May 2019
Control Plot	**9.5%**	**13.0%**	**9.9%**	**4.9%**
IVM Plot	**9.3%**	**9.2%**	**5.5%**	**0.5%**

Broadleaf Weeds in the IVM Plot reduced by 90%

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INSECTICIDE APPLIED 26 NOVEMBER 2018:

Date	IVM Plot Observations
5 December 2018	Grasshoppers or other insects could not be seen in trial plot
14 December 2018	Grasshoppers or other insects could not be seen in trial plot
9 January 2019	Significantly lower insect activity within trial site
13 February 2019	50% less visible insects in trial plot
28 February 2019	Visibly fewer insects than control site
6 March 2019	Approximately half the insect activity compared to control plot
13 March 2019	Similar insect numbers in both sites

Insect numbers significantly reduced for 3+ months

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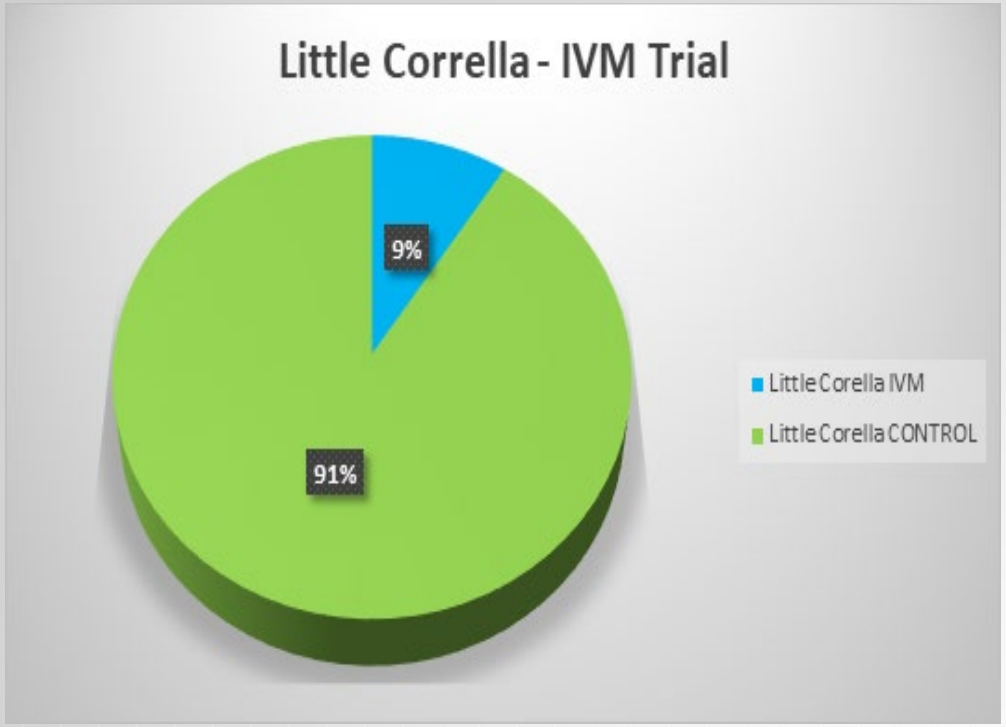
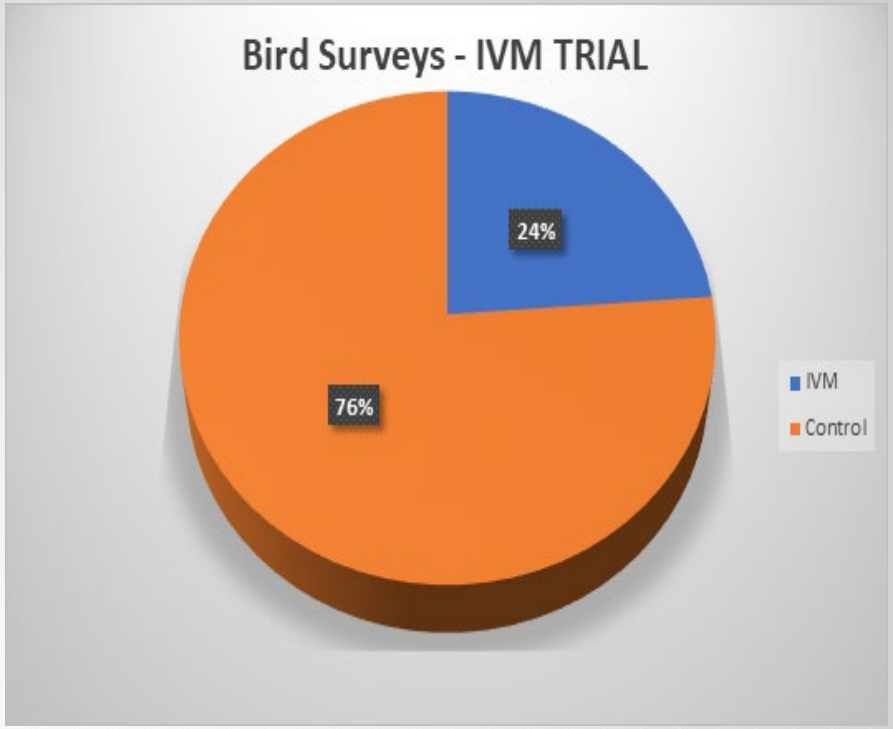


Overall 91% of Little Corella observed preferred the Control Plot



Overall 76% of all birds observed preferred the Control Plot

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TRIAL OUTCOMES:

1. **Reduce bird activity and wildlife risk**
   - **Bird activity reduced by 75%**
2. **Reduce post mowing wildlife harassment**
   - **Post-mowing harassment reduced by 50%**
3. **Reduce frequency of mowing/slashing rotations;**
   - **Mowing frequency reduced by 50%**
4. **Reduce man-hours spent on mowing/slashing operations**
   - **Mowing time reduced by 50%**
5. **Reduce vegetation biomass and post-mowing clip/debris (FOD)**
   - **Vegetation post-mowing clip reduced by 50%**

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CHALLENGES & LESSONS LEARNED:

1. **Joint User Airport**
   - Engaging early and with the right people i.e. decision makers
2. **Weather**
   - Heavy rain during first application – effect not known
   - Very low rainfall during 'wet' season – one of the driest on record
   - In particular DEC/JAN affected growth rate in both plots
3. **Wildlife**
   - Counts showed most species preferred the Control plot - very few in Treated plot
   - Bird numbers still high in other areas of the airport away from trial plot
4. **Monitoring**
   - Benefits from a more robust process for surveying insect numbers/type and bird numbers

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BRISBANE AIRPORT
GRASS MANAGEMENT TRIAL PROGRAM

BRISBANE AIRPORT AUSTRALIA

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Grass Management Trial Program

TRIAL OBJECTIVES:

- **Reduce mowing frequency by 50%**
- **Reduce vegetation biomass (post-mowing clip/debris) by 30%**
- **Reduce wildlife activity**

BRISBANE AIRPORT AUSTRALIA

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Grass Management Trial Program

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WEEDY GRASSES

BROADLEAF WEEDS

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WILDLIFE-ATTRACTING PLANTS

BARE AREAS

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Grass Management Trial Program

TOOLS	TARGET & FUNCTION
Plant Growth Regulation	Reduces the growth of all grasses
Selective Herbicides	Reduces the seed production of some grasses
	Controls Broadleaf weeds

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TRIAL PLOT
56 days after mowing

CONTROL PLOT
14 days after mowing

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TRIAL OUTCOMES:

1. **Reduce mowing frequency by 50%**
   - **Mowing frequency reduced by 73%**
2. **Reduce vegetation biomass by 30%**
   - **Vegetation biomass reduced by 49%**
3. **Reduce wildlife activity**
   - **Wildlife activity visibly reduced**

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Grass Management Trial Program

CHALLENGES & LESSONS LEARNED:

1. **Measuring for success**
2. **Keeping stakeholders informed**
3. **Developing the business case**

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Next Steps

IMPLEMENT GRASS MANAGEMENT FIELD PROGRAM:

1.	Main Runway	89 hectares
2.	Domestic Terminal	10 hectares
3.	International Terminal	15 hectares
4.	TOTAL	114 hectares

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Grass Management Field Program

Grass Management Field Program

FIELD PROGRAM OBJECTIVES:

1. **Reduce wasp activity (near terminals)**
2. **Reduce bird activity (near main runway)**
3. **Reduce post-mowing harassment**
4. **Reduce mowing frequency**
5. **Reduce post-mowing debris (FOD)**

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Grass Management Field Program

TOOLS	TARGET & FUNCTION
Plant Growth Regulation	Reduces the growth of all grasses
Selective Herbicides	Reduces the seed-head production of some grasses
	Controls Broadleaf Weeds
Weed Wipe	Controls taller-growing weedy grasses
Broad Spectrum Insecticide	Controls of a wide range of insects (Runway)
Selective Insecticide	Controls caterpillars and beetles (Terminals)

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Grass Management Field Program

Activities	2019						2020					
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
Application 1												
Application 2												
Application 3												
Application 4												
Application 5												
Mechanical												

Boom-spray Application

Weed Wipe

Slashing Rotation

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Vegetation Surveys at Monitoring Points

TrapView Insect Monitoring Stations

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Australian Plague Locust Management at Perth Airport

Perth Airport

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- Locust numbers in the grassy areas adjacent to movement zones increase dramatically over spring/summer.
- Birds that feed on locusts (e.g. Nankeen Kestrel and White-faced Heron) are attracted to these areas, increasing the risk of bird strikes.
- Removing attractants is the most effective way to manage wildlife threats.
- Fortunately, locust management is relatively straightforward, and a lot of information on locust lifecycles and management is available.

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Six fixed replicate survey sites located around the aerodrome have been established.

These sites will be surveyed weekly from the beginning of October through to the end of February.

During each survey, a Pollard Walk is used to calculate the density of locusts.

Additional information is also gathered relating to site conditions and locust developmental stages.

Information gathered from surveys is used to guide locust management.

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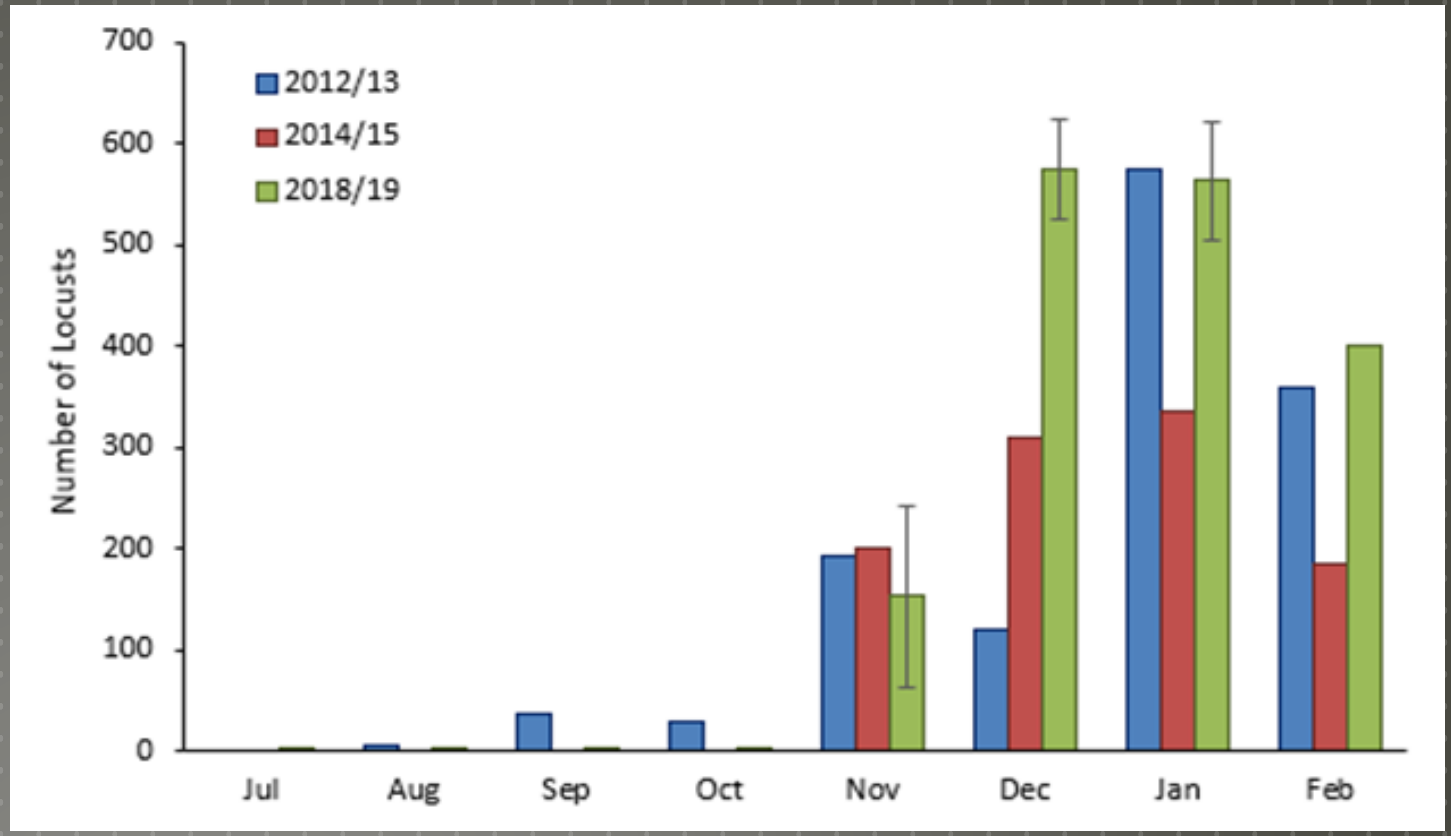
After hatching, nymphs take around 20-25 days to complete development.

Once they have completed their final moult stage, they typically lay their first egg pods within 10-14 days.

Egg pods often contain 30-60 eggs, and an average female will lay 3 egg pods over her lifetime.



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QUESTIONS & DISCUSSION