

Using data to effectively manage wildlife hazards

David C. Paton

School of Earth & Environmental Sciences



Outline

- The nature of a good data base
- Setting abundance thresholds for monitoring
- Using other data – harassment data
 - Risk assessment and ranking hazards
 - Measuring effort

AC139-26(0) Wildlife Hazard Management

Recommends

- **identify** and **monitor** the wildlife hazard;
- **assess** hazard and **rank** wildlife in order of risk;
- **identify** suitable risk treatment options;
- **develop** Wildlife Hazard Management Plan (WHMP)
- **implement** WHMP and **monitor**
- **review** and **update** WHMP regularly.

Certified Aerodromes

monitor and record wildlife
must develop a WHMP if hazard exists

Registered Aerodromes

monitor wildlife during serviceability inspection
consider developing WHMP if hazard exists

Certain Other Aerodromes

assess wildlife hazards
manage risks

Good data base and management

- Data need to be **accurate**
- Data items need to be **explained** somewhere
- Data bases should be **designed**
(allows extraction of relevant information)
- Data bases should have some **core elements**
(record#, date, observer etc)
- Data base managers **familiar** with data types





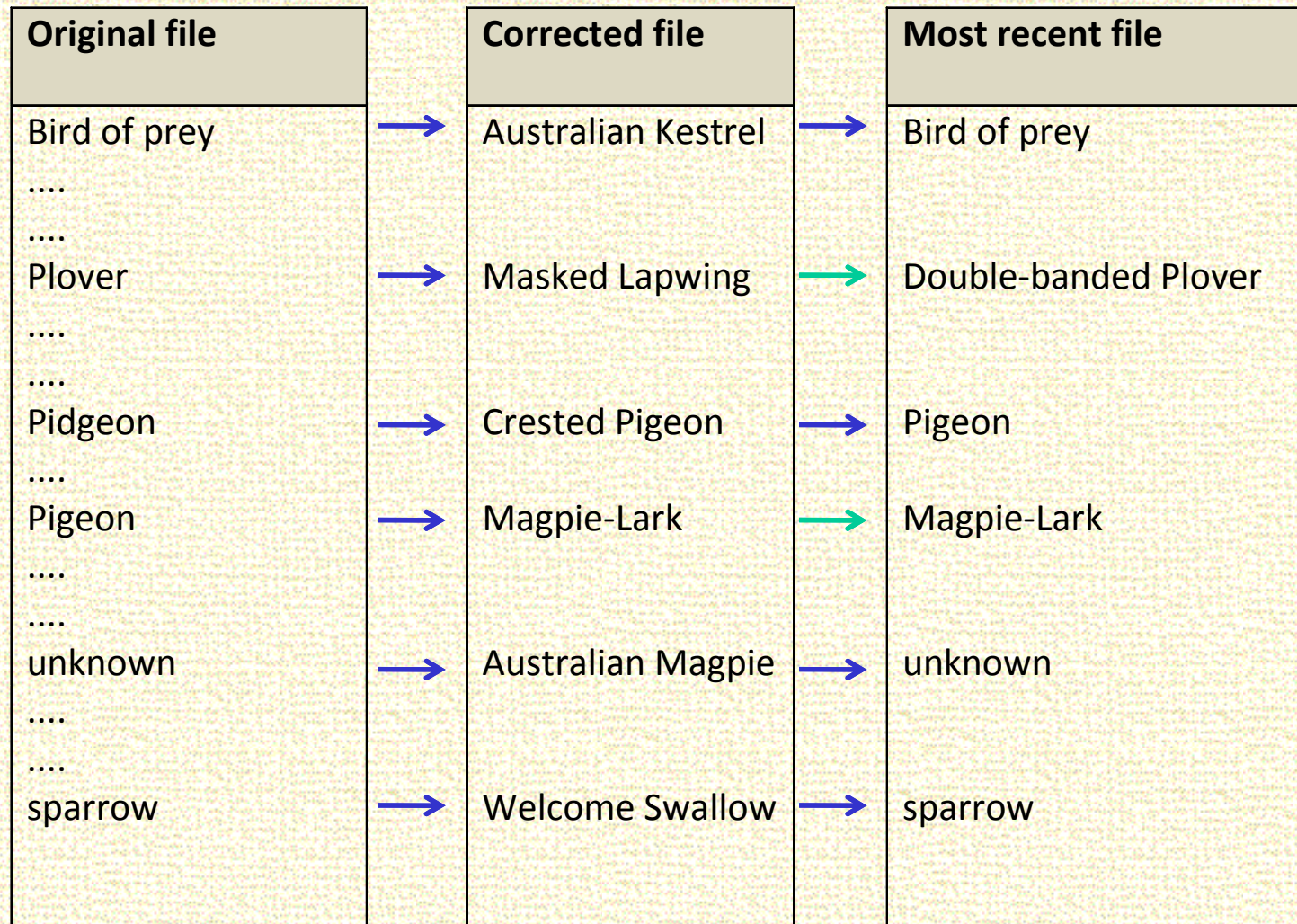




Species were:

- Silver Gull, Nankeen Kestrel, Galah
- Australian Magpie, Common Starling, Crested Pigeon
- Australian White Ibis, Masked Lapwing, Cape Barren Goose
- Welcome Swallow, Little Corella, Magpie-Lark

Data bases need to be accurate and managed by knowledgeable staff

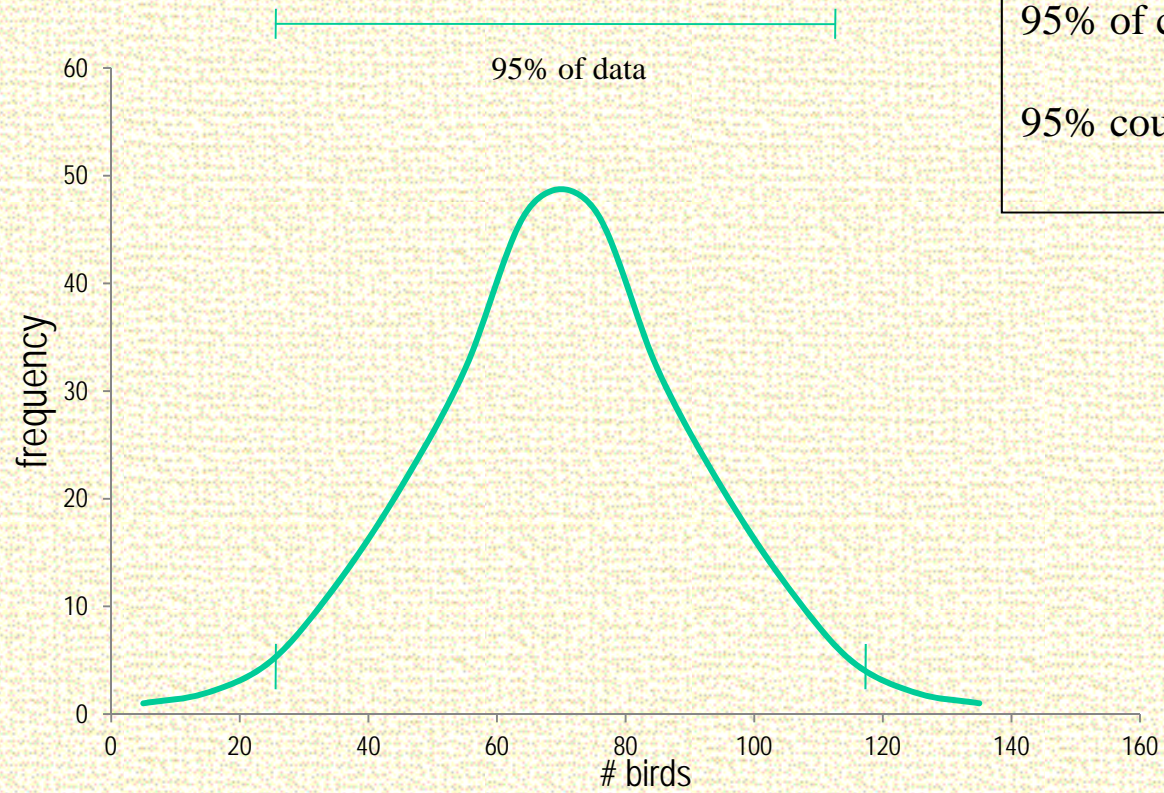


Data base design

Item	Comments
Record#	a unique number assigned for that record
Date	day/month/year 24h clock
Day	the day
Month	the month
Year	the year
Time	the time (24h clock)
Observer	Name of person collecting the data
.	
.	
.	
Species	the species of bird
.	
.	
ID confirm	give the name of person checking the species ID
.	
.	
.	
Photo#	Code for the digital image of the carcass

How might abundance monitoring data be used?

- Looking for trends over time
- **Setting threshold values**



Mean = 70

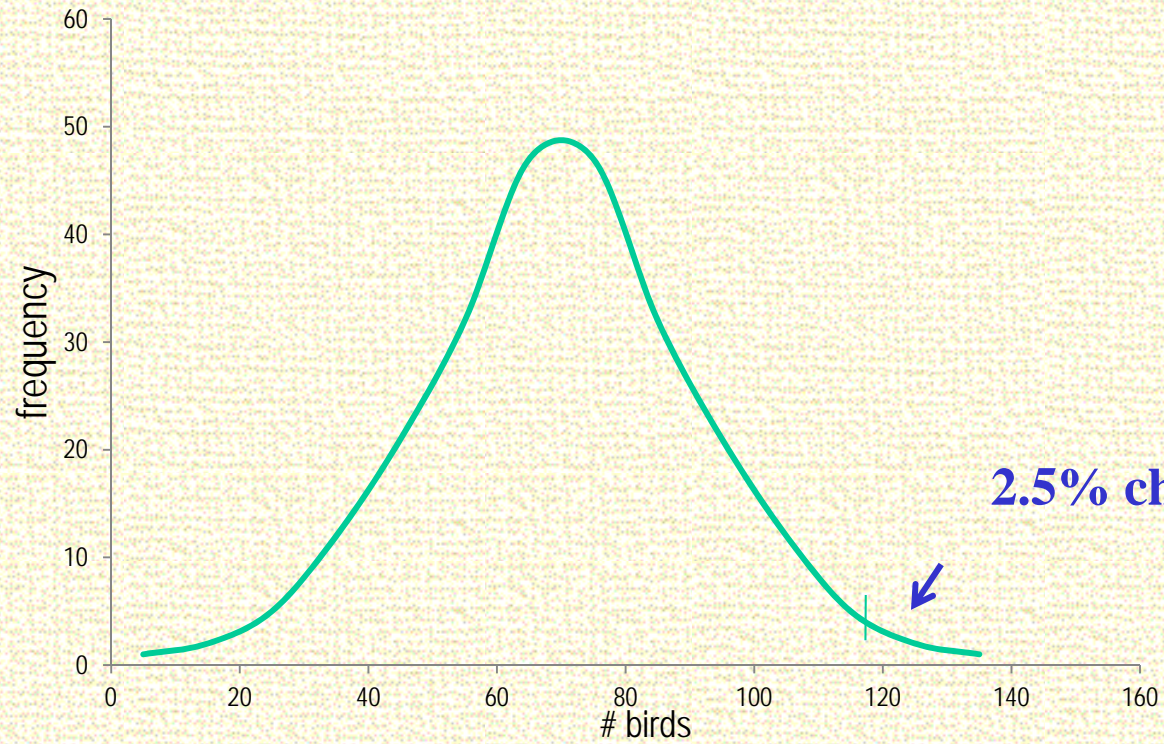
Std error (se) = 24

2se = 48

95% of counts = mean \pm 2se

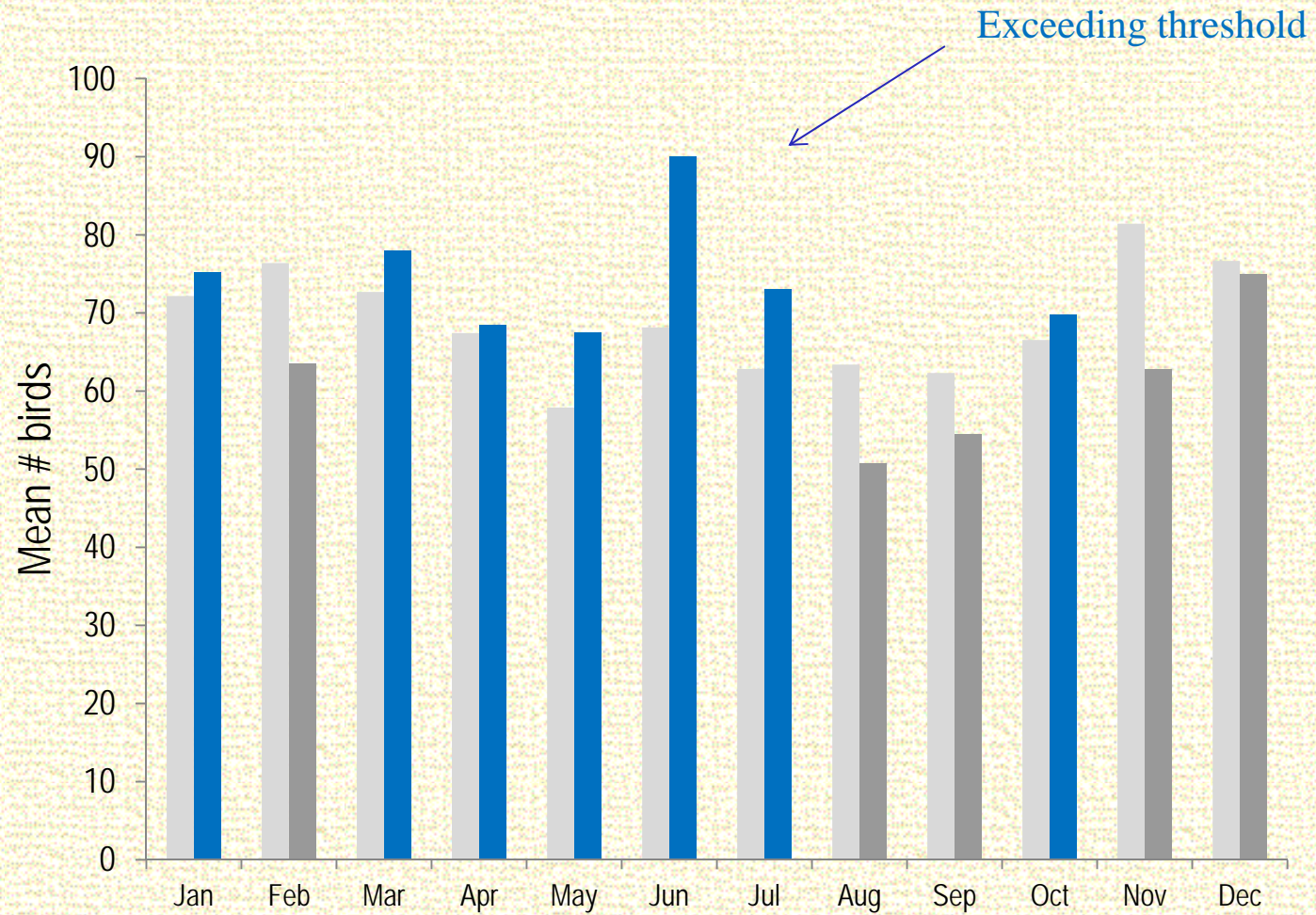
95% counts between 22 and 118

Upper threshold = 118

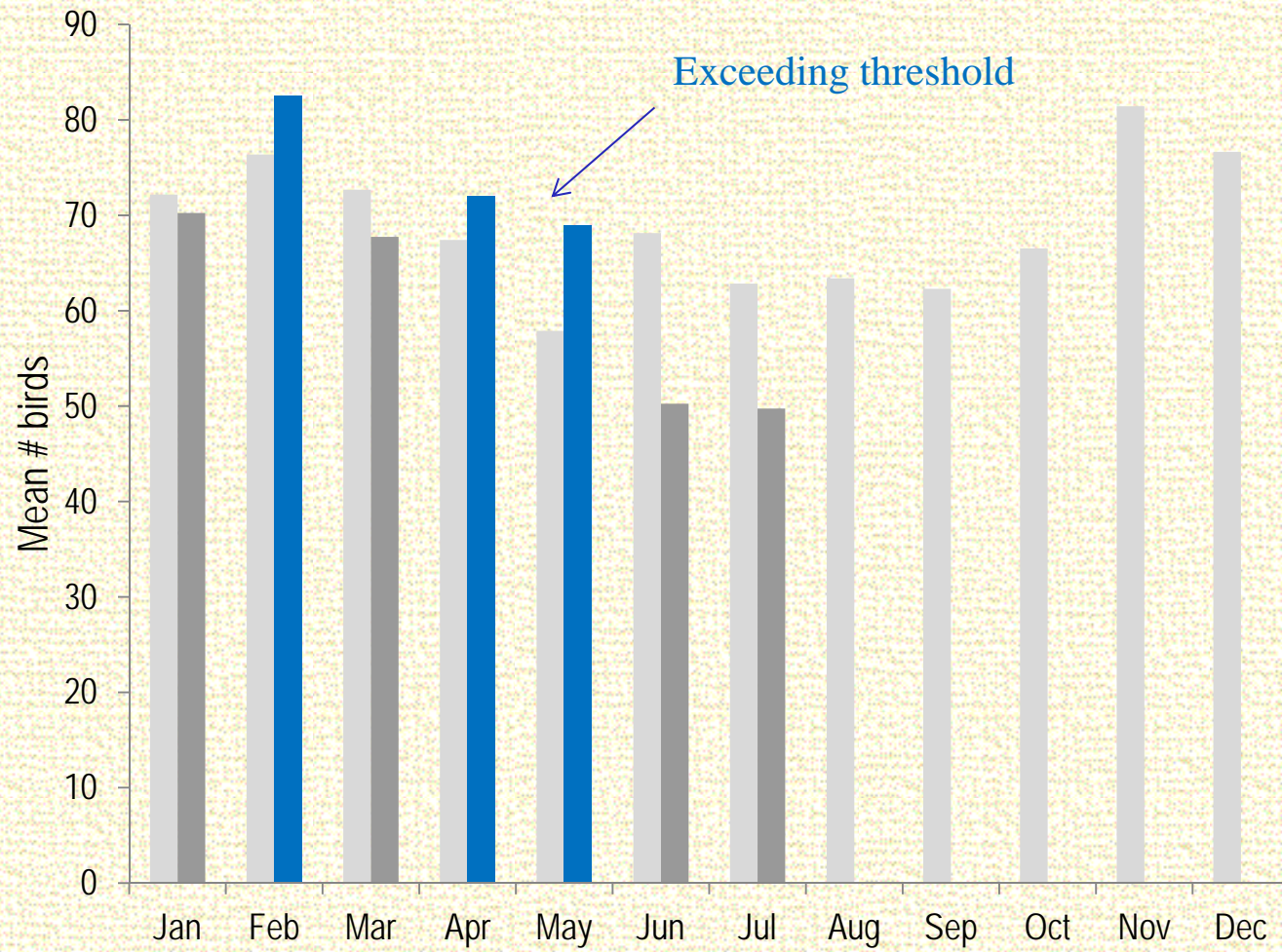


2.5% chance of >118

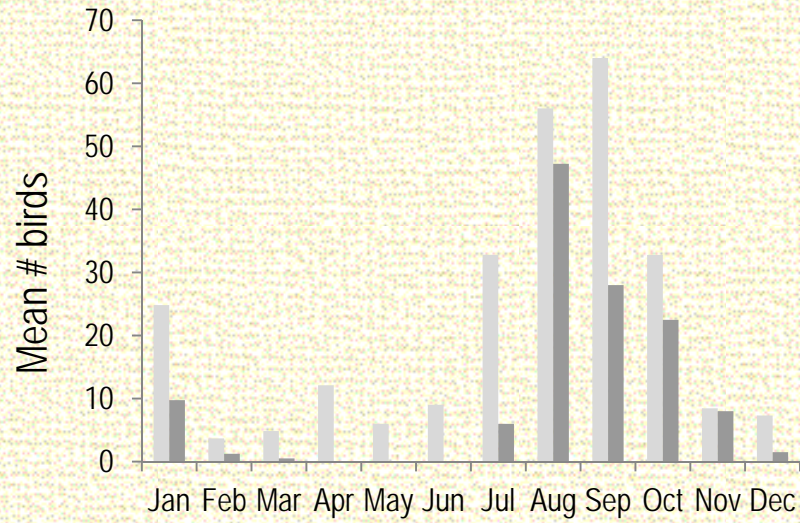
Australian Magpie Adelaide Apt 2010



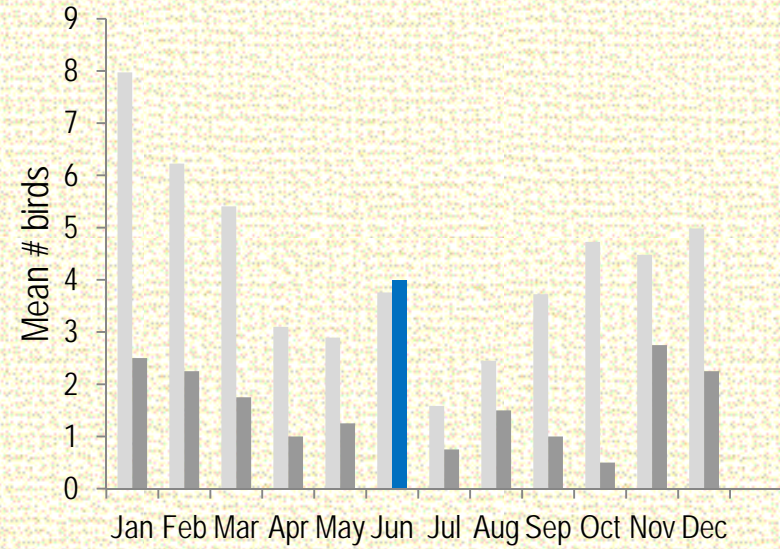
Australian Magpie Adelaide Apt 2011



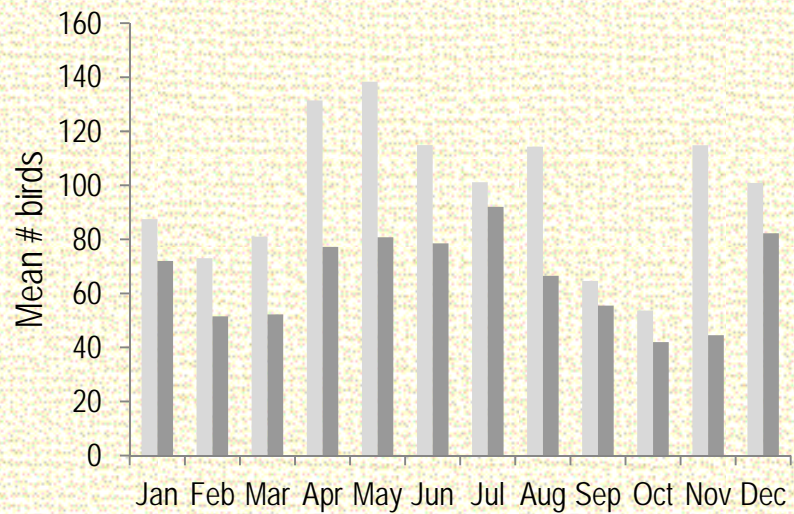
Galah



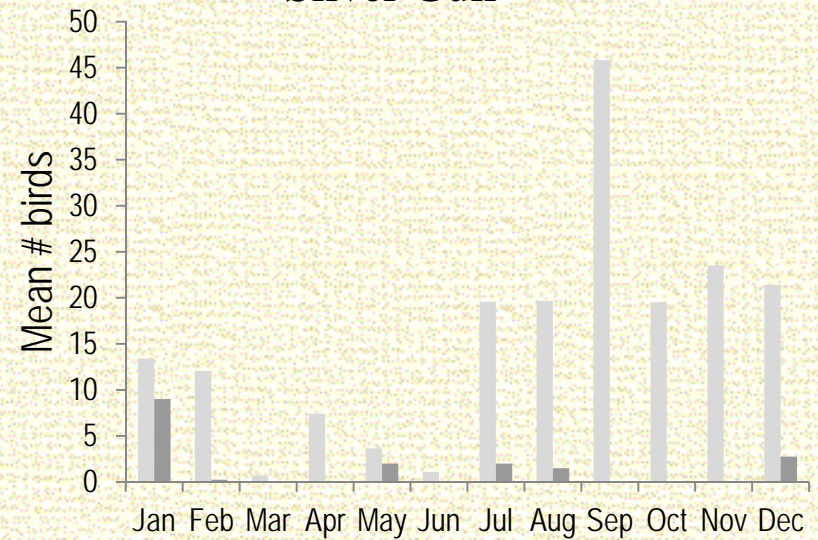
Nankeen Kestrel



Magpie-Lark



Silver Gull



Not all airports have dedicated monitoring programs

What alternatives exist for assessing hazards?

- harassment data

most airport ground staff are making day-to-day decisions about bird hazards and implementing harassment programs

Might not be any clear guidelines or quantification
– but it is an “expert system” that is being implemented

Using Airport harassment data to inform management

- Use of harassment data to assess and rank bird hazards
- Use of harassment data to report patterns and trends in active management effort
 - Long-term
 - Short-term

Frequency of harassment by bird species at Pt Lincoln Airport

Species	# harassments		% harassments		Likelihood
	2009	2010	2009	2010	
Australian Magpie	9	3	5	1	High
Australian Pelican	1	5	1	2	Moderate
Australian Shelduck	15	4	8	1	High
Australian White Ibis		1		0.3	Low
Barn Owl		1		0.3	Low
Black Swan		1		0.3	Low
Cape Barren Goose	76	116	38	40	Very High
Common Starling		2		0.7	Low
Domestic Pigeon		1		0.3	Low
Galah	32	52	16	18	Very High
(hawk)		1		0.3	(Low)
Lapwing	7	11	4	4	High*
Nankeen Kestrel	1		1		Low
Little Raven	33	21	17	7	Very High
Pacific Black Duck		2		0.7	Low
Pacific Gull		5		2	Moderate
Silver Gull	25	42	13	14	Very High
White-faced Heron		13		4	Moderate

Flock sizes harassed at Pt Lincoln Airport

Species	Average Flock Size	
	2009	2010
Australian Magpie	4	8
Australian Pelican	3	10
Australian Shelduck	16	9
Australian White Ibis		1
Barn Owl		1
Black Swan		1
Cape Barren Goose	32	49
Common Starling		140
Domestic Pigeon		1
Galah	157	121
(hawk)		1
Lapwing	9	11
Nankeen Kestrel	1	
Little Raven	23	28
Pacific Black Duck		7
Pacific Gull		1
Silver Gull	181	66
White-faced Heron		8

large flock sizes for:

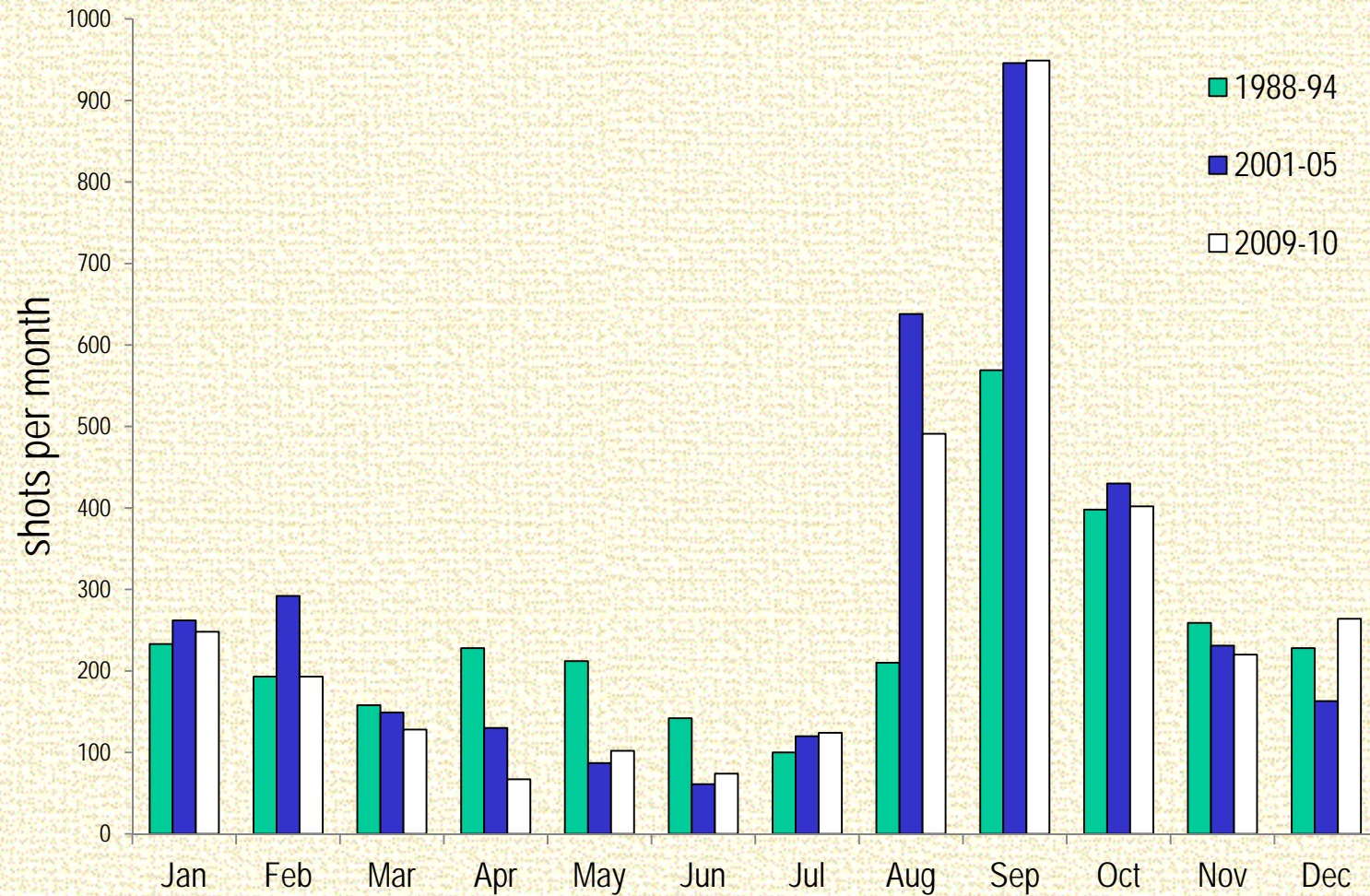
Galah

Silver Gull

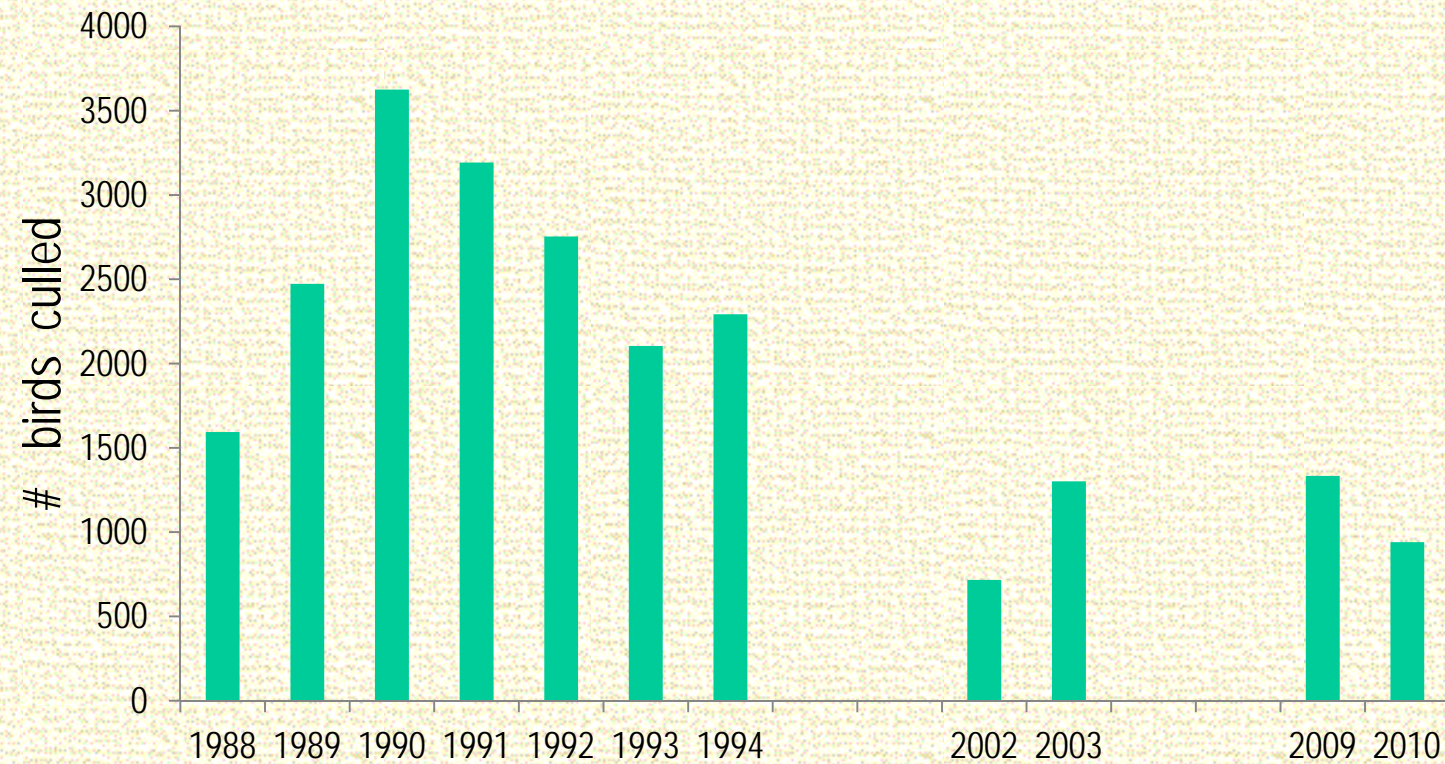
Common Starling

Cape Barren Goose

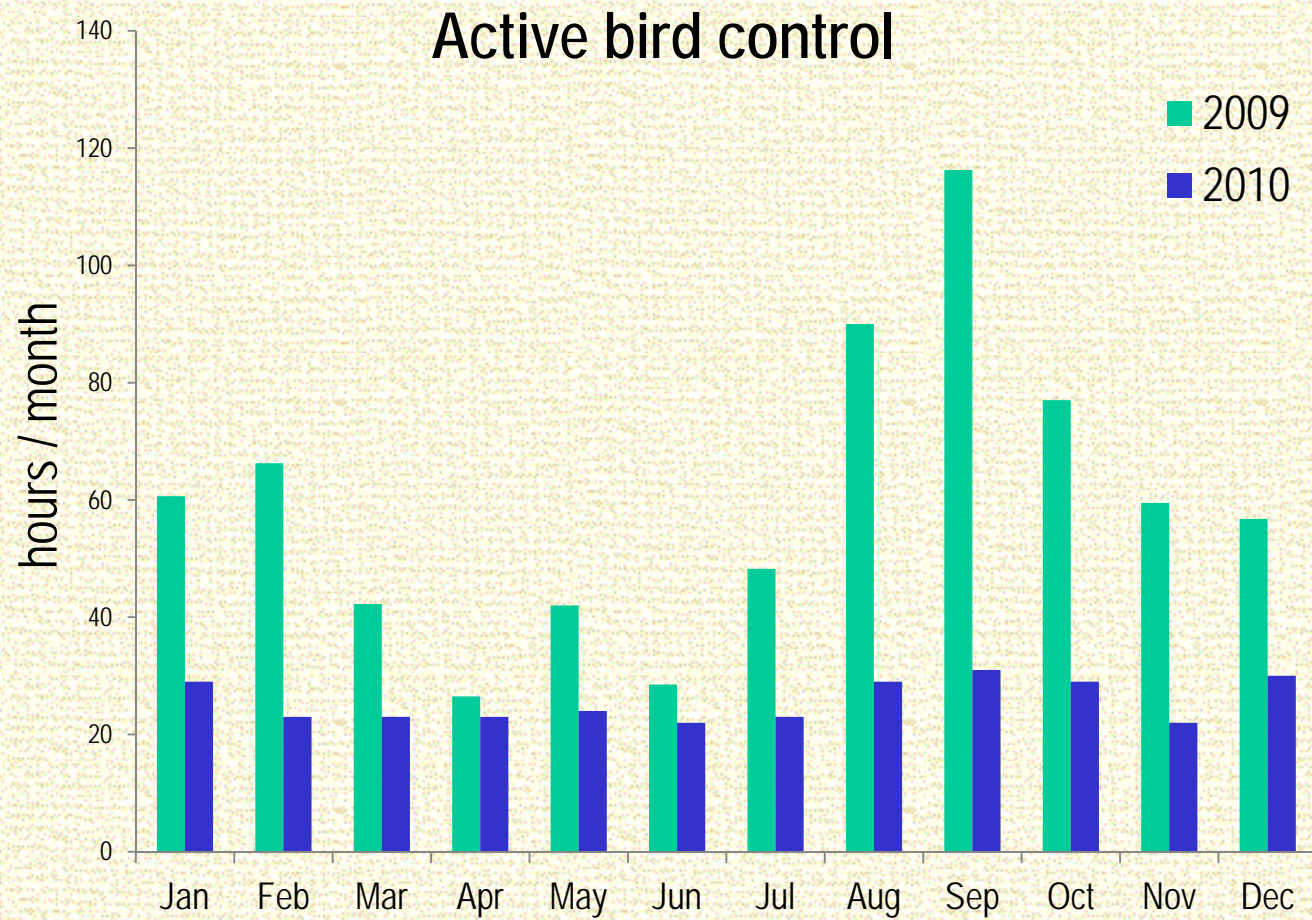
Seasonal patterns to shooting and harassment Adelaide Airport

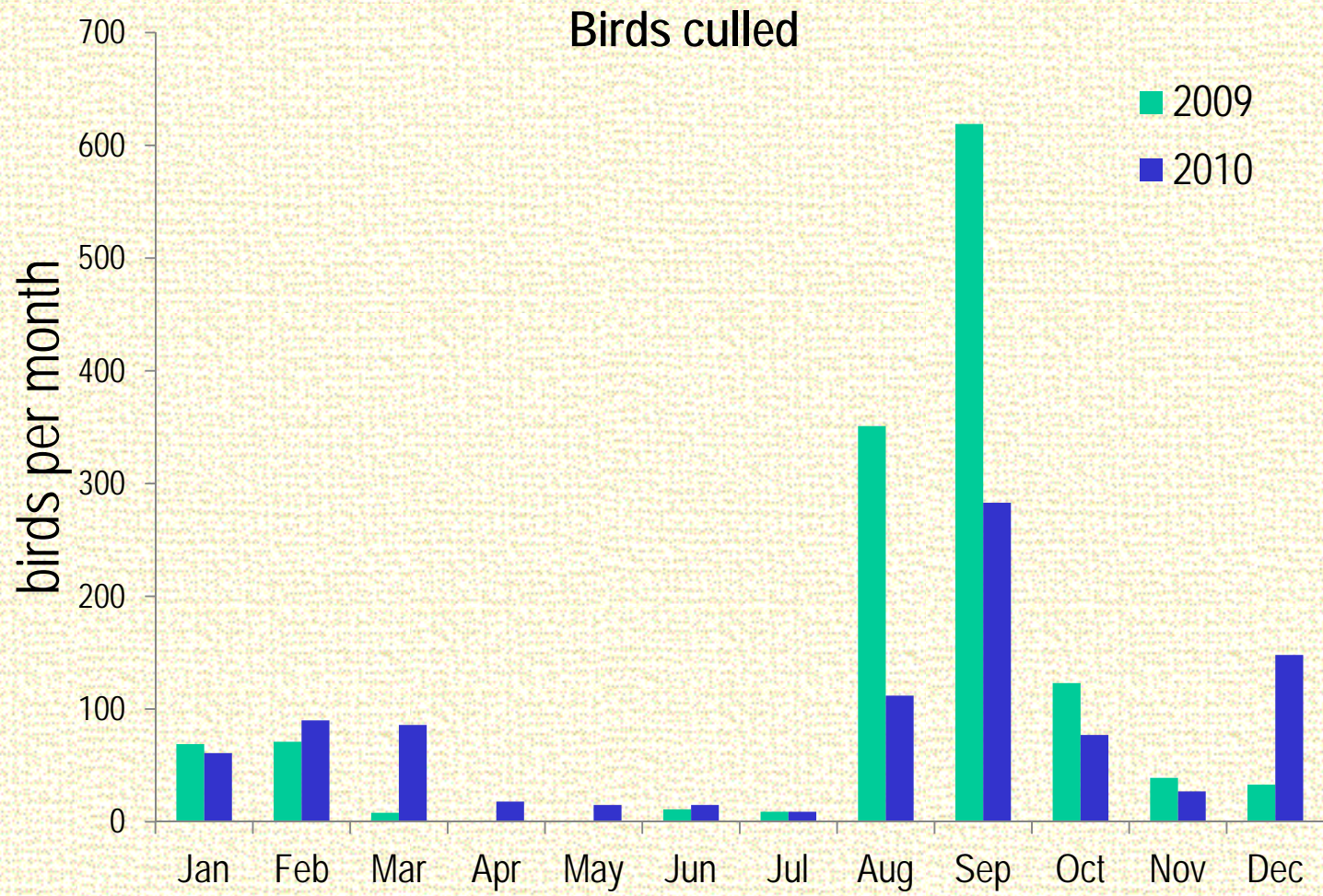


Historical changes in numbers of birds culled per annum Adelaide Airport



Changes in effort to actively manage birds at Adelaide Airport





Spreadsheet
not a
database

Date	Observer	Start	Finish	#shots	#frite	Species harassed	Cells	# culled
22/07/2011	XXX	6:30	8:15	2	2	GAL, AWI, AM	13H, 18J, 20L	2 GAL; 1 AM
23/07/2011	YYY	6:45	8:00	3	0	GAL, AML, SG	20L, 15M, 21L	1 AML
.....		



Date	Observer	Start	Finish	#shots	#frite
22/07/2011	XXX	6:30	8:15	2	2
23/07/2011	YYY	6:45	8:00	3	0
.....			

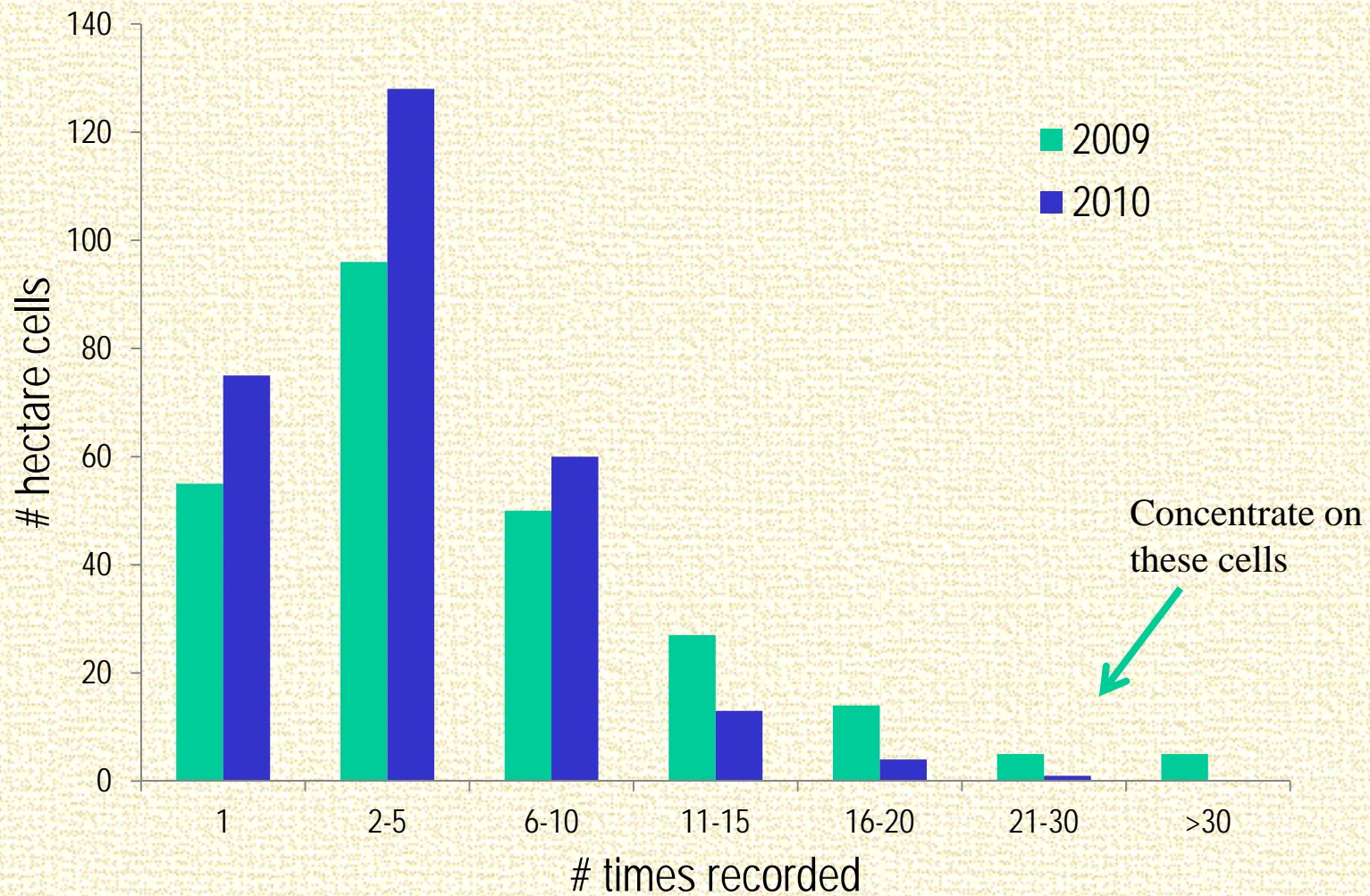


Date	Species ha	Cells
22/07/2011	GAL	13H
22/07/2011	AWI	18J
22/07/2011	AWI	20L
22/07/2011	AM	18J
22/07/2011	AM	20L
23/07/2011	GAL	20L
23/07/2011	GAL	21L
23/07/2011	AML	15M
23/07/2011	SG	15M
23/07/2011	SG	20L
23/07/2011	SG	21L



Date	Species	# culled
22/07/2011	GAL	2
22/07/2011	AM	1
23/07/2011	AML	1

Frequency distribution for number of times a 1 hectare cell had birds harassed for 2009 and 2010



Areas to target for management in subsequent
year (10 worst cells)

2009 1ha cells	2010 1 ha cells
23L	20L
22L	20K
21L	18H
19L	22W
20L	09N
24L	23Z
06N	23U
21N	28N
30L	24Z
22N	26L
24Z	

Some Discussion Points

1. Should a common (designed) data base be used by all airports?
2. Using monitoring thresholds as early warning – useful?
3. Do small airports really need to monitor their birds?
4. Are good harassment data a suitable alternative to monitoring?
5. Is their merit in recording effort to harass birds?