

Changi Airport Wildlife Hazard Management Plan

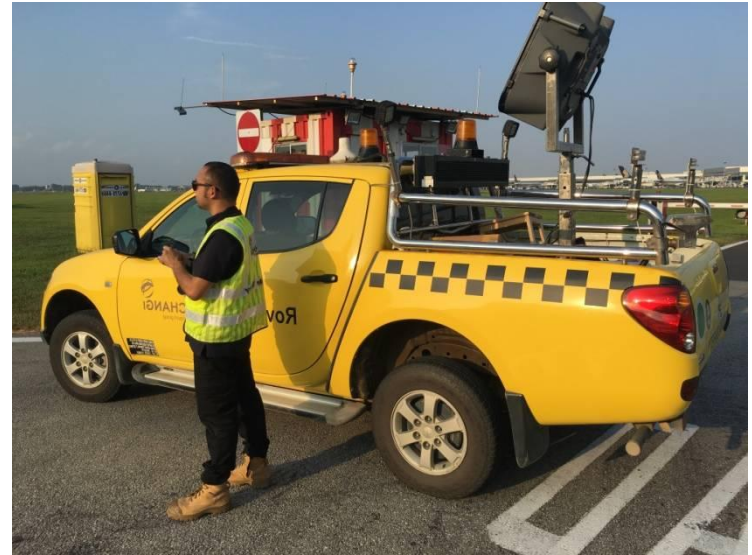




Understanding Wildlife Behaviour

Conducting patrol and surveys

- Daily wildlife patrols within aerodrome
- Monthly patrols within and beyond aerodrome by consultant
 - Species and count
 - Identify wildlife attractants



Understanding Wildlife Behaviour

Data analyses

- Gut analysis - “Autopsy”
- Bird strikes and carcass FOD data analysis
- Hazard assessments by wildlife specialist



Focus Species

Small flocking birds

- Swallows
- Swifts and Swiftlets
- Doves
- Mynas
- Munias
- Paddyfield Pitpit



Barn Swallow



SWIFTLETS

Characteristics:
Dull rump, Slightly
dark underparts



JAVAN MYNA

Characteristics:
White-vented, Yellow bill
Slaty-black plumage



Paddyfield Pipit

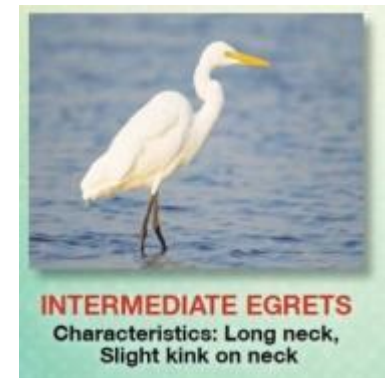
Medium and large birds (>300g)

- Brahminy Kite
- White-bellied Sea Eagle
- Intermediate Egret



BRAHMINY KITE

Characteristics: White head
to breast, bright cinnamon rufous



INTERMEDIATE EGRETS

Characteristics: Long neck,
Slight kink on neck



WHITE-BELLIED
FISH EAGLE

Characteristics:
White head, neck
& underparts,
Grey upperparts

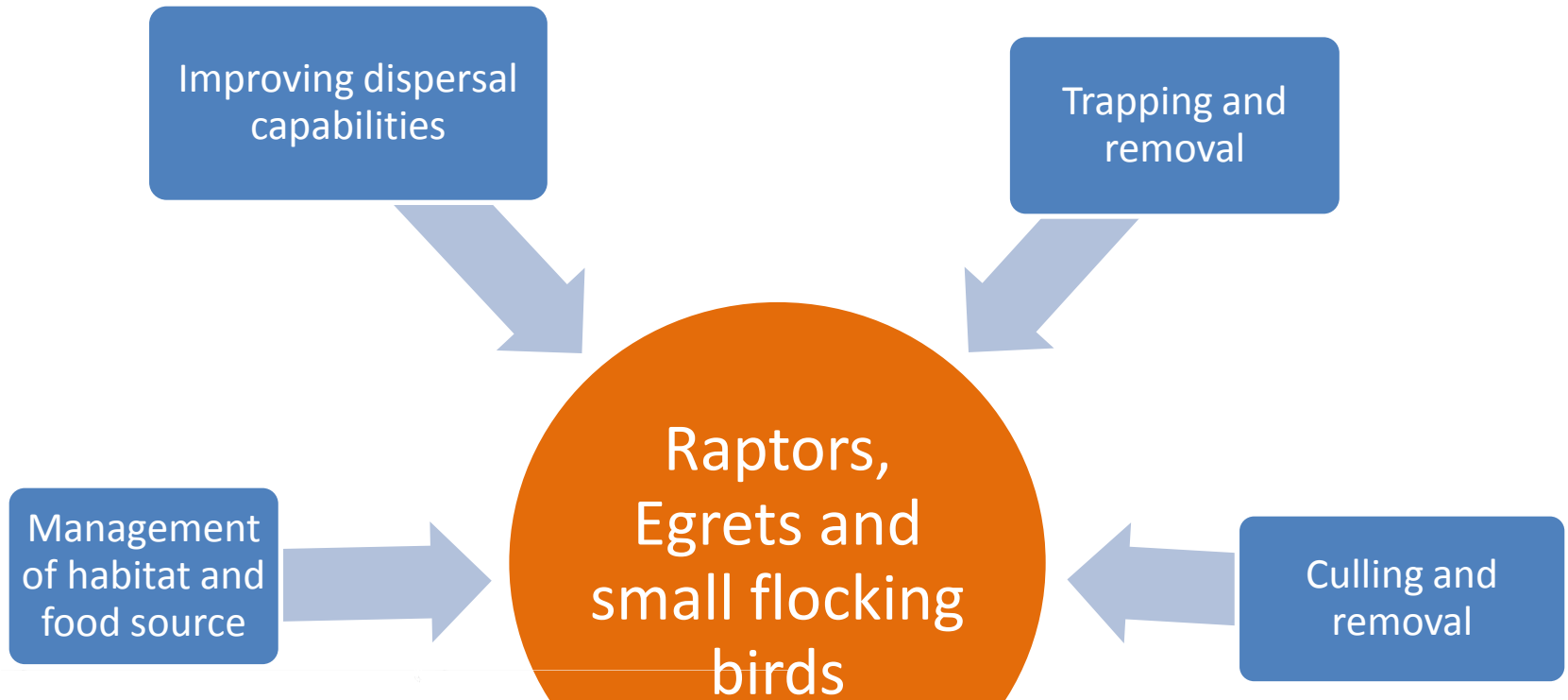
Migratory birds

Resident birds

Migratory and resident birds

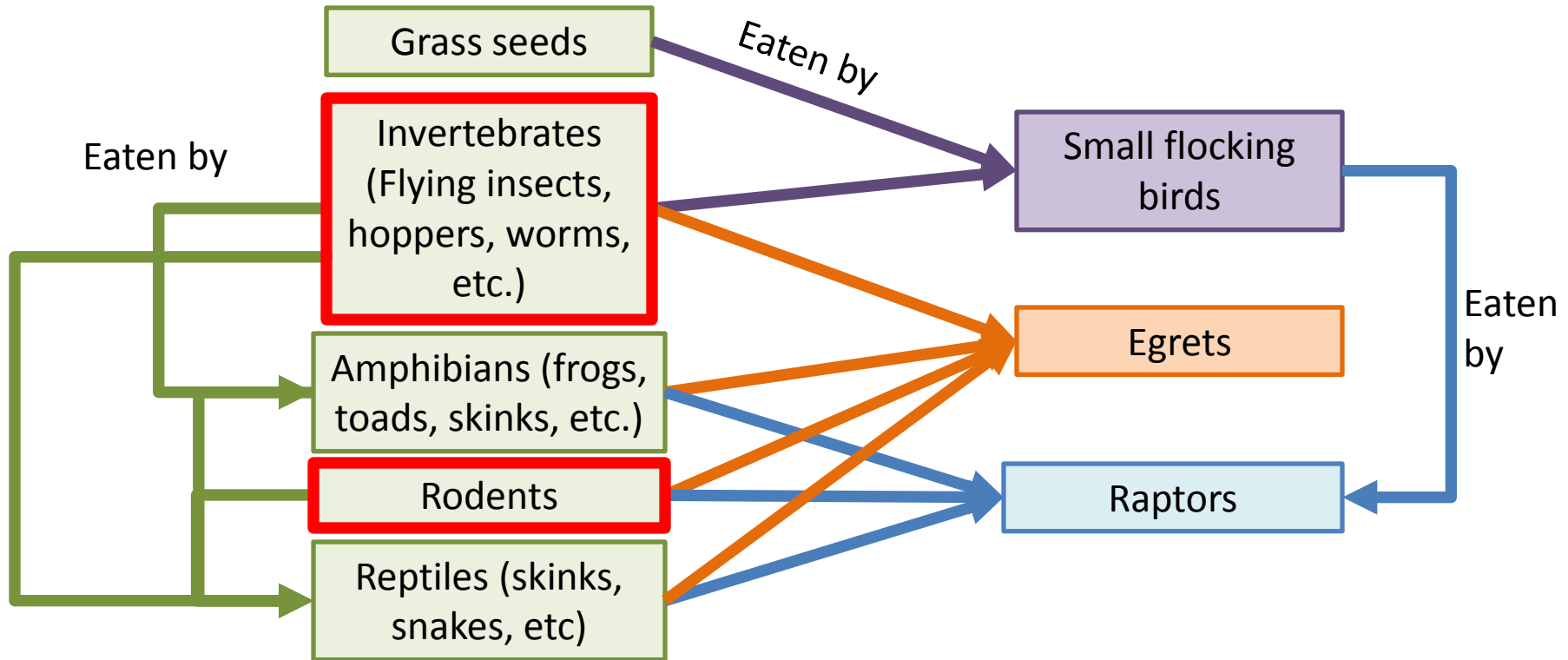


Wildlife Control Measures



Wildlife Control Measures

Management of Habitat and Food Source



- Habitat and food source management targets the problem at its core
- To target turf, invertebrates and rodents

Wildlife Control Measures

Management of Habitat

- Turf Management
 - Grass kept at 10-15cm
- Vegetation Management
 - Removing vegetation that attracts wildlife



Wildlife Control Measures

Management of Habitat

- Water Bodies Management
 - Canal netting
 - Line over water



Wildlife Control Measures

Management of Habitat

- Exclusion Techniques
 - Bird spikes
 - Anti-perching devices
 - Decoys



Wildlife Control Measures

Management of Food Source

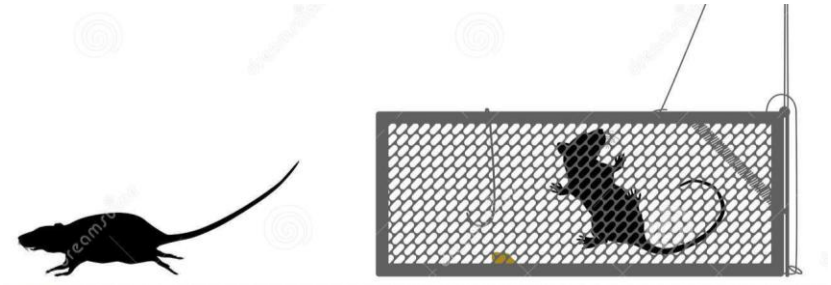
Invertebrates

- Chemical spraying on turf alongside both runways



Rodents

- Rodent bait stations placed along Runways



Wildlife Control Measures

Management of Food Source

- Enforcement on consumption of food and feeding in airside



Wildlife Control Measures

- Sustainable short term solution

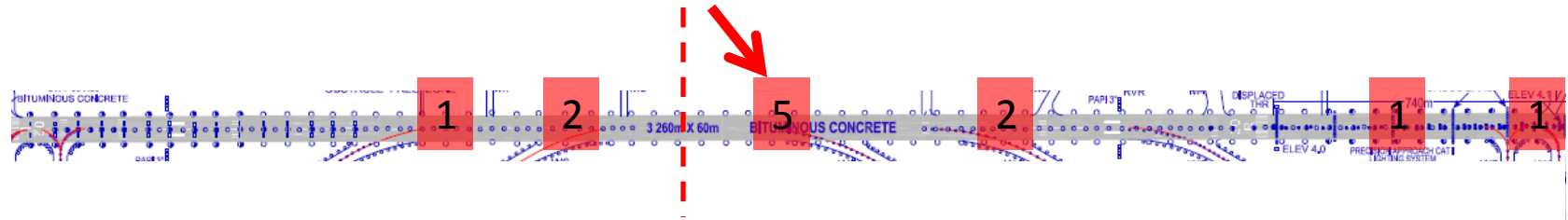
Improving
dispersal
capabilities

Raptors,
Egrets and
small flocking
birds

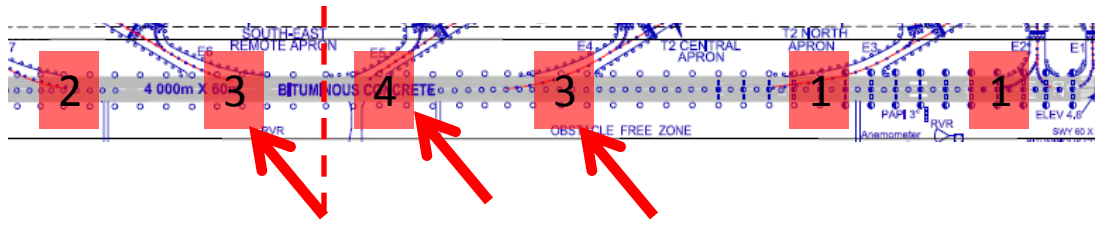


Wildlife Control Measures

Strategic Wildlife Dispersal



- Wildlife patrols conducted during periods of peak wildlife activity
- Conducting patrol and focused dispersal strategically using population, strikes and FOD data



Wildlife Control Measures

Improving Dispersal Capabilities

Wildlife Dispersal Tools

- Aerolaser
 - Dispersal range up to 2km at dawn and dusk
- Long Range Acoustic Device (LRAD)
 - Dispersal range up to 500m



Wildlife Control Measures

- Mid-term solution to bring down numbers moderately if successful
- Challenges to trap at the airside

Trapping
and removal

Raptors,
Egrets and
small flocking
birds



Wildlife Control Measures

Trapping and Removal

- Tried several trapping methods
 - Bal Chatri trap
 - Net gun
 - Bownet trap
 - Leg snares
- Targeted small birds (eg. mynas) and raptors

Wildlife Control Measures


Trapping and Removal

- Nest checks around aerodrome during nesting season (Mar – Aug)



Wildlife Control Measures

Culling
and
removal



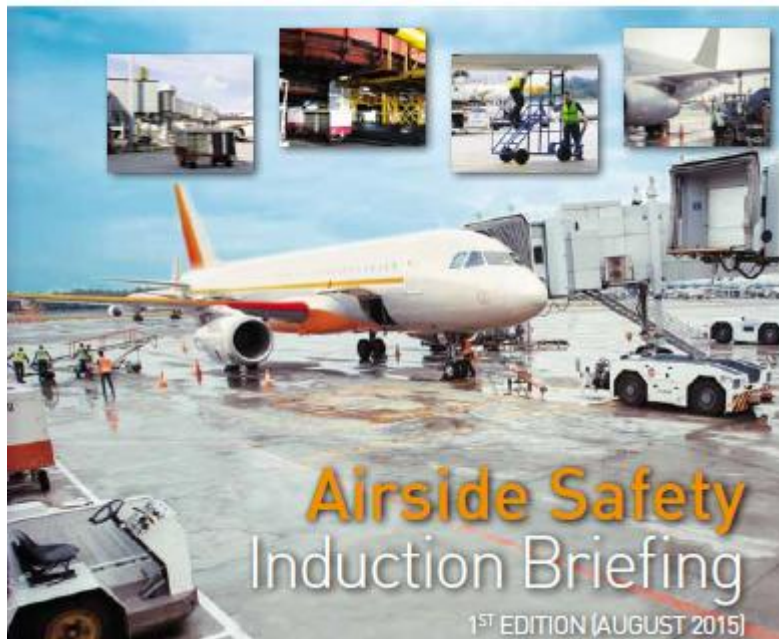
Raptors,
Egrets and
small flocking
birds

- Culling brings down numbers immediately and serves as a warning for other birds
- Is not a permanent solution but able to quickly reduce hazard risk
- Culling yet to commence. Still under consideration as one of the many tools to use in wildlife management



Education Programme and Increasing Awareness

- Airside Safety Induction Briefing
- Wildlife Hazard Awareness Talks
- Outreach to GHAs and contractors
- Changi Airport Wildlife Management Committee





Staff Training



- Training to improve staff knowledge and skills on wildlife behaviour, dispersal and handling

Thank You