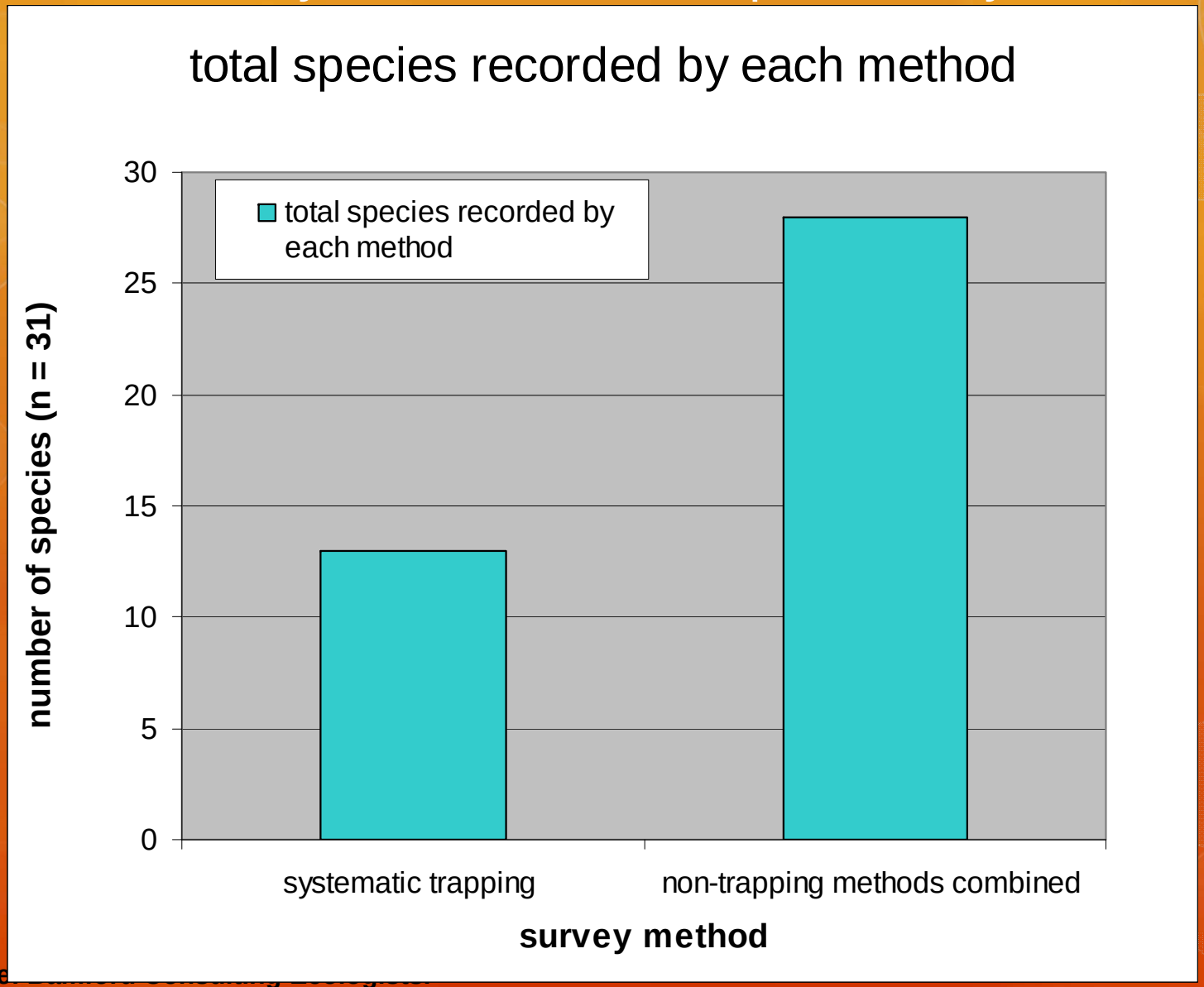
Active Searching:
As a fauna survey technique.

Active searching: searching or foraging by hand for fauna in places where animals are likely to be sheltering.

- **for reptiles, frogs, invertebrates (consig / SREs)**
- **applied to a diverse range of habitats**
- **often highly selective sampling of potential shelter sites**
- **requires some knowledge of fauna ecology**
- **weather dependant due to fauna behaviour**
- **can be both opportunistic & systematic**
- **can be destructive (implications for approaches used)**
- **physical (OHS)**

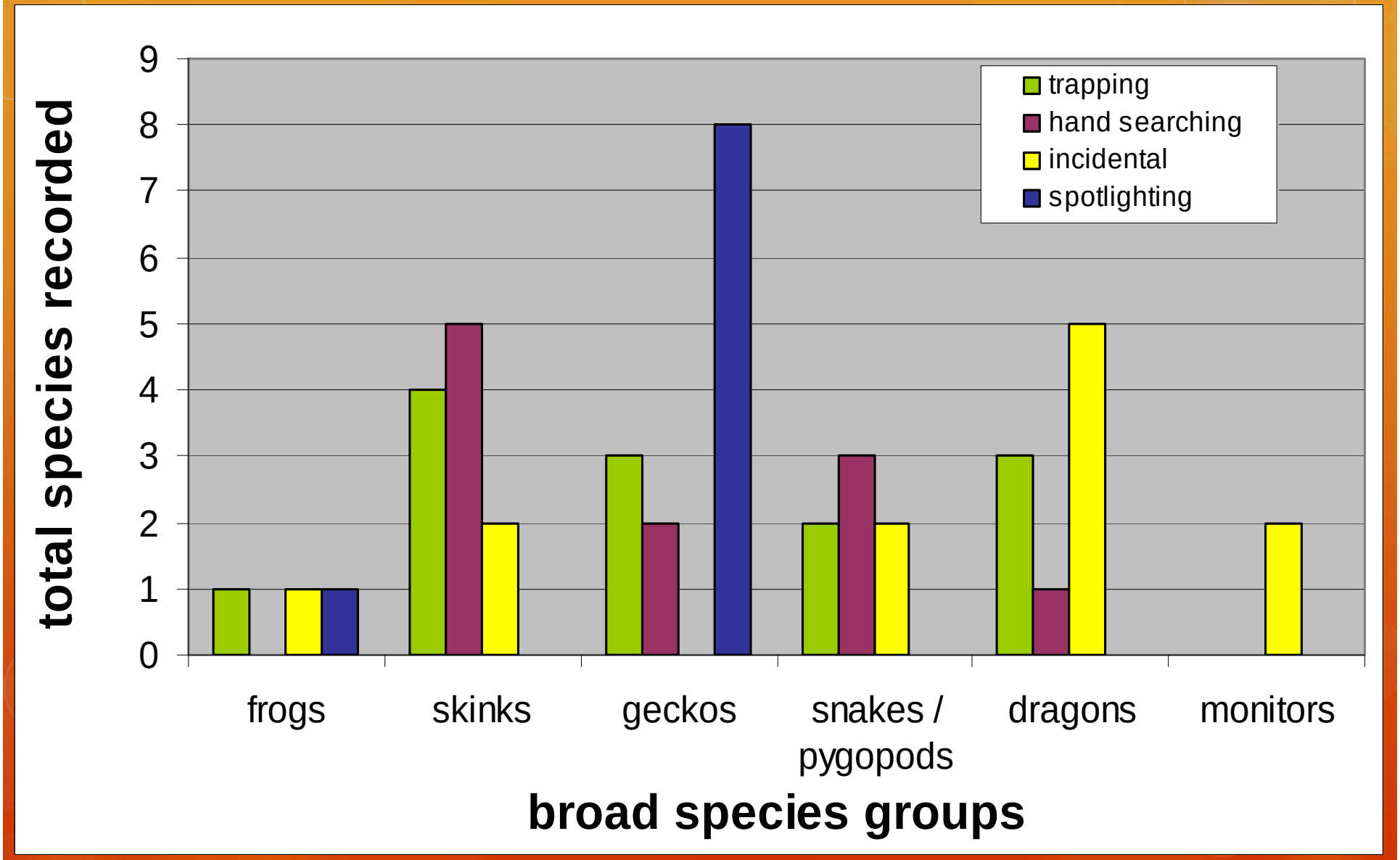
A Level 2 survey in the Goldfields

Survey methods are complementary



Source: [illegible]
Unpublished survey data.

Types of species found by hand searching



Source: Bamford Consulting Ecologists. Unpublished survey data.

Types of species found by hand searching

Fossorial snakes (*Simoselaps*, *Neelaps* etc)

Fossorial skinks (*Lerista* species)

Legless lizards (*Delma* species)

Types of habitats suitable for hand searching

- most bio-regions / veg comms
- sandy/loams ideal habitats (fossorial/burrowing)
- success is proportional to reptile diversity and number / quality of potential search sites
- disturbed habitats can be highly productive (track edges, ruins)

Hand searching – can be destructive

- Non renewable vs renewable shelters (eg leaf litter vs rocky outcrop)
- Habitat specialist fauna
- Pathogens (dieback)
- Licence / conditions

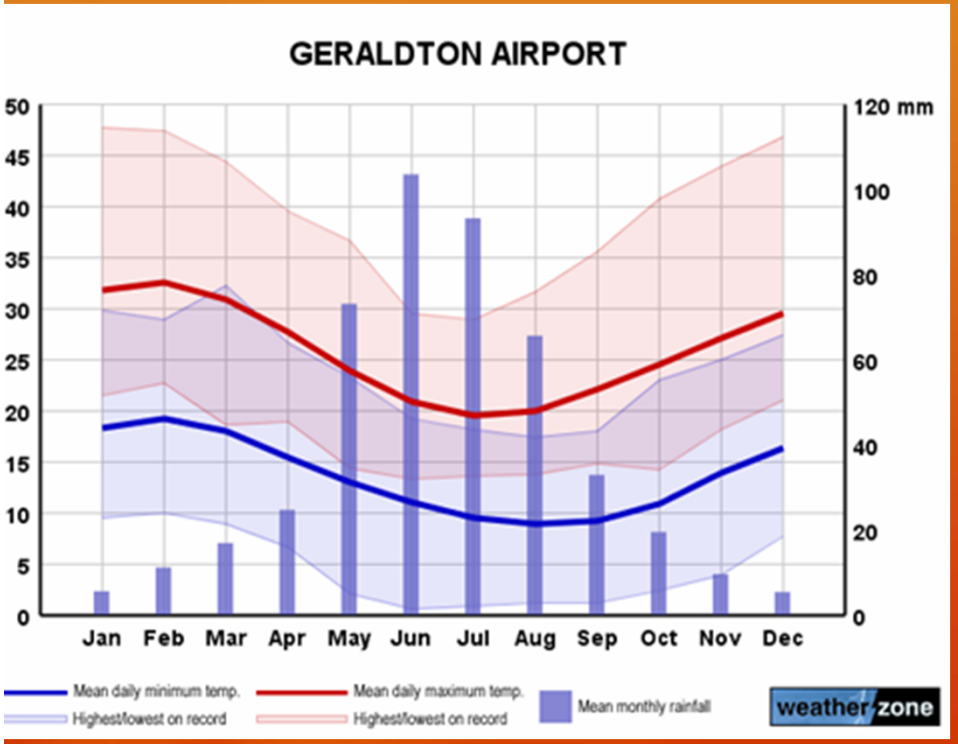
Highly productive sites for hand searching include mine or pastoral ruins

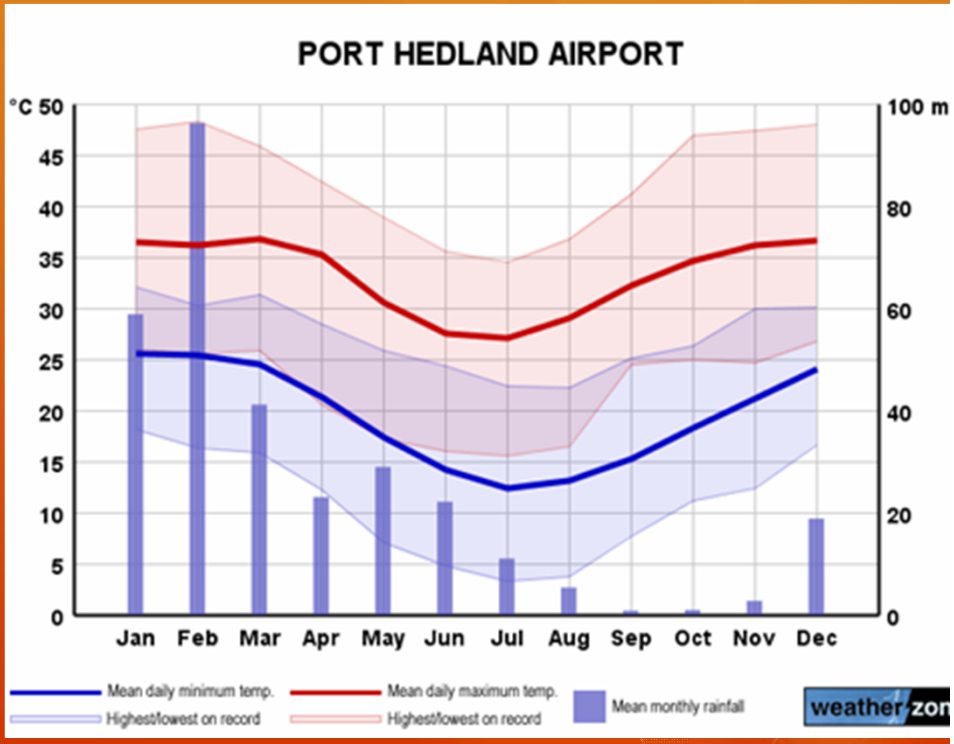
Selectivity of sampling

- **requires some knowledge of species behaviour / requirement / responses to environment**
- **therefore this technique is often highly selective, non-random, and aimed at maximising success by targeting the most likely sites.**

Success highest in cool weather

- seasonal behaviour of exothermic fauna (summer-winter)
- seasonally complementary to trapping (often targets inactive species)
- opportunity for winter sampling





Source: http://www.farmonlineweather.com.au/climate/station

Sampling - opportunistic and systematic

- **Opportunistic hand searching for baseline fauna surveys**
- **Systematic approaches to target species (E.g. consig spp) to maximise success, mee guidelines, and demonstrate adequate survey coverage**

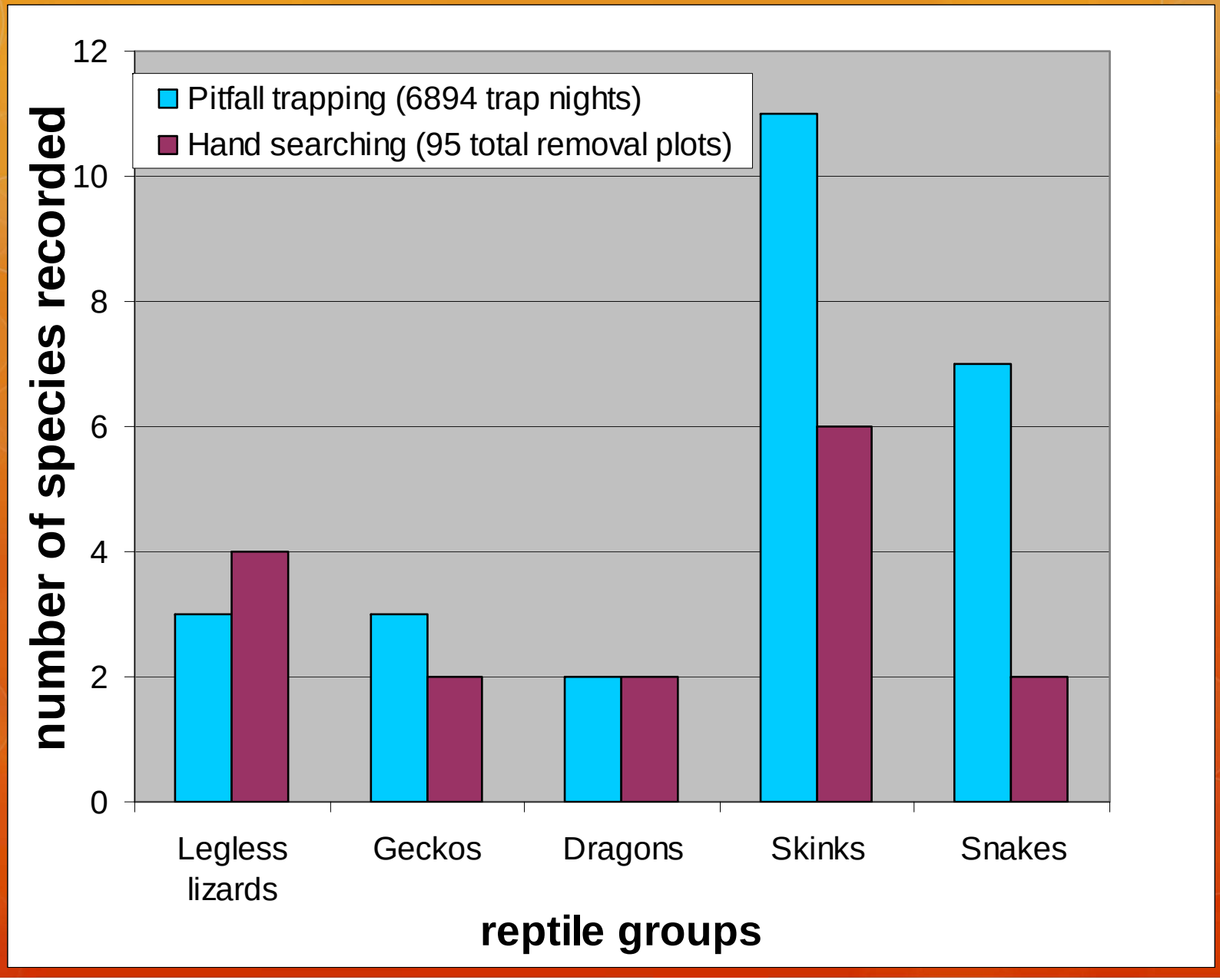
Systematic searching example: Comparison of species abundance. Pitfall trapping vs hand searching in Kwongan Heath

Species	Pit-fall trapping percentage captures	Searching (total removal) percentage captures
Spiny-tailed Gecko (*Strophurus spinigerus*)	2.6% (n=39)	12% (n=10)
Bearded Dragon (*Pogona minor*)	12.9% (n=193)	1.2% (n=1)
Heath Dragon (*Ctenophorus adelaidensis*)	38.2% (n=570)	8.4% (n=7)
Striped Skink (*Ctenotus fallens*)	23.4% (n=350)	4.8% (n=4)
Worm Skink (*Lerista praepedita*)	2.9% (n=43)	24.1% (n=20)
Pale-flecked Skink (*Morethia obscura*)	8.4% (n=125)	21.7% (n=18)
Source: Bamford and Calver (2015)	n=1464 animals trapped. Trap nights=6894. Trap dates 1990-2004	n=83 animals found. Number of 5x5 metre plots=95. Sample dates 1995-1997

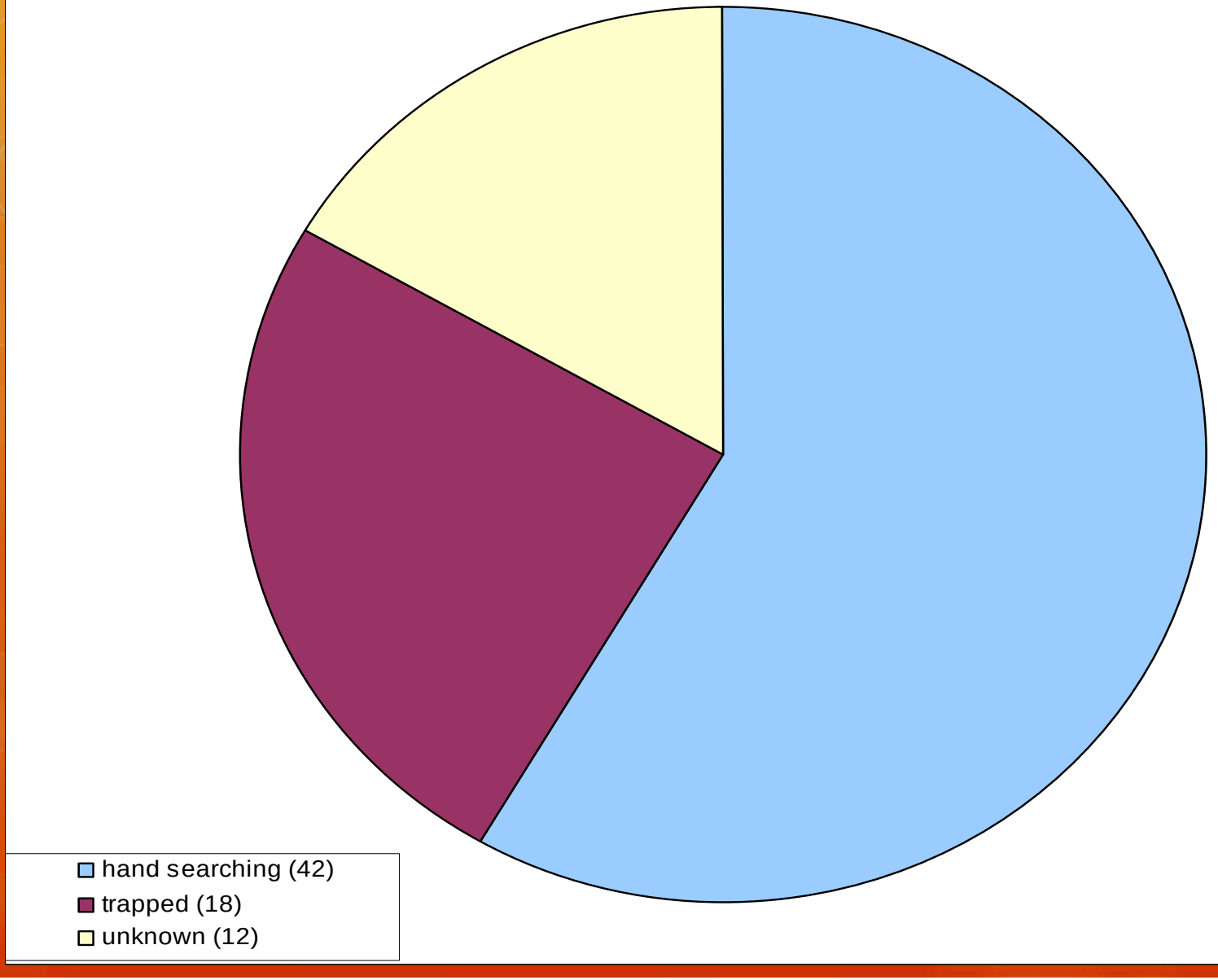
Heath Dragon
(*Ctenophorus adelaidensis*)
Pitfall trapped = 38%
Searching = 8.4%

Worm Skink
(*Lerista praepedita*)
Pitfall trapped = 2.9%
Searching =24%

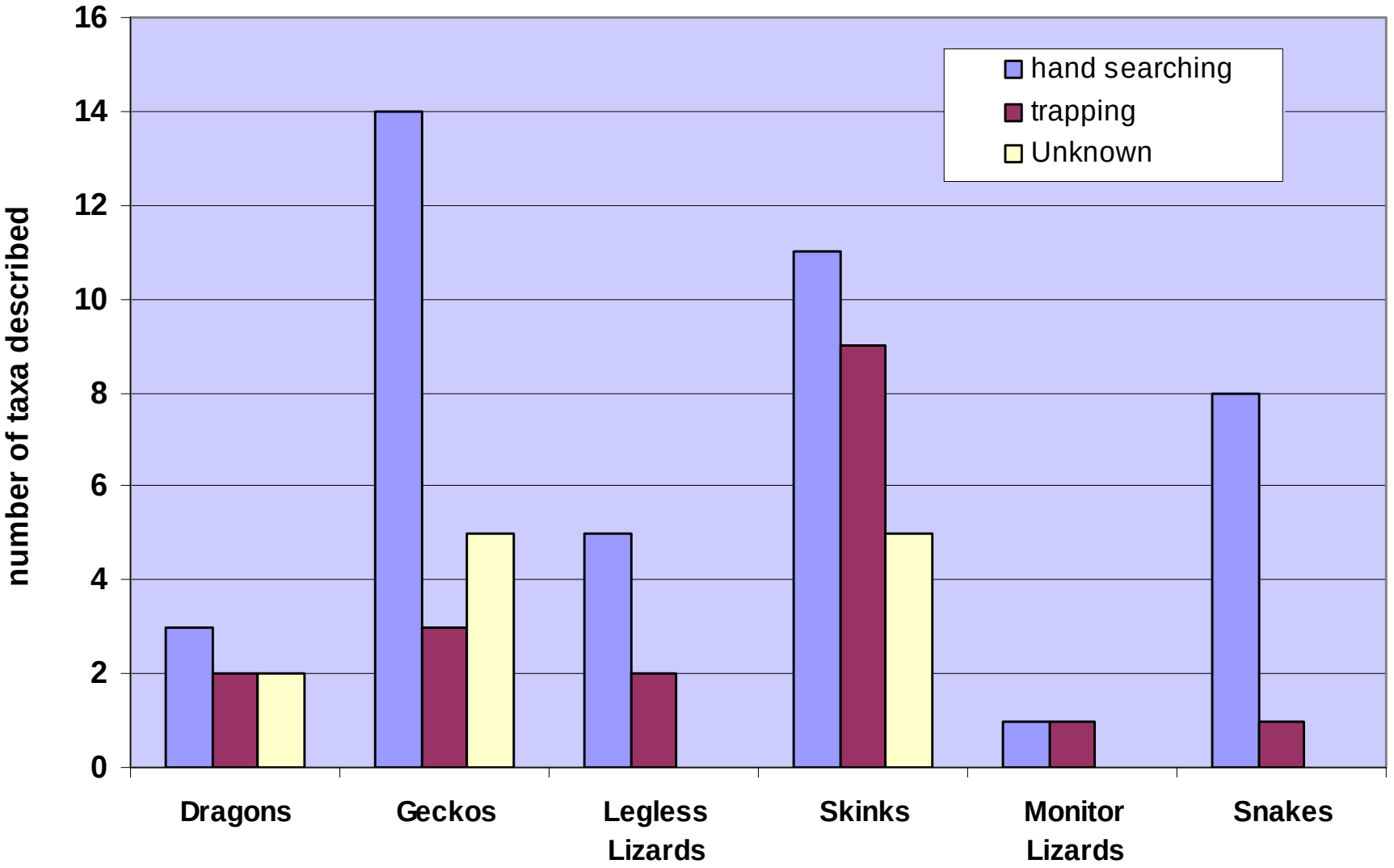
Extended trapping programs get results



Method of discovery for WA reptiles described from 1993 to 2016



Method of discovery of reptile groups (1993 to 2016)



How to incorporate active hand searching into fauna surveys?

- Complementary to other methods
- Useful for 1 or 2 phase surveys (time / budget constraints)
- Opportunistic nature of hand searching (an integral method)
- Planning - cool weather site visits (integrate into recce, target surveys)
- Local knowledge (sites of particular potential)

In summary, active searching:

- works for a range of reptile groups, especially fossorial species
- all seasons but particularly during winter and early spring (cool surface substrates)
- can be better than trapping for reptiles to confirm spp presence (short-term survey)
- can give species relative abundance and density estimates if done systematically
- searching can be destructive (approaches need to be considered)
- requires skill (knowledge of species ecology)
- lots of potential to utilise and develop active searching into fauna surveys
- integral component of surveys

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