EPSRC
Pioneering research
and skills

UNIVERSITY OF
Southampton

Institute for Complex Systems Simulation

ICSS 〔 〕

Understanding the Role of Recruitment in Robot Foraging

Lenka Pitonakova, Richard Crowder & Seth Bullock

Nature Inspired

Solitary Foraging

VS

Recruitment to food

What kind of environments make each type suitable for robot foraging?

Is simple recruitment sufficient to collectively decide which resource is most profitable?

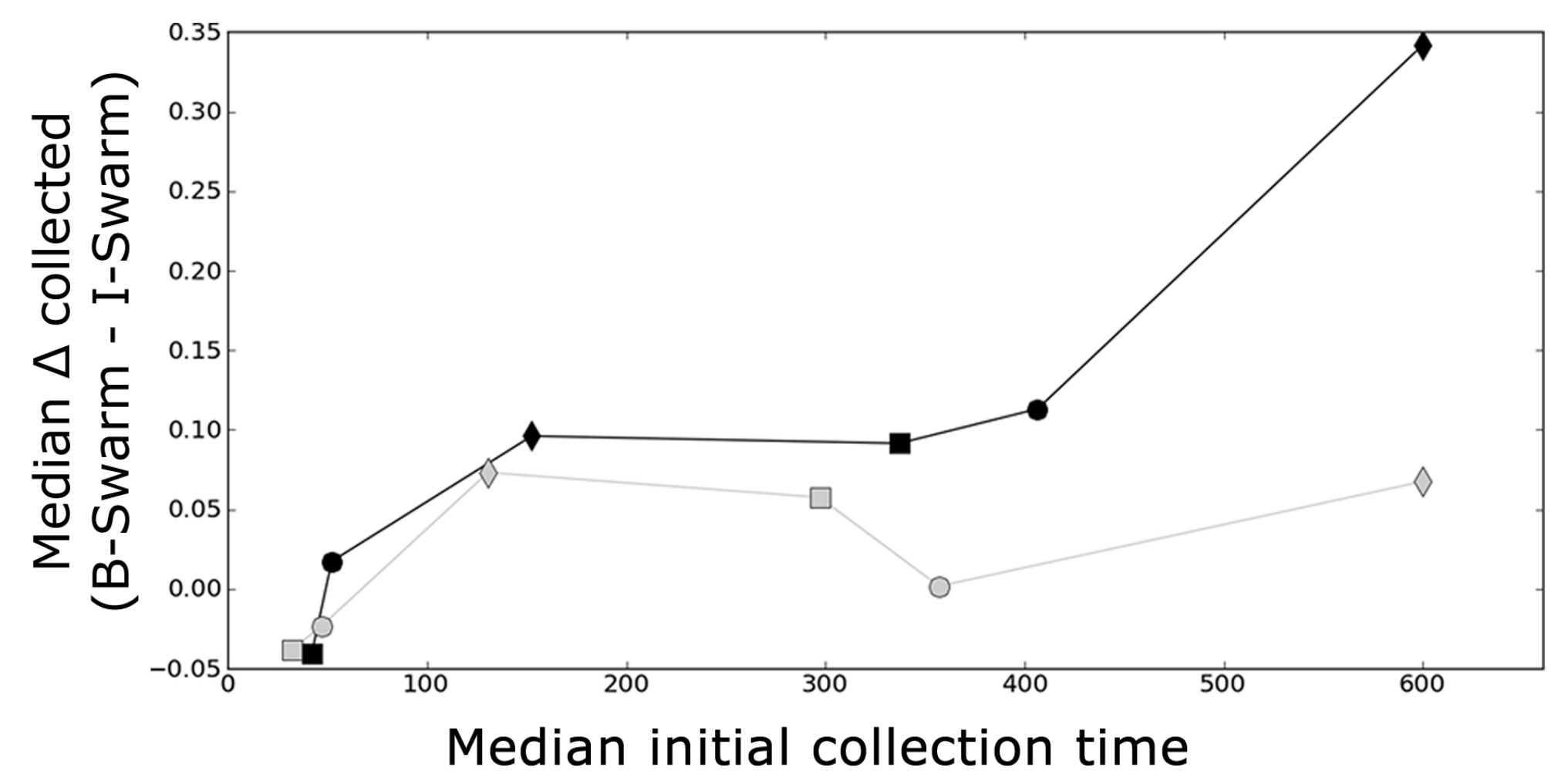## Robot simulation

I-Swarm
- Find resources by random walk
- Forage from them repeatedly if sufficient energetic return

B-Swarm
- Additionally, recruit others to resources of sufficient quality
- Return to the base if foraging was unsuccesful to get information from others

When to recruit?

1. Resources are hard to find

2. Parallel traffic jam solving

When to forage solitarily?

1. Information is unreliable
2. Resources are abundant
3. Robot communication costs more than it can return

Can B-Swarm exploit profitable resources better?

No ➡ more bee-like behaviour needed (scouting, dance floor)