



Credit: Connor Margetts



eDNA biomonitoring for the Pilbara olive python

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The Pilbara olive python (*Liasis olivaceus barroni*)

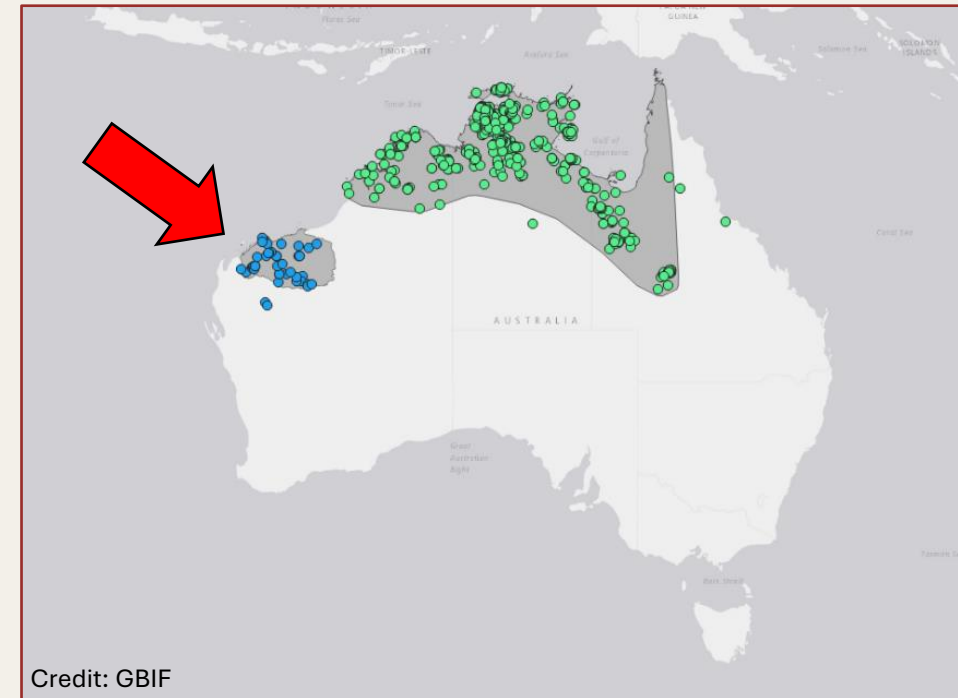


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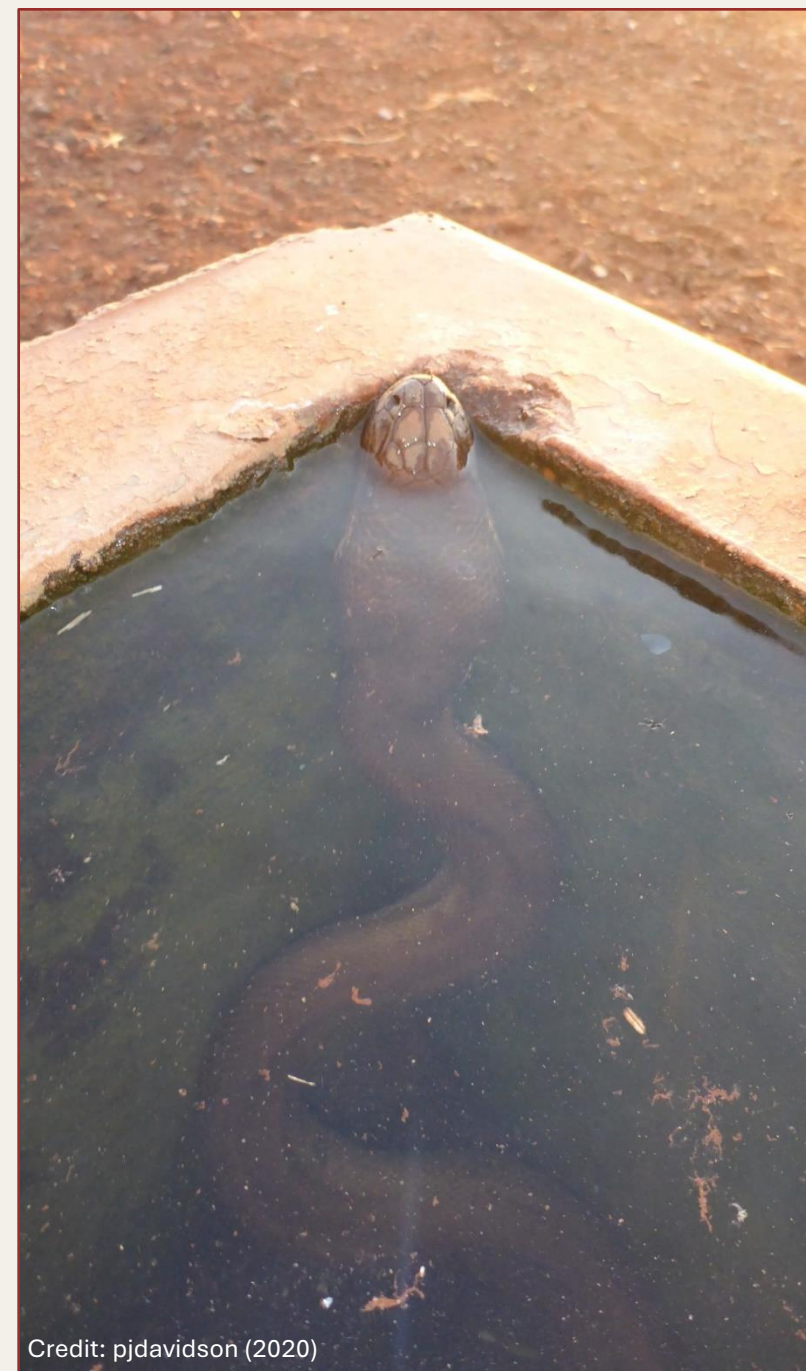
Olive python subspecies – Pilbara bioregion

- ❖ Intensive development in areas
- ❖ Vulnerable ssp., yet poorly studied
- ❖ Elusive; cryptic life history

How to survey?



Credit: GBIF



Credit: pj davidson (2020)



Credit: ABC (2005)



Credit: Jordan Vos (2016)

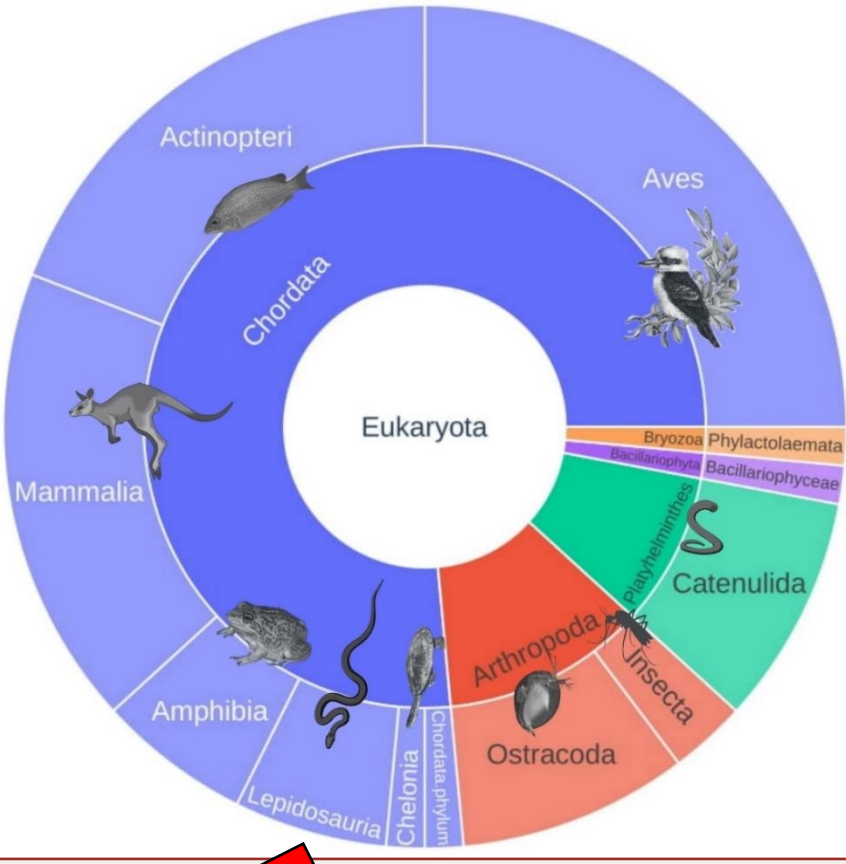
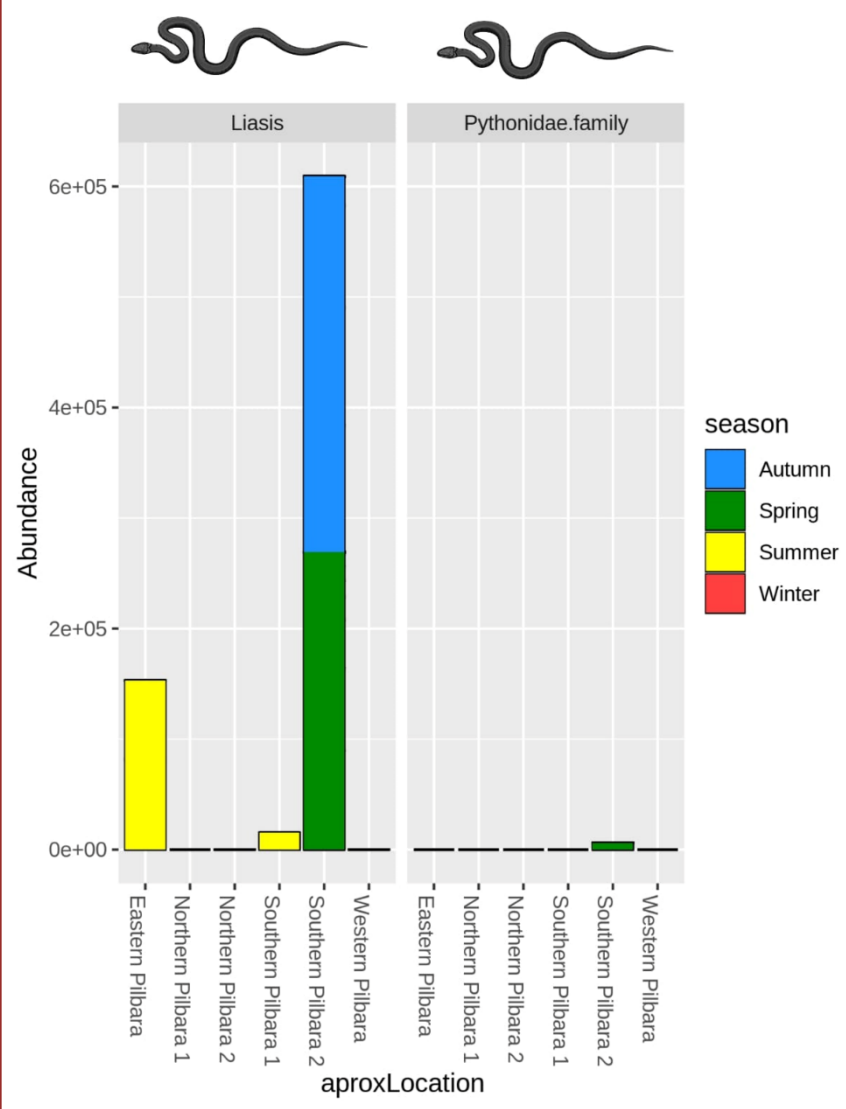
eDNA metabarcoding for olive pythons

Can we pick them up?

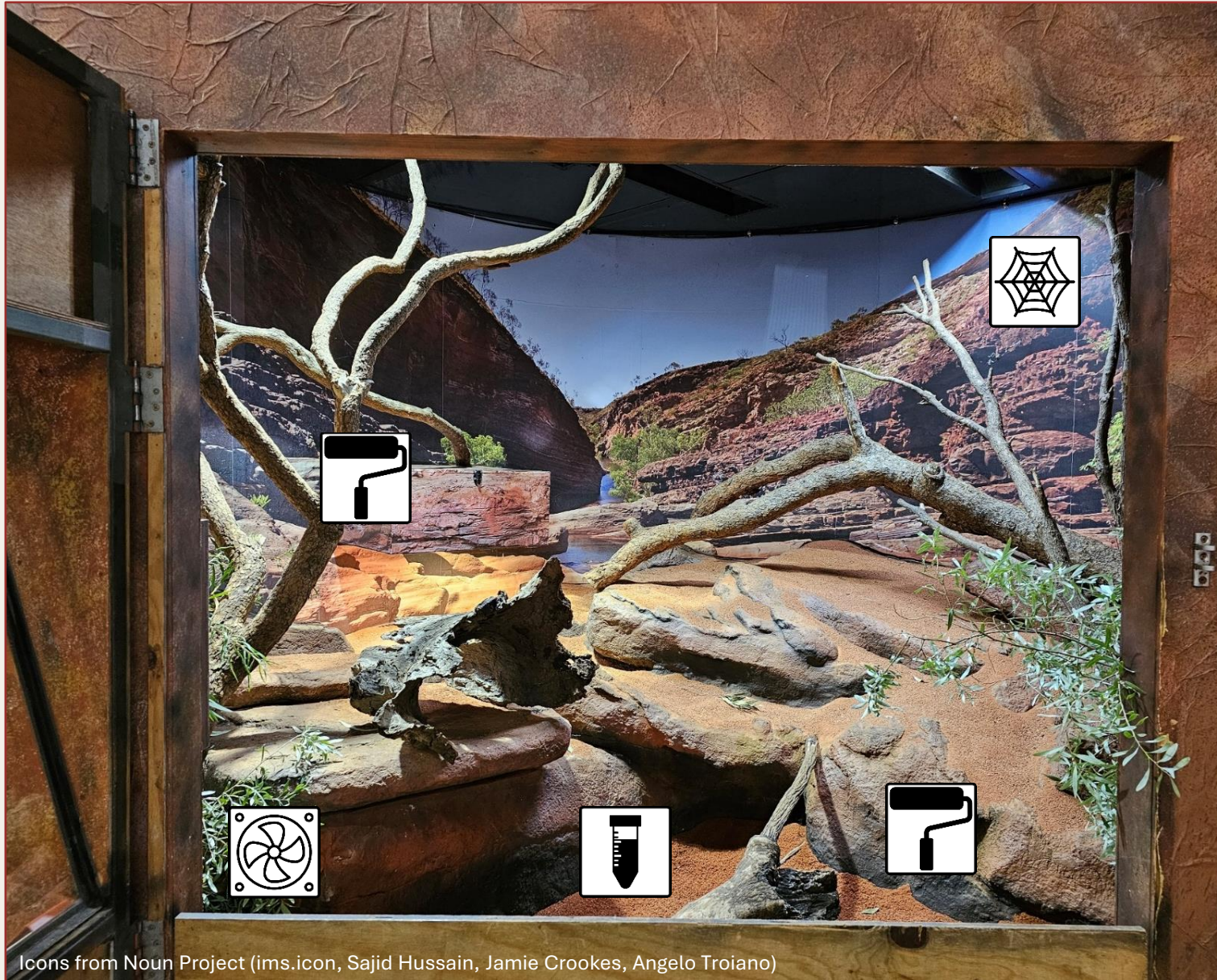
- ❖ Universal 16S assay
- ❖ 40 rockpools across the Pilbara

However...

- ❖ qPCR bias
- ❖ Reptile shedding hypothesis



Substrates - sampling



Perth Zoo:

❖ Olive python, Burmese Python

Caversham wildlife park:

❖ 2x Olive python

Substrates:

❖ Soil

❖ Spiderwebs

❖ Air

❖ Tree surfaces

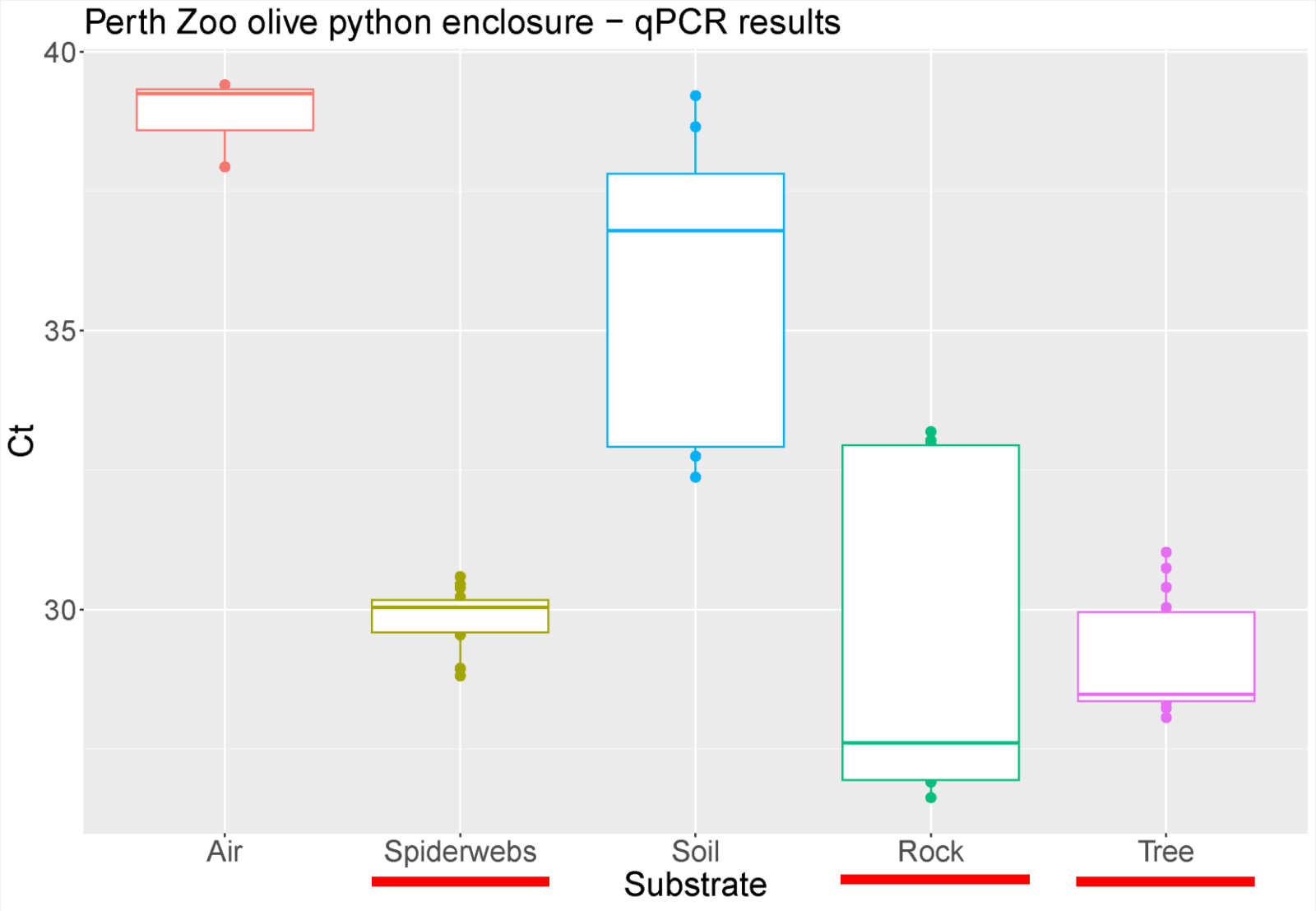
❖ Rock surfaces

Icons from Noun Project (ims.icon, Sajid Hussain, Jamie Crookes, Angelo Troiano)

CAVERSHAM WILDLIFE PARK
PERTH, WESTERN AUSTRALIA


Perth Zoo
SAVING WILDLIFE

Substrates - qPCR



Which work best?

- ❖ Spiderwebs
- ❖ Surfaces

Applicability in the field

- ❖ Rock ledges
- ❖ Trees
- ❖ Spiderwebs around caves

eGenomics

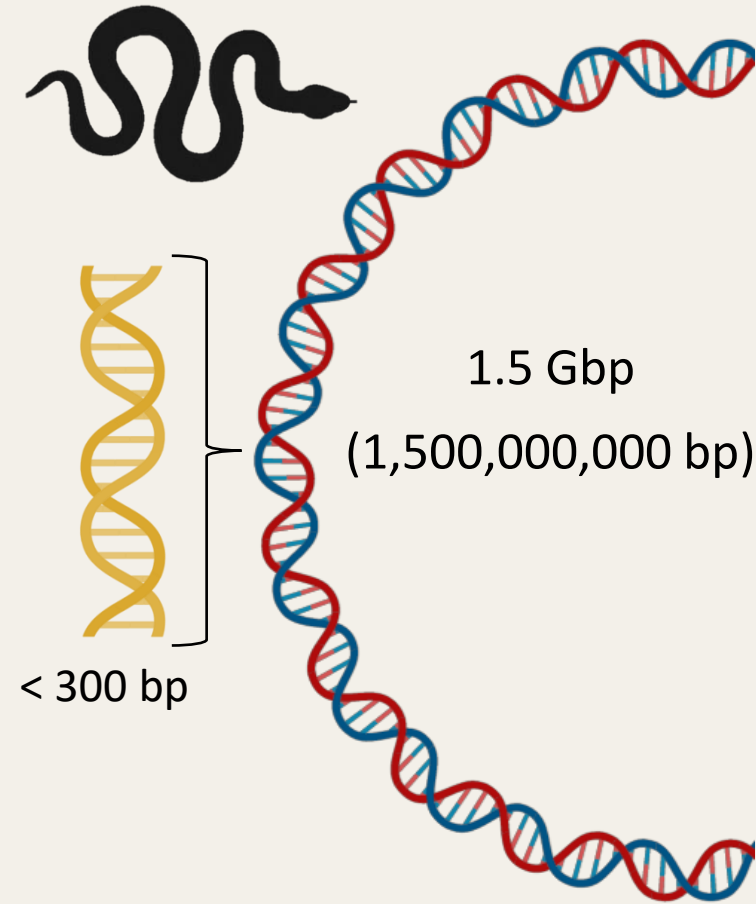
Next steps

Improved sensitivity?

❖ Beyond DNA fragments

Population genetics

❖ Genome-wide trace of python DNA
in environmental samples



**Only 0.00002% of genome
information is being utilized.**

Reference genome assembly



Assembly statistics

Genome size	1.5 Gb
Number of chromosomes	17
GC %	40
Genome coverage	33.5x
Scaffold N50	203.7 Mb
BUSCO %	95.38

Development of olive python genomes

- ❖ *L. o. barroni* genome complete
- ❖ Genome development for *L. o. olivaceus* is underway

Take-home message



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1. Targeted sampling rock pools
2. Subspecies-specific qPCR assay
3. Promise for alternative substrates
4. Exploring the ability of obtaining genome-wide DNA from these substrates

