The key to the queendom: driver ants as keystone species across African rainforests

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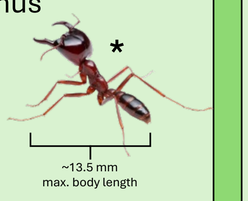
WHAT ARE DRIVER ANTS?

- Army ants that raid on the forest floor
- *Dorylus (Anomma)* subgenus
- Predatory and nomadic
- Endemic to Africa
- Highly conspicuous
- Poorly studied
- Very Cool
- Has a word in almost all sub-Saharan African languages: *Siafu* (Swahili), *Ng'aragu* (Kikuyu), *Matatara* (Hausa), *Nsanga* (Lingala), Zurkw (Fang)



Actual size!

WHAT DO WE KNOW ABOUT DRIVER ANTS?

- Some of the largest animal colonies on Earth
- Up to 20 million individuals
- Weigh an estimated ~185kg

- High colony density, approx. 25 colonies per km^2
- Very commonly seen in rainforests

- Raids are **enormous** ecological phenomena
- Up to 25m wide and 180m from the nest

- Little known of the ecology, mutualists, movement, parasites, diet, or effect of raids on wider community

ARE DRIVER ANTS KEYSTONE SPECIES IN AFRICAN RAINFORESTS?

1. How do driver ant raids affect arthropod community diversity and composition on the forest floor?

a) Does community composition and diversity shift and, if so, how?
b) How do communities recover in the days after a raid?
c) Do raids enhance beta diversity on the forest floor?

2. What are the primary prey groups of driver ants?

a) Which prey groups are most commonly consumed by driver ants?
b) Is predation frequency dependent on local availability of food?
c) Are there dietary differences between *D. wilverthi* and *D. sjostedti*?

3. Which species depend on driver ants in terms of mutualists, parasites, and commensalists?

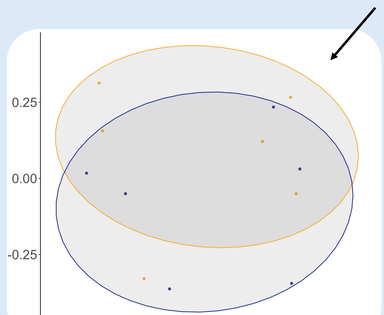
a) Identifying species associated to, or dependent on, driver ants
b) How do associates locate and follow colonies, given the landscape-scale movement patterns of driver ants?
c) Are associate assemblages affected by forest quality?

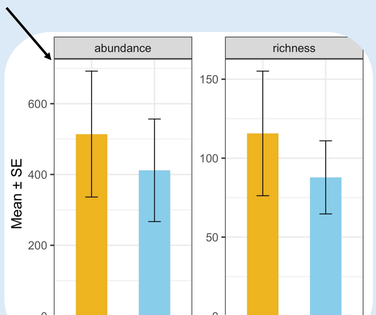
PRELIMINARY RESULTS

SIGNS OF COMPOSITIONAL AND DIVERSITY CHANGES AFTER DRIVER ANT RAIDS

- Preliminary – not yet statistically reliable
- Paired design; **n = 6**
- 12 samples processed (of 98!!)
- 5,554 individuals in 835 morphospecies

ORANGE = CONTROL; BLUE = RAID

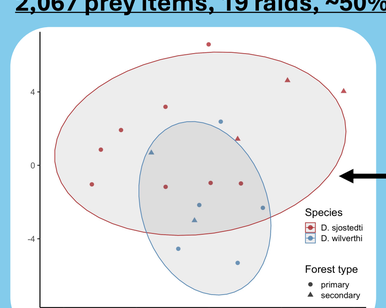




DRIVER ANTS CONSUME A BROAD RANGE OF TAXA IN AFRICAN RAINFORESTS

Driver ants mainly consume:
- Lepidoptera
- Cockroaches
- Spiders
- Other ants

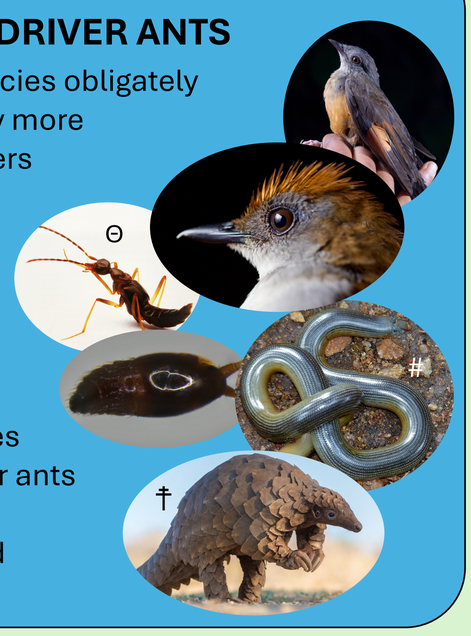
Results are from:
- **2,067 prey items, 19 raids, ~50% of samples**



Tentative significant differences in diet composition between forest quality and driver ant species

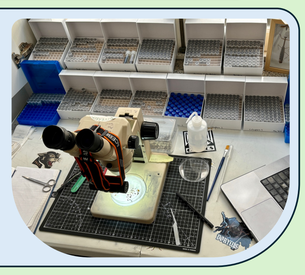
DOZENS OF SPECIES ARE DEPENDENT ON DRIVER ANTS

- At least 4 bird species obligately follow raids, many more facultative followers
- Numerous invertebrates collected in the nest or column
- Many other species interact with driver ants (e.g., pangolin, chimpanzee, blind snakes)



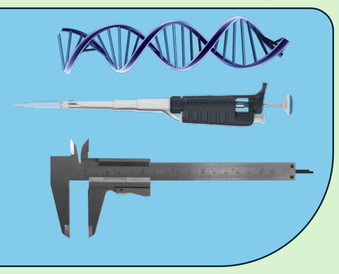
NEXT STEPS

1. Continue labwork
2. Morphometric, photographic, and barcoding work for all morphospecies



NEXT STEPS

1. Barcode all prey items
2. Measure and weigh all prey
3. Work on biomechanics of prey transport



NEXT STEPS

1. Continue fieldwork in Equatorial Guinea
2. Continue literature search
3. Explore olfaction of driver ants by dependents
4. Identify specimens

Important references:
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INTERESTED IN COLLABORATING OR JOINING THE DREAM TEAM?
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