

A METABARCODING APPROACH TO ACCELERATED TAXONOMIC DISCOVERY AND ENVIRONMENTAL MONITORING USING INSECTS

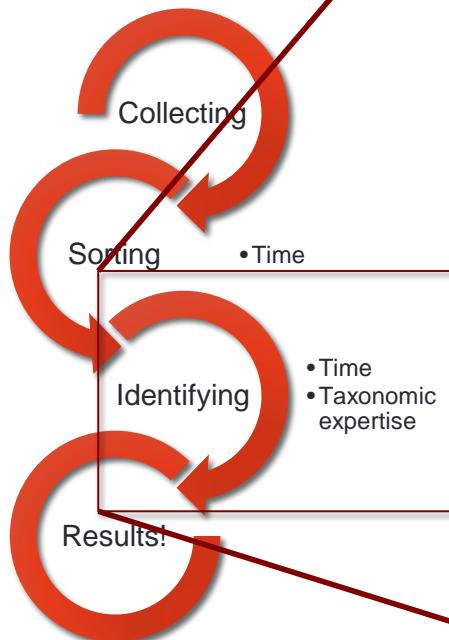
Daniel Marquina

Supervisor: Fredrik Ronquist

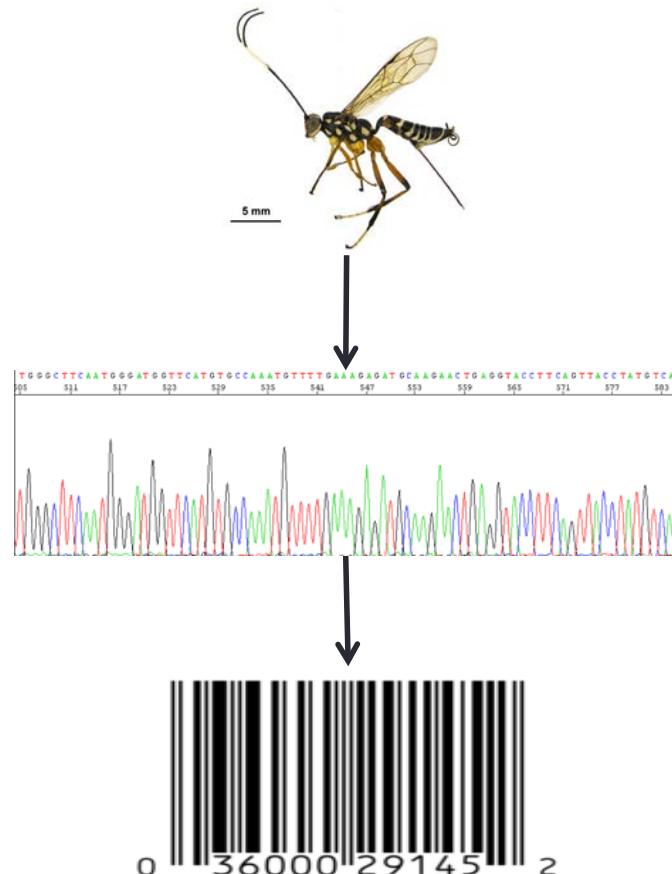
Department of Bioinformatics and Genetics (BIO)
Naturhistoriska riksmuseet (Stockholm, Sweden)

BACKGROUND

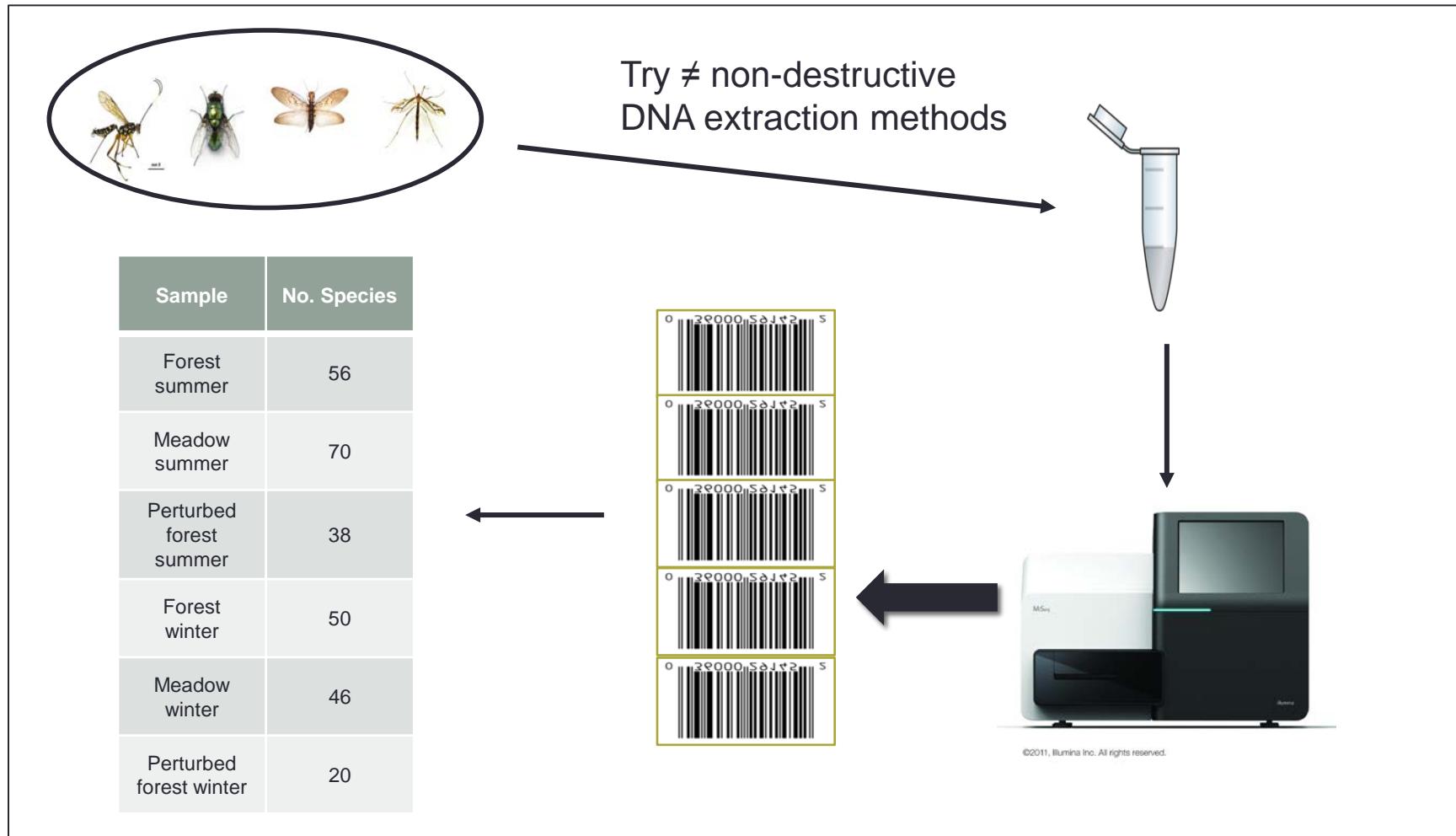
Traditional Workflow



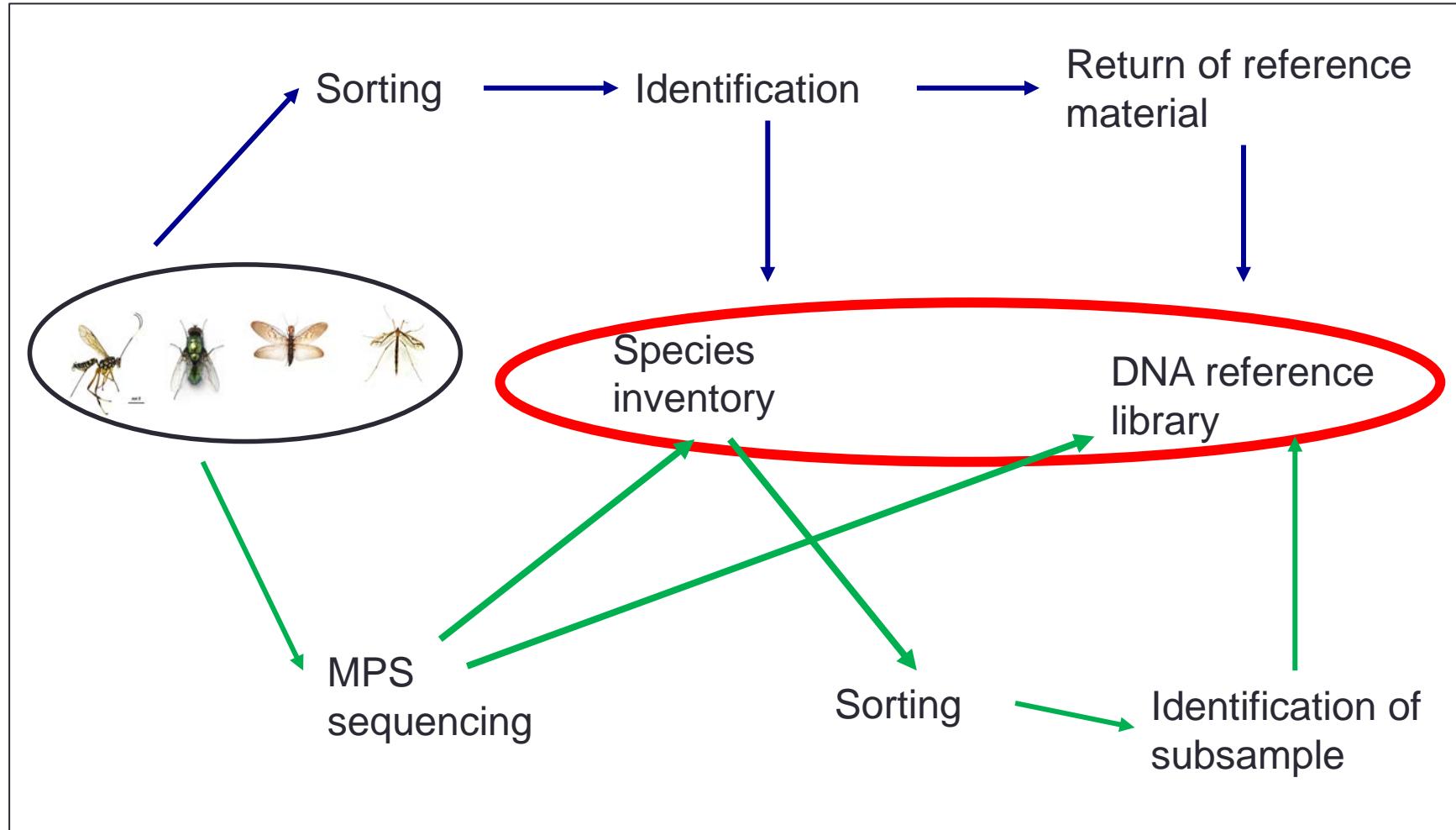
Traditional workflow + Barcoding



APPROACH



APPROACH



OBJECTIVES

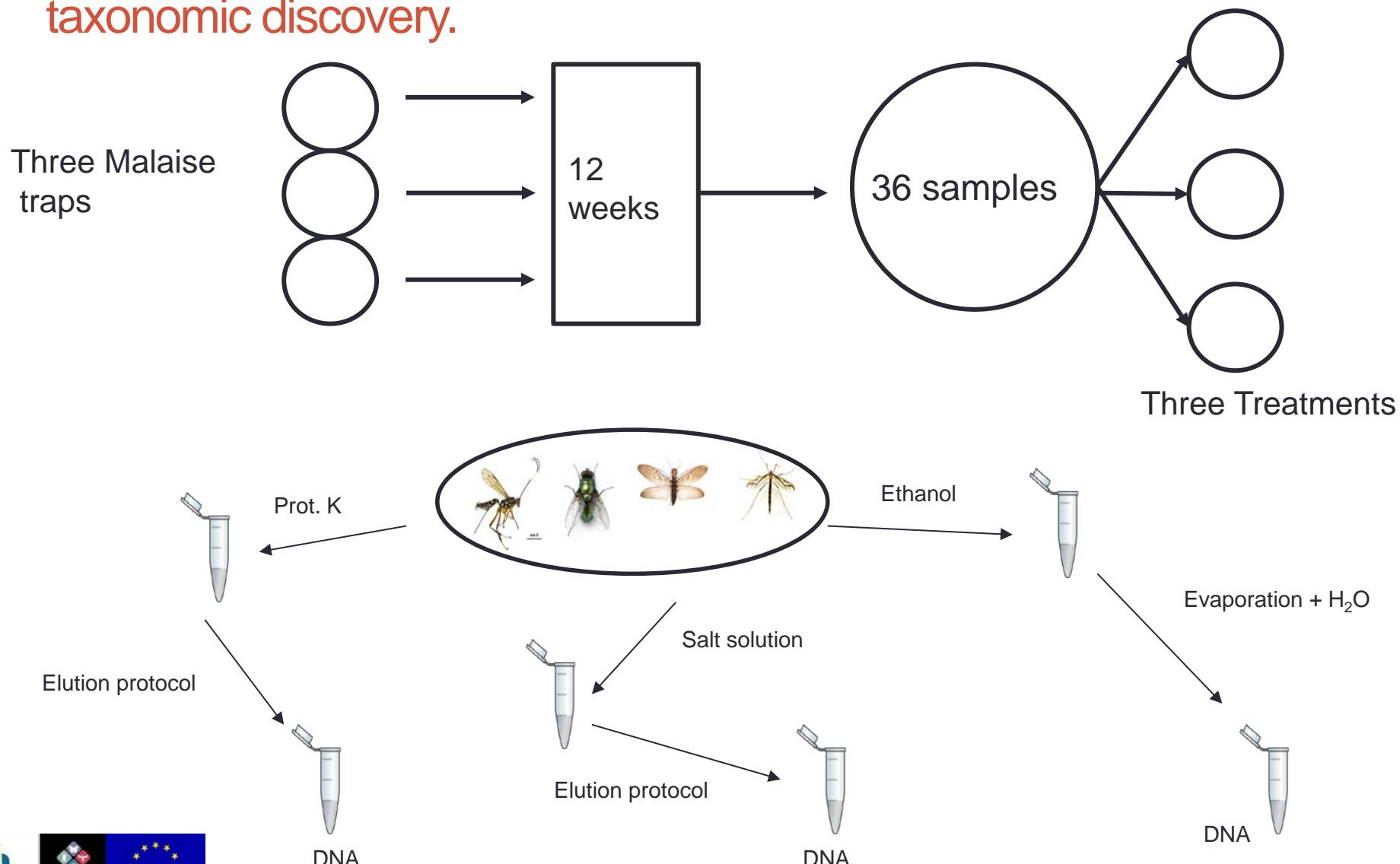
1. Improve current methodology for amplicon-based protocols.
 - Primer improvement → Marker evaluation
2. Tune up methodology for optimizing metabarcoding results with specimen-preserving manipulation for accelerating taxonomic discovery.
 - Extraction methods
3. Application to real monitoring/discovering project.



1. Improve current methodology for amplicon-based protocols.

Marker	Primer pair (name)	Primer pair (sequence)	Average amplicon size	Coverage (Bc)	Taxonomic resolution (Bs)	Total taxonomic resolution (Bc*Bs)
12S	Hex12F1-Hex12R1	HYTACTWTGTTACGACTT HTAGRATTAGATACYCTA	396	0,81	0,72	0,58
	Hex12F2-Hex12R2	ACTWTGTTACGACTTDYT AGGATTAGATACCCTDBT				
16S	Chiar16SF-Chiar16SR	TARTYCAACATGRGGTC CYGTRCDAAGGTAGCATA	348	0,93	0,76	0,71
	Ins16S_9R(_R_)-Hex16R2	GCTGTTATCCCYDARGTA GTRCDAAGGTAGCATART				
COI	HexCOIF1-HexCOIF2	HATAATTYYTTYATAGT AARAATCARAATAARTGT	485	0,6	0,89	0,53
	HexCOIF2-HexCOIR2	AATAAYATAAGHTTYTGA AATTARAATRTADACTTC				
COII	HexCOX2F2-HexCOX2R2	GATAYTGAAGHTAYGAAT CCACARATTCDGARCAT	255	0,52	0,86	0,45
COIII	HexCOX3F1-HexCOX3R1	GGDATAATYYTATTTATT DACAARTGTCARTATCA				
CYTB	REVCB2H_MD-HexCYTBR1	DCAAATATCWTTYGAGG RAARTATCATTCDGGTTG	378	0,62	0,86	0,53
	REVCB2H-HexCYTBR2	CAAATATCWTTYGAGGD ARTATCATTCDGGTTGRA				
ND1	HexND1F1-HexND1R1	ATYAAATTATCATAHCGA HCARACSATTCCTTATGA	390	0,03	0,86	0,03
	HexND1F2-HexND1R2	ATAYATYAAHTTATCATA TGATTTGCSGARGGDGA				
ND4	HexND4F2-HexND4R2	GAHGAATAWGCAATTAAW TTTATSTDTTTTGAR	464	0,03	0,95	0,03
ND5	HexND5F2-HexND5R2	ATCYTTWGAATAAAHCC GATTTDAARAARATTATT				

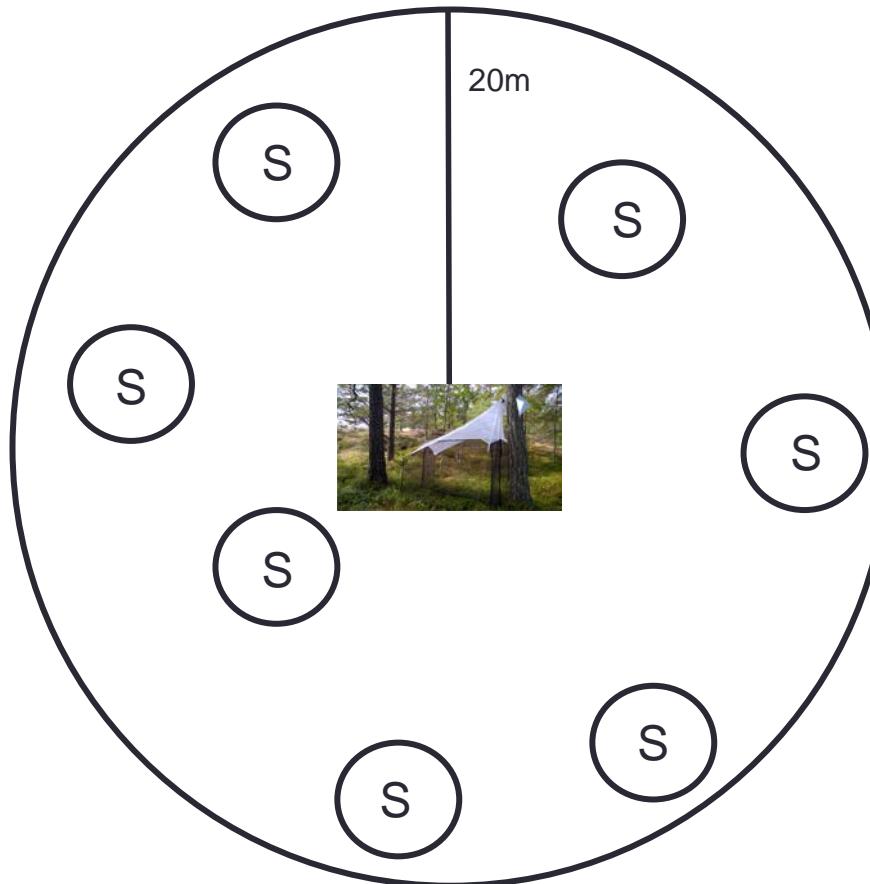
2. Tune up methodology for optimizing metabarcoding results with specimen-preserving manipulation for accelerating taxonomic discovery.



3. Application to real monitoring/discovering project.

3 sites in Nacka
Naturreservat:

- 1 Malaise Trap
- 3 Soil samples
- 4 Time Points across summer



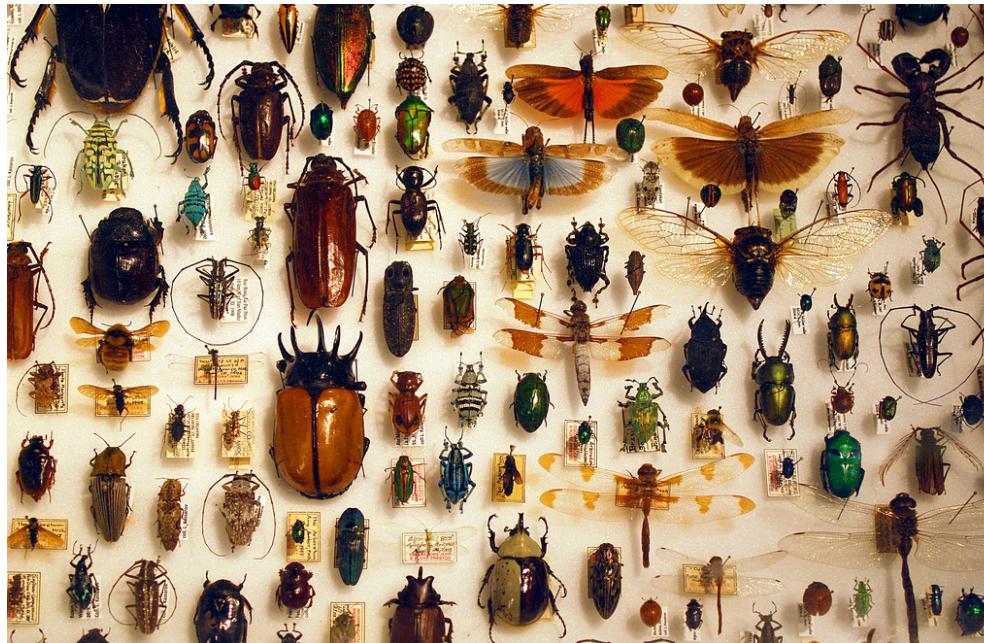
- How does flying insect change along the summer?
- How does flying insect change across habitats?
- Is metabarcoding a good monitoring tool?

THE FUTURE OF METABARCODING

Metabarcoding is one of the most fast-growing fields in number of publications as well as projects and methods development.

- In academia: methods developing, diet, ecology...
- In State agencies: environmental protection and monitoring
- In private companies: environmental consultancy

Thank you for your attention



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