Experimental protocol – The recipe of empirical work

Seminar on data-handling

3.4.2014

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What protocol?

= A recipe for research project, consicely and accurately

- What I am going to do? To find out what? Why? When? Where? And what is needed to do all this?
- Clear idea of your research, for your colleugues and yourself
- What materials are needed?

Purpose

Background & hypothesis:

What questions you are trying to answer?

What hypothesis are you testing?

The background of your work, *briefly*!

Materials

What do I need to accomplish the work?

- Plant / animal material?
- Field work site, lab or greenhouse space, a car?
- Research equipment: petri dishes, measuring tape, gps, sample tubes, labels, a bucket, binoculars, …
- Field assistants?
- Where will I store the samples? How will I label them?



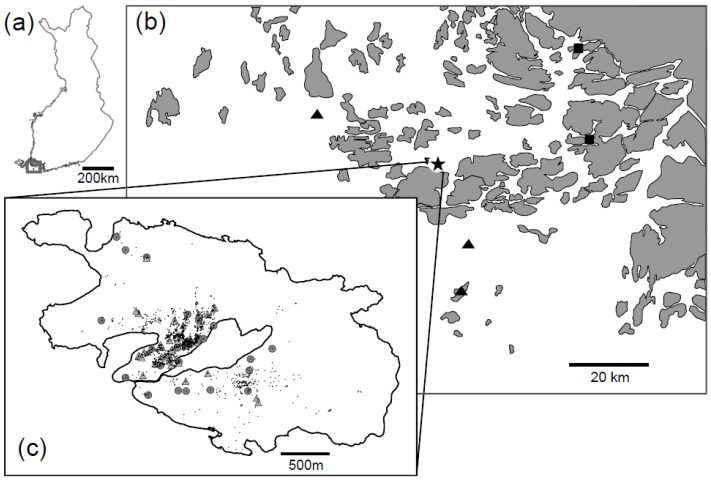

Methods

How will you set up your experiment/field work?

How many treatments will you have? What kinds of controls? How many replicates is enough?

How will you measure the effect you wish to study?

How long will the experiment or study last?



	date	BLOCK1 (2 repl)	BLOCK2 (2 repl)	BLOCK3 (2 repl)	BLOCK4 (2 repl)	BLOCK5 (2 repl)	BLOCK6 (2 repl)
mon	27.5.13	Plant barley (16)					
tue	28.5.13		Plant barley (16)				
wed	29.5.13	Collect predators: 800 Bemb, 35 Pmel, 80 C-7					
thu	30.5.13						
fri	31.5.13						
sat	1.6.13						
sun	2.6.13						
mon	3.6.13	Add aphids					
tue	4.6.13		Add aphids				
wed	5.6.13	Add predators					
thu	6.6.13	work	Add predators	work	work	work	work
fri	7.6.13	Day off	Day off	Day off	Day off	Day off	Day off
sat	8.6.13						
sun	9.6.13	Count aphids	work	work	work	work	work
mon	10.6.13		Count aphids				
tue	11.6.13	Day off	Day off	Day off	Day off	Day off	Day off
wed	12.6.13						
thu	13.6.13	End experiment					
fri	14.6.13		End experiment				
sat	15.6.13						
sun	16.6.13						
mon	17.6.13			Plant barley (16)			
tue	18.6.13				Plant barley (16)		
wed	19.6.13			Collect 650 Bembidion, 112 Pmel, 70 C-7			
thu	20.6.13						
fri	21.6.13						

Data Interpretation

What will be done with the data once it is collected?

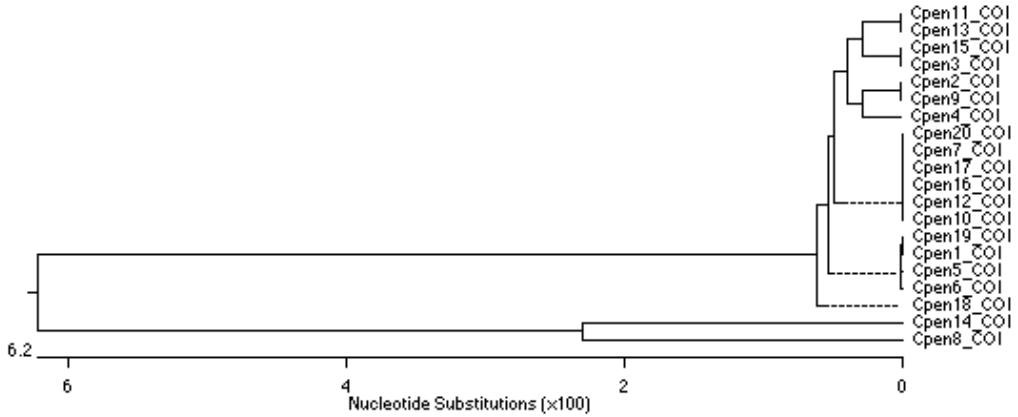
Presenting, organizing and summarizing data

Support for the hypothesis or not?

Results are usually shown in tables and graphs

What kind of statistical analyses?

Tree no	Locality	Coll. Date	Host species	Generation	ID number	Emerged species	sex	Em. Date
751	Wattkast	16.09.2006	Nque	sex	551	Nque	f	02.01.2007
729	Wattkast	10.09.2006	Amit		552	Sympiesis xanthostoma	f	15.01.2007
5000	Nötö	19.09.2006	Phy		553	Sympiesis gordius	f	15.01.2007
654	Wattkast	13.06.2006	Acal	sex	554	Mesopolobus xanthocerus	m	31.12.2006
654	Wattkast	13.06.2006	Acal	sex	555	Mesopolobus xanthocerus	m	31.12.2006
654	Wattkast	13.06.2006	Acal	sex	556	Mesopolobus xanthocerus	m	31.12.2006
654	Wattkast	13.06.2006	Acal	sex	557	Mesopolobus xanthocerus	m	31.12.2006
714	Wattkast	10.09.2006	Ealb		558	Chrysocharis pentheus	f	03.01.2007
726	Wattkast	25.07.2006	Clon		559	Synergus sp.	f	15.01.2007
5000	Nötö	19.09.2006	Phy		560	Sympiesis sericeicornis	f	13.01.2007
654	Wattkast	13.06.2006	Acal	sex	561	Mesopolobus xanthocerus	m	29.12.2006
654	Wattkast	13.06.2006	Acal	sex	562	Mesopolobus xanthocerus	m	29.12.2006
654	Wattkast	13.06.2006	Acal	sex	563	Mesopolobus xanthocerus	m	29.12.2006
654	Wattkast	13.06.2006	Acal	sex	564	Mesopolobus xanthocerus	m	29.12.2006
726	Wattkast	27.07.2006	Clon	asex	565	Synergus	f	03.01.2007
654	Wattkast	13.06.2006	Acal	sex	566	Mesopolobus xanthocerus	m	29.12.2006
654	Wattkast	13.06.2006	Acal	sex	567	Mesopolobus xanthocerus	m	29.12.2006
751	Wattkast	13.06.2006	Acal	sex	568	Mesopolobus xanthocerus	m	31.12.2006
751	Wattkast	13.06.2006	Acal	sex	569	Mesopolobus xanthocerus	m	31.12.2006
751	Wattkast	13.06.2006	Acal	sex	570	Mesopolobus xanthocerus	m	31.12.2006
751	Wattkast	13.06.2006	Acal	sex	571	Mesopolobus xanthocerus	m	31.12.2006
3001	Ekskär	28.09.2006	Clon	asex	572	Clon	f	03.01.2007
888	Wattkast	13.09.2006	Amit		573	Sympiesis xanthostoma	f	15.01.2007



References

Any published works (journals, books, websites)

Practice!

1. Purpose: The purpose of the study, in a context of other studies: background (1-2 sentences!) + hypothesis
2. Materials: what do I measure? where? when?
3. Methods: collecting data? experimental work?
4. Data Interpretation: what kind of data will I get? how to analyze it?
5. (References)