Goal: a Msc.-thesis....
and…….

a good grade!

- or your manuscript accepted
WHEN TO START?

- As early as possible!
- Use your project-description for your Master as a starting point. Use time and energy when preparing the project description – it will pay off in the end when writing your thesis!!
- Do not postpone processing your data! Get into the data-processing and -presentation (figures/tables) as soon as you get some data!
WHAT TO WRITE ABOUT?

- More important to write your thesis as a coherent story than to write about all you have done during the master study.
- Important to be able to remove irrelevant things from your thesis! Many students find this very difficult because they think they do not get 'credit' for all work done during the master study.

TITLE?

- Heading
- As short and as precise as possible!
- Do not use 'A study of...' or 'Observations on.....' etc.
- Remember to use important words, so that other students/researchers will find your study when searching litterature databases.
TITLE – 3 types

• Descriptive ("classical")
• Question
• Statement
QUESTION

Is basal metabolic rate influenced by age in a long-lived seabird, the snow petrel?

Børge Mørø1,*, Frédéric Angelier2, Claus Bech1 and Olivier Chastel2
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STATEMENT

Parent Kittiwakes experience a decrease in cell-mediated immunity as they breed

Jøll Bergzi · Magdalene Lampe · Bernt Rønning · Jörg Welcker · Claus Bech
"Catchy" titles are popular!

Survival of the fattest: body stores on migration and survival in red knots Calidris canutus islandica

R. I. Guy Morrison, Nick C. Davidson and Jim R. Wilson

R. I. G. Morrison (correspondence), Environment Canada, Wildlife and Landscape Science, National Wildlife Research Centre,


GUTS DON’T FLY: SMALL DIGESTIVE ORGANS IN OBESE BAR-TAILED GODWITS

Theunis Piersma1,2,3 and Robert E. Gill, Jr.4

1Netherlands Institute for Sea Research (NIOZ), P.O. Box 58, 1790 AB Den Burg, Texel, The Netherlands;
2Centre for Ecological and Evolutionary Studies, University of Groningen,

36.2. Africa’s coolest bird: Winter torpor in the freckled nightjar (Caprimulgus tristigma)


School of Animal, Plant & Environmental, University of the Witwatersrand, South Africa

You are what your mother eats: evidence for maternal preconception diet influencing foetal sex in humans

Fiona Mathews1,2, Paul J. Johnson2 and Andrew Neil3

1Hatherly Laboratories, School of Biociences, University of Essex, Prince of Wales Road, Essex EN1 4YS, UK
2Wildlife Conservation Research Unit, Department of Zoology, University of Oxford,

LANGUAGE: English or Norwegian?

- Whatever *you* find most easy. Choose English if you think you really are able to write in English!
- Help with the language? Primarily your supervisor, but also fellow students, family etc.

WHAT FORMAT OF THESIS?

- **Traditional thesis**
  - a finished report
  - in Norwegian or English

- **Manuscript**
  - ready for submitting for publication in a scientific journal
  - in the 'style' of a specific journal.
  - in English
TRADITIONAL THESIS

- PREFACE (Forord) – includes all thanks/acknowledgements
- LIST OF CONTENT (Innholdsfortegnelse)
- SUMMARY (a ‘short version’ of your whole work)
- INTRODUCTION (what you did and why you did it)
- MATERIAL AND METHODS (how you did it)
- RESULTS (what you found; incl. how your data was analysed)
- DISCUSSION (what you mean that your results show)
- CONCLUSION (a short summary of your scientific results)
- REFERENCES
- (APPENDIX)

MANUSCRIPT

- CONTENTS (not to be sent to the journal)
- ABSTRACT (a ‘short version’ of your whole work)
- INTRODUCTION (what you did and why you did it)
- MATERIAL AND METHODS (how you did it)
- RESULTS (what you found; incl. how your data was analysed)
- DISCUSSION (what you mean that your results show)
  - CONCLUSION (a short summary of your scientific results)
- ACKNOWLEDGEMENTS (thanks, finansing, permissions osv)
- LITTERATURE (list of references)
- TABLES (one table on each page)
- FIGURE LEGENDS (text to figures)
- FIGURES (one figure on each page)
- (APPENDIX)
WHERE DO YOU PLACE FIGURES AND TABLES?

Traditional thesis:
• Figures and tables to be placed as an integral part of the thesis – side by side with the text.

Manuscript:
• At the very end; *i.e.* after the list of references

Different views on what format to use among the supervisors at the Biology department – and between departments!

ABSTRACT

• The content of an abstract is a short description of the problem you have addressed, what you did, what you found, and your conclusions.

• It should be a summary of the WHOLE THESIS! Has been described as a 'linear, proportional, reduction' of the thesis.

• Can be written in 'third person' (i.e.: 'the length was measured' and not 'I measured the length')
INTRODUCTION (I)

• Introduce the reader to the area of research, which is relevant for your work.

• Provide enough information to understand what you did and why you did it.

• Give a survey of the literature to show the ‘position’ of your work within the field of research.

INTRODUCTION (II)

• Give a clear, precise, purpose of your study. In this, you have to give the predictions for your study (what results you are expecting) and why you expects these results (rasjonalen for hypotesen).

• Can you include the results and conclusions in the introduction? – Seen more often in scientific publications nowadays.

• Ratnoff (1981) writes: 'Reading a scientific article isn’t the same as reading a detective story. We want to know from the start that the butler did it'
INTRODUCTION (III)

• Why interesting?
• What do we know from before?
• What do we NOT know?
• What is the mystery?

MATERIAL AND METHODS

• Keyword: Precision.
• The purpose of this section is to produce so much (detailed) information about how you performed your study, that it makes the reader able to reproduce exactly what you did.
• You should begin writing this early in the process (if not written down, you are likely to forget what you have done)
• A separate section on statistics.
RESULTS

• Presentation of your data. What is **NEW**.
• The presentation should include both the data and the analyses of the data.
• It is important that you show the ability to distinguish between what is important and what is not. All data, which will be commented on in the discussion need to be presented (no matter how difficult they are to handle statistically).
• Statistical analyses.

DISCUSSION

• You can start this section with a discussion of the methods used in the study.
• Otherwise there are 3 parts in the discussion:
• 1) *Your findings*. A short summary of your main findings. That is, a short version of your results.
• 2) *What are the meaning of your findings?* This is where you discuss possible explanations for your findings. Remember that you are more likely to see obvious connections and draw conclusions that the reader may not immediately see – therefore: you should also write some ‘obvious’ things.
3) **What are the implications of your findings?** This is where you go back to what you wrote in your introduction, but now with your own results as a ‘joker’. You should also include a short discussion about in which direction this research field should go.

- Finish your discussion with a paragraph or two in which you summarise your main conclusions.
- Draw powerful conclusions (‘a punchline’).

**DISCUSSION**

Two ways of getting it wrong:

- **Being too modest**
  - impression: nothing new here

- **Being too pushy**
  - impression: you disregard everything done before you
CONCLUSION

- A short survey of the scientific results which your study has provided to the scientific community!
- is often followed by 'where to go next'

HOW SHOULD THE TEXT BE WRITTEN?

- What is characteristic of 'scientific' writing?

  - **Passive** or **active**?
    - 'An experiment was performed'                  'I performed an experiment'
    - 'It was found that…'                          'We found that..'

- It used to be most 'correct' to write scientific publications/theses in the passive form. In later years, however, it has become more accepted to write science in the active form.
The use of references

- Whenever you write *e.g.* 'It has been *found* that', 'it has been *argued* that' eller 'it has been *claimed* that', you need to *document* it with one or more references.

The higher basal metabolic rate (BMR) of birds (Nagy et al. 1999b) has been suggested as one explanation for the higher FMR of birds compared with mammals. A similar proposal has been made between groups of birds, for example, marine versus terrestrial birds (Bennett and Harvey 1987). Intraspecifically, however, a similar relationship among individuals is yet to be found (Nagy et al. 1999a). It has been suggested that BMR represents the metabolic machinery that limits metabolic output (Daan et al. 1990). Individual variations in BMR might be found among individuals (Daan et al. 1990).

REFERENCES

- Keep track of the papers you read – and need for your thesis! Specific programmes for this, *e.g.* Endnote, GetARef, Reference Manager etc.
- Which reference(s) to cite? Use the most 'original' one!
- Can you refer to papers you haven't read?
- Format of your list of references: use whatever you like best!
- **BUT:** it is important to be **CONSISTENT** in the use – and that the list of references is in accord with the text!
The same paper – but different stiles of citing it:


How to list references - in alphabetic order!

• Alphabetic after first author.
• If there are more papers by the same first author:
  - List after year of publication within these groups:
  - FIRST ’if only one author’
  - THEN ’two authors’
  - THEN ’three or more authors’ (et al.)
Example:


If more in the same year: use a, b etc.:


Nisbet J., 1978. Log adjustment between estimated and actual...
If you cite more papers, sort either after year or first author (be consistent!)

Johnson 2004). In addition to genetic and environmental effects, intraspecific variation in BMR may be due to developmental factors or to strategic decisions (Dawson et al. 1983; Burness, Ydenberg & Hochachka 1998; Swanson & Olmstead 1999; Nilsson 2002; Bech et al. 2002; Wikelski et al. 2003; Broggi et al. 2005).

PLAGIARISM

• What is a plagiarism?

• Never!

• Severe consequences!
USE OF TABLES AND FIGURES

• Are used to present summaries of the results.
• You should present your data in either a table or in a figure. NOT both ways! The most important data should also be mentioned in the text. You are – of course – allowed to present data in the text only!
• FIGURES are best to use when trends or forms in your data are important for you to express.
• TABLES should be used if you want to present exact numbers or values.
• You can present tables and figures also in the discussion!

FIGURES

• A good figure:
  - emphasises and supplements what you have written in the text
  - contains only essential information
  - leaves out visually disturbing details
  - is easy to read
  - is produced such that the purpose is obvious
  - is consistent with – and made in the same fashion as – your other figures
  - is carefully planned and produced

• Use specialised data-programmes to produce your figures, e.g. SigmaPlot
TABLES

• The reader should be able to quickly understand the presented data and see patterns and connections between the presented data.

• It is often best first to prepare your table in such a manner that it gives maximal information, and then write the text that deals with this particular table.

AVAILABILITY OF YOUR THESIS AFTER YOU HAVE FINISHED?

• Reduced availability only if there are VERY GOOD REASONS to this!
PUBLISHING YOUR THESIS?

- Part of the 'Master agreement'
- Talk to your supervisor about this!

GOOD LUCK ON YOUR 'JOURNEY'!