

## **Term Paper – BIO 315**

The purpose of the paper is to offer you a better perspective of the scientific process, particularly as it relates to this course. As you may already know, once a study is completed a report, or “paper”, is usually written. Among government agencies such reports are often internal, but the most interesting work is prepared for publication in peer-reviewed journals. After extensive revisions, careful proof-reading and proper formatting, this “paper” is submitted to an appropriate journal. The selection of the journal depends on many factors. Given that a study can only be published in one journal, a choice must be made between seemingly suitable journals. For example, it may not be clear whether a paper on say “Effects of strongyloides infestations on habitat choice by congeneric mustelids during winter” would be more appropriate in the J. of Wildlife Management, J. of Mammalogy, J. of Parasitology, J. Biological Conservation, or J. of Animal Ecology, to name a few. The first consideration is perhaps choosing a journal whose readers are indeed the intended audience. The paper may have to be re-written slightly, or completely, depending on the intended outlet, both to agree with the journal format and to emphasise or de-emphasise different aspects of the study.

Once a paper is submitted, the journal’s editor reads it over superficially (or perhaps just reads the abstract, or even just the title!) and if he/she thinks it is suitable material for the journal, sends it to 2 or more “experts” in the field. The degree of expertise of these “experts” ranges from that of the editor’s M.Sc. student, who just happens to be handy, to that of the world’s pre-eminent scholar in the field, who may be half a world away in a small town in northern B.C. The selection of reviewers is not easy; editors often rely on individuals who have recently published similar work in the same journal or workers who have published the classic works in the field

These reviewers then peruse the paper, judging the originality, adequacy of the methods, style and grammar, implications on the field, statistical soundness, etc. Then, usually within a month, they submit a report to the editor and one to the authors, via the editor. By the way, the reviewers DO NOT get paid for doing this, which is sort of strange. Could you imagine any other professional making even a 2 minute phone call and not charging someone for it? No wonder scientists get no respect- it is not all about the money! It is even more strange because the journals are often “for profit” and very expensive.

Anyway, the reviewer’s report summarises the paper, clearly states its strengths and weaknesses, and suggests whether the paper should be accepted for publication as it is (very uncommon), accepted but with minor revisions, accepted with major revisions, rejected with an offer to resubmit, or rejected without recourses. The report for the authors is perhaps less critical or direct, but it is similar in content, without the section of whether the paper should be accepted, and with the added emphasis on suggestions that would help to improve the paper, should the authors end up submitting it to the same or another journal.

It is this reviewing process that we will be trying to simulate here, with a few changes. You will choose one from among several papers that I have selected. These papers are interesting, relatively short, light on statistics, and relevant to some of the topics covered (or that will be covered) during class. The papers will actually take you beyond what I can possibly

cover, will give you a glimpse of the range of activities involved in the field, and I hope that you will actually read more than just the one you choose to review.

You are invited to write a report in which you will summarise the paper, comment on the relevance and interest of the issue addressed, assess the adequacy of the methods, evaluate the results, and consider the potential implications, including those addressed by the authors in their discussion and those that you may believe that they missed (or chose not to discuss). Your paper shall start with a summary (which is NOT the same as copying the abstract) of the paper you are reviewing, which will provide the reader with sufficient information to comprehend the ensuing discussion. You should not assume that “the editor” has read the paper, or at least not as thoroughly as you. In the discussion you may wish to address some of the following issues (note I did not write “answer some of the following questions”), applying all the biological knowledge you have accumulated so far in your life, which may also include whatever you have learned in this course, if anything:

Are the goals clearly stated?

Is it a worthwhile question?

Is there any sort of hypothesis?

Are the objectives placed in a greater framework?

Are the methods adequate for addressing the stated goals?

Can the design be improved upon?

Is the study correlational or experimental?

Do the results support the hypothesis?

Was there at all a possibility for rejecting the hypothesis?

Was the discussion relevant or tangential?

How does the study relate to some other general principles?

Do you buy it?

Are there any questions left open? How would you address these questions?

Do not assume that the paper is good just because it is published. The point of this is to sharpen your critical thinking skills.

Your paper is to be written in English (do I need to elaborate?) and typed. Length is not an issue, but I suppose that somewhere between 1000 and 3000 words would be suitable. If, however, you are able to say all you want to say in 500 words, by all means, do so. On the other hand, if you need 5000 words to express yourself, that is fine too, as long as you do so concisely. Scientific writing and speech are laden with verbosity and loquacity (see how easy it is!). As Calvin says, sarcastically, of course, “the purpose of (scientific) writing is to inflate weak ideas, obscure reasoning and inhibit clarity. With a little practice it can become an intimidating an impenetrable fog”. Make every word count! Be direct and concise; do not be tempted by grandiloquence (I am doing it again!!).

You may find it helpful to check other sources to properly understand the paper and its significance. You may even choose to include these in your discussion. If you do so, please reference these properly. If despite your resourcefulness and the vast support of our libraries you

still have problems with VERY specific items, see the TA and me (in that order). Be aware that the request “explain the paper”, or even “please explain the paper” (a word people often forget) will not elicit a favourable response.

The paper might be graded by BOTH the TA and myself, or just one of us. The purpose of this is two-fold. First, I wish to instil upon you the idea that differences of opinion do exist in science. One of us may find some point made in your paper absolutely insightful, whereas the other may find the same point rather obvious. I envision that the more interesting and thought-provoking papers will stimulate readers in different ways. Second, I want you to see beyond academic rank and realise that when the instructor and TA disagree, the instructor is not necessarily always right. Judge the idea, not the source. The TA might not have a Ph.D. (yet?) and whatever experience is associated with it, but otherwise is as qualified a biologist as I am, with expertise in a slightly different sub-field. Of course, the goal is that you keep this in mind also when listening to other lectures, seminars, expert testimony at trials, TV pundits, etc. Your papers might be returned to you with 2 sets of comments and 2 grades (the mean will go on your record). Unless you are a handwriting analysis expert, you will not know who gave you which grade. Recently I saw some people, seemingly from the crime lab, walking around in their lab coats and gloves taking samples from around the stairwell. Perhaps they could help you if you are truly need to know who wrote what, but really, it should not matter.

I will accept only up to 3 persons per paper; there are enough papers for you to have some choice. Discussions amongst you are expected and encouraged, especially among people reviewing different papers (you will learn more that way), but it would be better if the final work is carried out individually. You may choose to submit your work as a pair or trio, in which case you will **split** the grade accordingly, which will also occur if the grader finds evidence of too much co-operation. It is therefore best if you and your spouse, army buddy, or best friend choose different papers to review.

You will have one week to decide on your paper. Starting NEXT MONDAY MORNING the 31<sup>st</sup> you may log your choices individually with the TA, at your convenience. Do so via e-mail; that way the order of precedence will be clear and unhindered by your ability to find the TA. You will get a reply within 24 hours, either approving the choice or informing that 3 other people have already chosen that paper to review, in which case you will have to choose another one.

You can hand it in AT THE LATEST on the due date OR the last day of classes, WHICHEVER COMES FIRST.

A few words about format: make it double spaced with 12 point font, number all pages sequentially, on the top right.

**The list of papers is:**

Williams, C. M., Poulin, R. and Sinclair, N. J. 2004. Increased haemolymph osmolarity suggests a new route for behavioural manipulation of *Talorchestia guoyana* (Amphipoda: talitridae) by its memithid parasite. *Functional Ecology* 18: 685-691.

Muller, Et al. 2004. Maternal antibody transmission and breeding densities in the black headed gull *Larus ridibundus*. *Functional Ecology* 18: 719-724.

Lajeunesse, M. J., Forbes, M. R. and Smith, B. P. 2004. Species and sex biases in ectoparasitism of dragonflies by mites. *Oikos*. 106: 501-508.

Clavete et al 2004. Short-term negative effects of vaccination campaigns against myxomatosis and viral haemorrhagic disease (VHD) on the survival of European wild rabbits. *J. Wildl. Manage.* 68: 198-205.

Reid, J. M., Arcese, P., and Keller, L. F. 2003. Inbreeding depresses immune response in song sparrows (*Melospiza melodia*): direct and intergenerational effects. *Proc R. Soc. Lond. B.* 270: 2151-2157.

Grether, G. F. Kasahara, S., Kulluru, G. R. and Cooper, E. L. 2004. Sex-specific effects of carotenoid intake on the immunological response to allografts in guppies (*Poecilia reticulata*). *PRSLB* 271: 45-49.

Kurtz et al. 2003. Major hisocompatibility complex diversity influences parasite resistance and innate immunity in sticklebacks. *PRSLB* 271: 197-204.

Fallon et al. 2003. Temporal stability of insular avian malarial parasite communities. *PRSLB* 271: 493-505.

Samuel, W. M., Pybus, M. J., Welch, D. A. and Wilke, C. J. 1992. Elk as a potential host for meningeal worm: implications for translocation. *J. Wildl. Manage.* 56: 629-639.

Wagner Weber Arrais-Silva, Marcelle Carolina Collhone, Diana Copi Ayres, Paula Cristina de Souza Souto and Selma Giorgio . 2004. Effects of hyperbaric oxygen on *Leishmania amazonensis* promastigotes and amastigotes. *Parasitology International*

Juan Tomás Timi, Ana Laura Lanfranchi, Robert Poulin. 2005. Is there a trade-off between fecundity and egg volume in the parasitic copepod *Lernanthropus cynoscicola*? *Parasitology Research* 95: 1 – 4.

Anssi Karvonen, Satu Paukku, Otto Seppälä, et al. 2005. Resistance against eye flukes: naïve versus previously infected fish. *Parasitology Research* 95: 55 – 59.

Miguel Rubio-Godoy and Richard C. Tinsley. 2004. Immunity in rainbow trout, *Oncorhynchus mykiss*, against the monogenean *Discocotyle sagittata* following primary infection. *Parasitology Research* 92: 367 – 374.

Aeby, GS. 2002. Trade-offs for the butterflyfish, *Chaetodon multicinctus*, when feeding on coral prey infected with trematode metacercariae. *Behavioral Ecology and Sociobiology* 52: 158-165.

Damien O. Joly and François Messier. 2004. The distribution of *Echinococcus granulosus* in moose: evidence for parasite-induced vulnerability to predation by wolves? *Oecologia* 140: 586-590.

Jan O Bustnes, Kirill V Galaktionov. 2004. Evidence of a state-dependent trade-off between energy intake and parasite avoidance in Steller's eiders. *Can J Zool* 82: 1566 – 1571.

Dave Shutler, Adele Mullie, Robert G Clark. 2004. Tree swallow reproductive investment, stress, and parasites. *CJZ* 82: 442-448.