Todo, Get Vander Zanden Fcasselman Rasumssen Nature 1999 on smallmouth bath or invasions.

Q for shelton, Shuter et al. Paper on lake trout. Also paper by Lester and Shuter in Crox book

Catchability for anglers is extremely density-dependent. This suggests a potential problem in the ability to managege the fishery.

Why should fish grow faster to a smaller size with higher M for fish of the same species in small lakes? See Shuter article.

1. Scientific excellence of the researcher

Tony Pitcher is a superb administrator and editor. His service to the fisheries community in founding and editing "Reviews in Fish Biology and Fisheries" has been very important. As director of the Fisheries Centre at UBC, he has made the institution one of the best in t he world. For this very important work, he certainly deserves continued support by NSERC. However, I believe his research is much less strong. In the five papers that were sent out with his application, not one scientific hypothesis was formally tested.

The lack of attention to falsifying hypotheses (and this is only one way to do science) is shown in the paper on herring (the challenge of herring ., by Ferno, Pitcher, et al.). In this paper, describes a model, without the detail that I need to evaluate it, but does not appear to actually disprove any of the hypotheses suggested test any model. I also see no plan to formally test the model.

Few of the publications are in journals that are in the best fisheries or ecology journals (although some are). For example, many of the papers are in Fisheries Research, a journal with very low standards, while none are in Can. J. of Fisheries and Aquat. Sciences, which has a relatively high rejection rate. Dr. Pitcher has chosen not to break the publications up as required by NSERC. He has non-refereed papers mixed with those in good journals. This is my breakdown of the publications

	Good journals	poor journals	book chapters/conference proceeding	other
Published	8	5	13	3
In Press	4	2	3	0

The breakdown between good and poor journals is based.

2. Merit of proposal.

I will examine the merit of the three parts of the proposal in tern:

Ecosystem models: Pitcher proposes to use ecosystem models, mainly mass balance models with a spatial component, to understand the impact of fishing. My main concern is this: How are they to be tested? The construction of such models is non trivial, but the testing is the different hypotheses that go into them are very difficult. I see no evidence that there is a clear plan to test these models in a systematic pattern.

Rapid appraisal: This is a proposed method of using ordination methods to combine quantitative data on ecosystem heath. I know of no clear example of such an approach being effective, although some may exist. My personal bias is that ordination of nonquantiative, subjective data is rarely a useful activity. It may be that this produces useful management advice, but I have no experience that it does.

Schooling: This part of the proposal is a field/modeling approach to study schooling. This is an area that Pitcher has made good contributions in the past. However, I am at a loss of exactly what is being proposed. The phrases "Analytical and modelling have largely employed Visual Basic" and "expert systems software that implements fuzzy logic algorithms" provide the reviewer with no information on what type of models will be developed, and how they will be tested.

3. Contribution to training HQP

I believe that this is a strongpoint in the proposal. Although I am not greatly impressed by the proposal per se, I am greatly impressed by the collaboration at the UBC fisheries centre. Dr. Pitcher's administrative skills along with the first class work of Carl Walters and D. Pauly, make this a winning team. Students who have been trained by the team have done very well.

In conclusion, it is difficult to praise Pitchers organizational and editorial skills and services enough. His science, is good, but not of the highest quality. I strongly recommend that he continue to receive NSERC support. I cannot recommend the full amount requested, but it would be a crime if he did not continue to receive substantial NSERC funding.

First, although Brian Shuter not a full time employee of Univ. of Toronto (his main employer is ON DNR); however, he spends two full days at UofT a week. When considering, NSERC awards to adjuncts, I believe that it is important to consider their active involvement with the University. In my personal experience Dr. Shuter comes through with flying colours in this regard. He is an active member of his department, teaches, and is active with many graduate students. I think that this is an important point when considering these grants.

1. Scientific excellence of the researcher.

Dr. Shuter is a solid researcher. I have regularly used data for my meta-analytic work, and I have always found it to be very reliable. His 19 refereed publications are primarily in journals that have a rejection rate of 2 out of 3. One negative point about his publication record is that relatively few are first authored. On the other hand, several are quite long and synthesize much data. His long paper on lake trout is a substantial and important analysis.

Some of the data that he has produced and compiled are extremely valuable. The Lake Opeongo data set on lake trout and smallmouth bass are the longest term reliable data sets on any freshwater system in the world. As someone who steals a lot of data (it is called meta-analysis by some), I view Shuter's data as particularly tasty.

2. Merit of proposal.

The proposed research is workable, and carefully thought out. This is primarily "pattern finding" research, with a strong "hypothesis rejection" subcomponent. I believe that Shuter will carry out the pattern finding research well; he is very good at it. The "hypothesis rejection" part is the linking of individuals to population and community dynamics. It appears to be feasible to collect data on individuals in enough detail to allow the hypotheses to be tested.

3. Contribution to training HQP

The proposed work should train the students that the programs funds. I think that they will be well supervised.

Overall evaluation: I think that Shuter's work is very competent and carefully done, and his work should be supported by NSERC. The requested amount seems reasonable for the work to be carried out.