Some comments in response to the long range plan from Statistics division in Dalhousie University

Mike Dowd, Chris Field, Joanna Mills-Flemming, Hong Gu,
David Hamilton, Bruce Smith

April 11, 2011

1 Science

Statistics will continue to flourish as a discipline as long as it continues to address the issues arising from new and complex date types and structures which are and will be observed in the future. The desire to solve practical or applied problems motivates statistics and continuously enlarges the scope of statistical science. It is therefore essential that NSERC support statisticians for the advancement of statistical and quantitative interdisciplinary science.

At Dalhousie, interdisciplinary research is the core of our work. There are two major research groups among the faculty members in the statistics division, namely the statistical genetics/bioinformatics group and the environmental statistics group.

Our statistical genetics and bioinformatics group collaborates actively with researchers in biology, medicine, microbiology, biochemistry and computer science. We develop statistical models, methods and inference in the contexts of molecular evolution, medical association studies, and quantitative trait analysis. The statistical methodologies we are developing in this field are novel and are aimed at solving current problems in biology and medicine.

Our environmental statistics group collaborates actively with researchers in biology, oceanography and atmospheric science. The problems are generally motivated by novel and complex types of data that are not readily treated

with existing statistical approaches. The analysis methods developed are key to advancing the science in these other disciplines.

It is our belief that such truly interdisciplinary research between Statistics and other disciplines must be judged according to a broad evaluation criteria that reflects the significance of the problem, along with the novelty and quality of the methodologies and their applications.

2   Training

At the heart of interdisciplinary research lies the proper training of HQP working at the intersection of statistics and a relevant area of application (biology, ecology and finance, as examples). For HQP evaluation in collaborative research, it should be well recognized that co-supervision is the preferred model and the student or post-doc being supervised may either be in statistics or in the subject-matter area.

NSERC should ensure both appropriate assessment of interdisciplinary research as well as sufficient levels of funding.

3   Research funding

There seems to be little benefit to the statisticians at Dalhousie from the existence of the three main Institutes. The model of the NICDS seems to be a much more effective and efficient mechanism for stimulating innovative statistical research in collaboration with other scientists.

Some of the best statistical research comes out of collaborative work with researchers in other disciplines and hence is inter-disciplinary in nature. There must be mechanisms to ensure this research is evaluated fairly.

Many statisticians who do substantive statistical methodology in a collaborative setting often choose to publish in high impact subject matter journals to ensure the research has the desired readership. This needs to be recognized when proposals are evaluated.