

1. RELEVANT AGENDA ITEM (NO. AND TITLE)

RMP, item 2.6 (Update Requirements and Guidelines for conducting surveys and Implementations)

2. PROJECT TITLE

Guidelines for evaluating abundance estimates: diagnostics and testing

3. BRIEF DESCRIPTION OF PROJECT AND WHY IT IS NECESSARY TO SUB-COMMITTEE

Abundance estimates are central to the Committee's work, of course in RMP but in most other Subcommittees too. Spatial modelling is a powerful tool for abundance estimation which, in principle, can: be used in many cases where design-based estimates are inappropriate; overcome some bias associated with uneven survey coverage; and deliver more stable CVs than a standard design-based analysis even when the latter is appropriate. However, spatial modelling can also go wrong; it requires expertise both to use and to assess. Hence it is important to have clear guidelines (which already exist for conventional design-based estimates, but are somewhat out of date) both for assessing new abundance estimates made specifically with spatial models, and for the situation commonly seen by the Committee where a simple design-based estimate has been applied without its assumptions being met; this latter case may or may not lead to substantial bias, depending on the realized coverage of the survey and the distribution of the animals, so some diagnostic software for checking is desirable. The general idea is that surveys with dense and evenly-distributed coverage should readily pass the diagnostic tests, whereas surveys with low or badly imbalanced coverage should raise a flag. Deliverables include software (R package of automated diagnostics based on results of automated trial fits of spatial models), workshop preparation and delivery (see separate), and proposals for new guidelines in the form of a paper to SC 66a (a revision to RMP 11 this year).

The second, smaller, part of the project, is preparation for a pre-meeting workshop at SC 66a (see separate proposal), in which proposed new guidelines will be tested based on the experience of fitting proper spatial models. Preparation therefore choosing several appropriate datasets, trying to fit both well-chosen and badly-chosen spatial models, and seeing how the guidelines work in practice. More datasets will be brought and tested by participants at the workshop. The workshop would also include a demonstration and discussion of the diagnostic software for a wider audience, at the start of SC 66a itself.

The need for new guidelines (last updated for RMP in 2004) was originally brought up in RMP 2012, leading to a contract in 2013 to propose updates (see SC/65b/RMP11). Based on consideration of the proposals this year, it was apparent that a diagnostic tool would also be required, and that the guidelines would need to be tested in a workshop with input from several experienced analysts. The point of delivery for this research proposal is the pre-meeting workshop at SC 66a.

4. TIMETABLE

First half of 2015, in time for pre-meeting at SC 66a

5. RESEARCHERS' NAME(S)

Sharon Hedley
Mark Bravington

6. ESTIMATED TOTAL COST (WITH BREAKDOWN AS NEEDED, E.G. SALARY, EQUIPMENT)

Travel UK-Aus or vice versa for one meeting between researchers: GBP 2500

Hedley: 15 days' work at GBP 400 per day: GBP 6000

Bravington: 12 days' work at GBP 480 per day (CSIRO "research rate" allowing for internal subsidy): GBP 5800

Total: GBP 14300