WKABM - Workshop on Acoustic Backscatter Models

2019/2/EOSG16 The **Workshop on Acoustic Backscatter Models (WKABM)**, chaired by Sven Gastauer, Germany, will be established and will meet online, 7-8 April 2021, in conjunction with WGFAST to:

a) Review and select commonly used acoustic scattering models and their application/relevance to fisheries acoustics in relation to various objectives; (Science Plan codes: 4.4).

b) Review and select methods to organize digital morphology and anatomical data of aquatic organisms (including data formats, segmentation processes, meshing techniques); (Science Plan codes: 4.4).

c) Review / recommend software platforms and languages in which to develop and disseminate the open source acoustic scattering models (with respect to availability, processing speed, precision, transparency and simplicity); (Science Plan codes: 4.4).

d) Recommend benchmark methodology to compare acoustic scattering models to canonical shapes and field data, including defining boundary conditions and providing clear guidance on the circumstances individual scattering models can be used; (Science Plan codes: 4.4).

e) Develop a set of standardized shapes including a fish body, a fish swimbladder, a backbone, and a zooplankton (e.g., krill) to test and compare acoustic scattering models (including different resolutions and meshing techniques, where needed); (Science Plan codes: 4.4).

f) Discuss the need for future training programmes on the subject of scattering models; Science Plan codes: 4.4).

WKABM will report by 30 June 2022 for the attention of WGFAST, WGIPS, and SCICOM Committees. Additionally, reports and data will be posted to the WKABM's ICES GitHub site.

Supporting information

Priority	This workshop will bring experts together to define and scope a coordinated effort to disseminate acoustic scattering models in open-source fora. Workshop results and recommendations affect processing of acoustic data that are used in stock assessments of pelagic species and the wider pelagic ecosystem. Consequently, these activities are considered to have a very high priority.
Scientific justification	Terms of Reference a-e) The translation of acoustic energy to biologically meaningful metrics such as numeric density, abundance, and biomass relies on accurate knowledge of acoustic target strength. Acoustic scattering models provide a theoretical foundation for empirical measures of target strength, but these models have been the purview of acousticians and mathematicians. Many of these models are now mature enough so that they can be used by the broader community. One way to bring these models to the community is through open source and open access software. WGFAST proposes to conduct a workshop to initiate this effort and scope strategies for effective development and provision of target strength models to the fisheries acoustics community.

Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	Members of WGFAST and guests (15-20 participants expected).
Secretariat facilities	WKABM GitHub repository in the ICES GitHub repository.
Financial	No financial implications.
Linkages to advisory committees	There are no obvious direct linkages with the advisory committee.
Linkages to other committees or groups	There are linkages to SCICOM. There are linkages to all groups currently planning acoustic surveys or using acoustic survey data like WGIPS, WGACEGG,and WGBIFS.
Linkages to other organizations	The work of this group is of international interest to all countries conducting biomass estimation surveys, and to national and international acoustical societies like the Acoustical Society of America and the European Acoustics Association.