Table 2. Data-limited assessment techniques discussed at this meeting. Techniques include length-based, catch-based, and an integrated catch and length-based method. Methods vary in their input requirements, outputs and assumptions.

Type	Method	Data requirements and outputs	Supporting documents	Notes
Length based	LBSPR (Hordyk *et al.*, 2015a). Length-base spawning potential ratio	Inputs: lengths/length frequency (single or multi-year); life history (maturity, growth, M/k ratio) Outputs: Spawning potential ratio; F/M ratio; selectivity ogive	https://cran.r-project.org/web/packages/LBSPR/vignettes/LBSPR.html	Assumes logistic selectivity; best used with data containing wide range of sizes; available as simulation model
	LBB (Froese *et al.*, 2018a). Length-based Bayesian biomass estimation	Inputs: Length Frequencies (single or multi-year); Optionally: life history priors (L_∞, M/k) Outputs: Ratios B/B_{MSY} and F/M, selectivity	http://oceanrep.geomar.de/43182/7/LBB_UserGuide_1.zip	Assumes stock equilibrium; logistic selectivity; von Bertalanffy growth function; representative of the length composition of the exploited phase of the stock.
Length and/or catch based	LIME (Rudd and Thorson, 2017). Length-based integrated mixed effects model	Inputs: lengths/length frequency; life history (maturity, growth, M and length-weight relationship) Outputs: Spawning potential ratio; F; selectivity ogive and recruitment deviations	https://github.com/merrillrudd/LIME	Assumes logistic selectivity; best used with data containing wide range of sizes; includes recruitment and F variability. Can include catch and index of abundance
Catch based	Catch-MSY (Martell and Froese, 2013)	Inputs: catch series; priors K, r and prior on B/B_0 Outputs: MSY, F_{MSY}, B_{MSY}	https://cran.r-project.org/web/packages/fishmethods/fishmethods.pdf	Assumes a logistic population growth model (Schaefer); the input range for r is representative of the plausible stock's productivity; some degree of knowledge about the exploitation history
	CMSY (Froese *et al.*, 2017)	Inputs: catch series; priors r and prior on B/B_0 (at least one) Outputs: B, B/B_{MSY}, F/F_{MSY}, MSY	http://oceanrep.geomar.de/33076/21/UserGuideNew.zip	Assumes a logistic population growth model (Schaefer); the input range for r is representative of the plausible stock's productivity; some degree of knowledge about the exploitation history
	Depletion Based Stock Reduction Analysis, DBSRA (Dick and McCall, 2011)	Inputs: catch series; Age at maturity and priors F_{MSY}/M, B_{MSY}/B_0, M and B/B_0 Outputs: B, B/B_{MSY}	https://cran.r-project.org/web/packages/fishmethods/fishmethods.pdf	Assumes a logistic population growth with a delay difference model, selectivity equal to maturity ogive
	Simple Stock Synthesis (SSS, Cope, 2013)	Inputs: catch series; growth and reproductive parameters, priors h, M and B/B_0 Outputs: B, B/B_{MSY}, SPR and other derived quantities	https://github.com/shcaba/SSS	Age structured model, stock recruitment relationship could be Beverton-Holt or Ricker