

1.7 Acronyms and terminology

Term / acronym	Description
Bayesian method	Assessment method that quantifies uncertainties and formulates advice on the basis of probabilities of reaching a limit or target point.
B_{lim}	Limit reference point for spawning stock biomass (SSB)
B_{pa}	Precautionary reference point for spawning stock biomass (SSB)
B_{MSY}	Spawning stock biomass (SSB) that results from fishing at F_{MSY} for a long time.
$B_{trigger}$	Value of spawning stock biomass (SSB) that triggers a specific management action
Catchability	The fraction of a fish stock which is caught by a defined unit of the fishing effort
Cpue	Catch per unit effort: The quantity of fish caught (in number or in weight) with one standard unit of fishing effort; e.g. number of fish taken per 1000 hooks per day or weight of fish taken per hour of trawling. Cpue is often considered an index of fish biomass (or abundance). Sometimes referred to as catch rate.
Discards	Are those components of a fish stock thrown back after capture e.g. because they are below the minimum landing size or because quota have been exhausted for that species. Most of the discarded fish will not survive.
Ecosystem approach	Ecosystem approach to fisheries management. Management that takes into account the effects of fisheries on the ecosystem and the effects of the ecosystem on the fish stocks.
Exploitation boundary	Threshold on exploitation (catch, mortality, effort) that is consistent with a management strategy or international agreement (e.g. exploitation boundary consistent with precautionary approach)
Exploitation pattern	Distribution of fishing mortality over the age composition of the fish population, determined by the type of fishing gear, area and seasonal distribution of fishing, and the growth and migration of the fish.
F Fishing mortality	Instantaneous Rate of Fishing Mortality. When fishing and natural mortality act concurrently, F is equal to the instantaneous total mortality rate (Z), multiplied by the ratio of fishing deaths to all deaths. Expressed on an exponential scale: $F=0.5$ means that $1-EXP(-0.5)=39\%$ are removed.
F_{pa}	Precautionary reference point for fishing mortality (mean over defined age range)
F_{lim}	Limit reference point for fishing mortality (mean over defined age range)
F_{MSY}	Fishing mortality consistent with achieving Maximum Sustainable Yield (MSY), (see ICES Advice, Section 1.2)
F_{MP}	Fishing mortality reference point as defined in management plans.
$F_{0.1}$	The fishing mortality rate at which the marginal yield-per-recruit (i.e. the increase in yield-per-recruit in weight for an increase in one unit of fishing mortality) is only 10 percent of the marginal yield-per-recruit on the unexploited stock. The fishing mortality rate at which the slope of the yield-per-recruit curve is only one-tenth the slope of the curve at its origin.

Term / acronym	Description
F_{med}	Fishing mortality rate F corresponding to a SSB/ R equal to the inverse of the 50th percentile of the observed R /SSB.
F_{max}	Fishing mortality rate that maximizes equilibrium yield per recruit. F_{max} is the F level often used to define growth overfishing.
F_{sq}	F status quo
Fecundity	In general, the potential reproductive capacity of an organism or population expressed in the number of eggs (or offspring) produced during each reproductive cycle. Fecundity in fish usually increases with age.
Fishery	Group of vessel voyages targeting the same (assemblage of) species and/or stocks, using similar gear, during the same period of the year and within the same area (e.g. the Dutch flatfish-directed beam trawl fishery in the North Sea). See also: fleet, metier.
Fleet	A physical group of vessels sharing similar characteristics in terms of technical features and/or major activity (e.g. the Dutch beam trawler fleet < 300 hp). See also: fishery, metier.
FLR	Fisheries Library in R. The FLR library is a collection of tools in the R statistical language that facilitates the construction of bio-economic simulation models of fisheries and ecological systems. It is a generic toolbox, but is specifically suited for the construction of simulation models for evaluations of fisheries management strategies. The FLR library is under development by researchers across a number of laboratories and universities.
HCR Harvest Control Rule	An algorithm for pre-agreed management actions as a function of variables related to the status of the stock. For example, a control rule can specify how F or yield should vary as a function of spawning biomass. Also known as 'decision rules' or 'harvest control laws'.
Harvest rate	(= harvest ratio) Ratio between landings and total stock abundance (e.g. as estimated from TV surveys for <i>Nephrops</i>).
High-grading	The discarding of a portion of a vessel's legal catch that could have been sold in order to retain a higher or larger grade of fish that will bring higher prices. It may occur in quota and non-quota fisheries.
ICA	Integrated Catch Analysis; Stock assessment method
L_{pue}	Landings per unit effort, similar to $cpue$, but based on that part of the catches that are landed and reported.
Management plan	A management plan includes the decision-making processes (harvest control rules, tactical decision making) and the sanctions on implementation and the requirements for monitoring and reporting. Management plans may also exist in the form of rebuilding plans or recovery plans.
Management strategy	Management strategies consist of objectives with associated performance criteria, the implementation measures (e.g. input or output control) and what is considered a relevant knowledge base for decisions.

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Metiér	Homogeneous sub-division of a fishery by fleet (e.g. the Dutch flatfish-directed beam trawl fishery by vessels < 300 hp in the North Sea). See also: fishery, fleet.													
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MSY	Maximum Sustainable Yield. The largest average catch or yield that can continuously be taken from a stock under existing environmental conditions.													
MSY $B_{\text{escapement}}$	A biomass reference point for short-lived species within the ICES MSY framework (see ICES Advice, Section 1.2) where the target is to leave the reference spawning stock biomass to spawn the next year.													
MSY B_{trigger}	A biomass reference point that triggers a cautious response within the ICES MSY framework (see ICES Advice, Section 1.2).													
Population	A group of fish of one species which shares common ecological and genetic features. The stocks defined for the purposes of stock assessment and management do not necessarily coincide with self-contained populations.													
R Recruitment	The amount of fish added to the exploitable stock each year due to growth and/or migration into the fishing area. For example, the number of fish that grow to become vulnerable to the fishing gear in one year would be the recruitment to the fishable stock that year. This term mostly used in referring to the number of fish from a year class reaching a certain age. For example, all fish reaching their first year are age 1 recruits.													
Reduced reproductive capacity	When SSB is at a level where the stock reproduction is impaired as evident from historical observations.													
SSB	Spawning stock biomass. Total weight of all sexually mature fish in the stock.													
SSB _{MP}	Spawning stock biomass reference point as defined in management plans.													
SSB/R S/R	Spawning Stock Biomass per Recruit: expected lifetime contribution to the spawning stock biomass for a recruit of a specific age (e.g., per age 2 individual). For a given exploitation pattern, rate of growth, and natural mortality, an expected equilibrium value of SSB/R can be calculated for each level of fishing mortality.													
SMS	Stochastic Multispecies Model; Stock assessment method.													

Term / acronym	Description
Stock	A part of a fish population usually with a particular migration pattern, specific spawning grounds, and subject to a distinct fishery. In theory, a Unit Stock comprises all the individuals of fish in an area, which are part of the same reproductive process. It is self-contained, with no emigration or immigration of individuals from or to the stock. On practical grounds, a fraction of the unit stock is considered a 'stock' for management purposes (or a management unit), as long as the results of the assessments and management remain close enough to what they would be on the unit stock.
SURBA	SURvey Based Assessment. Uses only relative abundance indicator(s)
Surplus production model	Mathematical representation of the way a stock of fish responds to the removal of its individuals. Usually a relationship between yield and/or cpue, and fishing effort or mortality. Expressed in biomass.
Sustainable	Can be sustained. In the light of the ICES interpretation of precautionary approach: fisheries management that keeps stock(s) above B_{pa} and fishing mortality below F_{pa}
VPA	Virtual Population Analysis. An algorithm for computing historical fishing mortality rates and stock sizes by age, based on data on catches, natural mortality, and certain assumptions about mortality for the last year and last age group. A VPA essentially reconstructs the history of each cohort, assuming that the observed catches are known without error (Powers & Restrepo, 1992). VPA is often used as a generic description of an age-based stock assessment but this is not necessarily true because many stock assessments are based on different (statistical) assumptions.
XSA	Extended Survivors Analysis; Stock assessment method.
Year class	All the fish of a stock spawned or hatched in a given year.
Yield per recruit	The expected lifetime yield per fish recruited in the stock at a specific age. Depends on the exploitation pattern (fishing mortality at age) or fishing regime (effort, size at first capture) and natural mortality.

The terms in this glossary are taken and adapted from a number of sources:

Cochrane, K. L., Ed. (2002). A fishery manager.s guidebook. Management measures and their application. FAO Fisheries Technical Paper. No. 424. Rome, FAO.

FAO Fisheries glossary (<http://www.fao.org/fi/glossary/default.asp>)

NOAA Definition of Fisheries Technical Terms (http://www.nefsc.noaa.gov/techniques/tech_terms.html)

Powers J.E., and V.R. Restrepo. 1992. Additional options for age-sequenced analysis. ICCAT SCRS/91/040.