

Rapfish ECOLOGICAL EVALUATION FIELD: ATTRIBUTES (version 3.1)

This is a revised Rapfish evaluation field that scores *ecological* and ecosystem factors (attributes) that will foster or inhibit biological sustainability of the resource. Scoring scale is from zero (worst) to 10 (best), with 4/10 representing a bare pass and 7/10 a good score. Scoring guidelines are given with each ecological attribute description. Users can give an upper and lower range for each score to express uncertainty. GRT = Gross registered tonnage of a vessel. (Please note that Rapfish undergoes continual improvement, and the most recent version of this scoring table will be found at www.rapfish.org.)

ATTRIBUTE	DESCRIPTION	SCORING GUIDELINES
1. Exploitation and population status of fishery in relation to sustainable levels	Assesses exploitation status scored on an FAO-like scale; assess using local experts, stock assessment, Kobe plot, or consult FAO website for status (except collapsed).	Under-exploited (Rapfish score 10-9); exploited, less than MSY (8-6); fully exploited, at approx. MSY (5-4); over-exploited, beyond MSY (3-2); heavily exploited, well beyond MSY, to collapsed (1-0)
<i>Ecosystem factors</i>		
2. Species changes	Assesses changes in species composition of catch in past 10 years, or compared to the first 5 years after the fishery began, if information is available. A characteristic of overfishing in multispecies fisheries is a catch previously dominated by apex predators replaced by short-lived pelagic species. Score the number of species almost eliminated, greatly reduced, or of changed identity in the catch (retained and/or discarded).	Low change 0-4 (Rapfish score 10-9); medium 5-9 (8-6); high 10-14 (5-3); very high >14 (<3)
3. Intrinsic Vulnerability Index (V Index) of fish species in the fishery	A susceptibility measure for the species in the fishery (index values available by species from www.FishBase.org). Multispecies fishery might need an approx. average score. These Rapfish score categories are based on the frequency distribution of the Vulnerability Index for 30,000 species (range <10 to 80+).	V Index value 0-9, (Rapfish score 10); 10-14, (9); 15-19, (8); 20-24, (7); 25-29, (6); 30-39, (5); 40-49, (4); 50-59, (3); 60-69, (2); 70-79, (1); >80, (0)
<i>Fish life history factors</i>		
4. Size of fish in catch	Assesses if the average fish size is reduced in the past 10 years, or compared to the first 5 years of the fishery, if information is available.	No or very little change in average fish size (or fish bigger), indicating appropriate and observed minimum size requirements or limits (Rapfish

	Includes changes in population size structure and/or species composition.	score 10-9); yes, a gradual change, indicating limit not conservative enough or not fully respected (8-6); yes, a rapid large change (5-3), major rapid reduction (2-0).
5. Recruitment variability of exploited fish population	Percentage variation in new fish arriving at the fishery (= recruits), year to year. Sustainability is prejudiced by high variability: fishing increases this variability, but a major cause is often climate change. These two may interact, with negative consequences for the resource.	Low recruitment variability <20% (Rapfish score 10-9); medium 20-59% (8-7); high 60-99% (6-4); very high ≥100% (3-0)
6. Catch before maturity	Percentage of the fish caught that are smaller or younger than the size or age of maturity.	None or little caught before maturity, <30% (Rapfish score 10-9); some, 30-59% (8-6); lots 60-79% (5-3); a very large amount > 80% (2-0)
<i>Selective fishing factors</i>		
7. Discards	Percentage of the catch biomass discarded (includes juveniles of the target species, plus other species), weighted by the percentage of discards that result in mortalities.	Low discards and low mortalities, 0-9% (Rapfish score 10-9); medium low, 10-19% (8-6); medium, 20-39% (4-5); high, 40%<discards<100% (2-3); very high discards and high mortalities, ≥100% (<2)
8. By-catch	Percentage of target catch biomass that is landed by-catch (includes juveniles of the target species, plus other species).	Low by-catch, 0-9% (Rapfish score 10-9); medium low, 10-19% (8-6); medium, 20-39% (5-4), high, 40%<by-catch<100% (3-2); very high, ≥100% (<2)
<i>Spatial (Geographical) stability factors</i>		
9. Range collapse	Assesses if there is evidence of geographic range reduction of the fish population in the past 10 years, and/or loss of sub-populations within an area (indicator of future range collapse).	No or very little range reduction and/or loss of sub-populations (Rapfish score 10-9); some, slow (8-6); a lot, fast (5-3); very great, rapid (<3).
10. Migratory range of target fish	Assesses the number of jurisdictions encountered during life history of the target fish (international waters may be counted as two jurisdictions because of the greater hazard faced in such waters).	1 jurisdiction only (Rapfish score 10); 2-3 (9-7); 4-5 (6-4); 6-7 (3-2); >7 (1-0)