

Country	France
Classification System:	IBGN – Indice Biologique Global Normalisé
General Description	<p>Description of the IBGN Index. (Norme AFNOR NF T 90-350, 1992)</p> <p>The index is based on macroinvertebrate fauna identified at the family level. Eight individual samples are taken from different habitats. The index is semi-quantitative, but quantitative data are available in many cases, allowing the comparison with the ICM index. The IBGN is a combination of 2 metrics:</p> <ul style="list-style-type: none"> - the total number of taxa (at the family level for Insecta, Crustacea, Mollusca, Acheta; class for the other groups), is expressed in 14 classes of taxonomic richness. The Metric CV : Classes de Variété, varies from 14 (> 50 taxa) to 1 (1-3 taxa) . - the Indicator Faunistic Group representing the presence/absence of 39 indicator taxa, grouped in 9 classes of sensitivity to pollution. The Metric GFI : Groupe Faunistique Indicateur, varies from 9 (very sensitive taxa present) to 1 (only very tolerant taxa remaining). <p>The IBGN index is given by the formula : $IBGN = (CV + GFI) - 1$, varying in integer values between 20 (set as maximum value) and 1. The index is sensitive to pollution (including toxic), and to general degradation (including habitat alteration).</p> <p><u>Principles of the classification.</u></p> <p>A provisional classification derived in 2004 was endorsed in 2005 by the French Ministry of Environment (Circulaire MEDD/ DE / MAGE / BEMA 05 / n° 14 / 28 juillet 2005).</p> <p>The same principles are applied to all the river types in France. The classification is based on the level of biological alteration evaluated by the EQR-IBGN values, and compliant with the WFD normative definitions for what concerns a "slight deviation" of taxa richness (CV) and sensitive taxa (GFI), and for the disappearance of major taxonomic groups.</p> <p><u>1: definition of Reference values.</u></p> <p>Reference sites were selected in the monitoring network on the basis of the national reference criteria, following a procedure compliant with the REFCOND Guidance. A set of reference criteria, officially endorsed by the French Ministry of Environment (Circulaire MEDD/ DE/ DCE 08 du 23 décembre 2004) has been applied at the national level. These criteria are compliant with the Mediterranean GIG reference criteria, including chemical values when available. (See separate annex on reference criteria).</p> <p>The statistical distributions of observed biological values (i.e. IBGN index and its two metrics, GFI and CV) were analysed for all the types with a sufficient number of reference sites. For each type, a reference value was derived as the median of observed values in reference sites for the IBGN and its separate metrics. For some types, reference values were tested against an independent dataset provided by the Cemagref.</p> <p>All the IBGN values were then transformed in EQR-IBGN; for this calculation, the minimum IBGN value is set at IBGN = 1.</p> <p><u>2: definition of High /Good boundary</u></p> <p>The H/G boundary is based on the IBGN value corresponding to the combination of the <i>25th percentile</i> of the metrics values (CV and GFI) observed in reference sites.</p>

	<p>3: definition of the Good / Moderate boundary For each type, the remaining range below the H/G boundary and the minimum IBGN value was split into 4 equal classes following a procedure suggested in the REFCOND guidance, to derive a preliminary limit; then, following a pressure / impact analysis at the national scale, this limit was adjusted at a higher level, for almost all types, to set the G/M boundary.</p> <p>An official table (circulaire MEDD/ DE / MAGE / BEMA 05 / n° 14) gives the provisional IBGN values, corresponding to the Reference, H/G and G/M boundaries for all types with sufficient reference values. Some of the types corresponding to the large and very large rivers have no reference sites, and thus reference values could not be derived so far.</p> <p>Taking into account that any change in reference values will be reflected in the future classification, the concept of the G/M boundary for France represent a deviation of the EQR-IBGN from the reference values. At the national level, the average EQR-IBGN value for the G/M boundary is 0.80 ; the range for the different types corresponding to the Mediterranean GIG (i.e. Hydro-ecoregions: Méditerranée, Cévennes, Corse, PréAlpes du Sud, except rivers originating in the Alps), is 0.79 – 0.82, according to the variability of the reference conditions. The value for the type intercalibrated (R-M1) is 0.81.</p> <p>4: Harmonisation of the High /Good boundary Following the Central Baltic GIG intercalibration process, the H/G boundary of the IBGN classification has been adjusted to a higher level. In the harmonised classification, at the national level, the average EQR-IBGN value for the H/G boundary is 0.94 ; the range for the different types corresponding to the Mediterranean GIG is 0.93 – 0.94, according to the variability of the reference conditions. The value for the type intercalibrated (R-M1) is 0.94.</p> <p><u>Future revision of the classification:</u> A new reference network implemented in 2005 will provide a more consistent reference dataset at the end of 2007. At this date, all the reference values will be recalculated for all the types, and a definitive classification will be established. The future classification will take into account both</p> <ul style="list-style-type: none"> - the revision of the preliminary reference values according to the data coming from the new reference network; - the deviation from reference conditions (as EQR-ICM) corresponding to the H/G and G/M boundaries agreed during the IC process. 	
Criteria for Boundary Setting	High/Good boundary	Good/Moderate boundary
Taxonomic composition and abundance	For the number of taxa , 25 th percentile of the values observed in the reference samples, transformed into the corresponding class of the metric CV.	For the number of taxa , the range below the H/G boundary and the minimum value (number of taxa =1) is split into 4 equal classes.
Ratio of disturbance sensitive to insensitive taxa	For the sensitive taxa , 25 th percentile of the values observed in the reference samples, expressed as the corresponding class of the metric GFI.	For the sensitive taxa , loss of one class of the metric GFI from H/G boundary (i.e. GFI H/G minus 1).
Level of diversity	The diversity is reflected by the number of taxa (no quantitative diversity index).	The diversity is reflected by the number of taxa (no quantitative diversity index).

Global Index IBGN	<p>The combination of the values corresponding to H/G boundary for the two metrics CV and GFI. Generally equivalent to the 25th percentile of the IBGN values observed in reference samples.</p> <p>EQR-IBGN at H/G boundary R-M1: 0.94</p> <p>National average <i>after harmonisation with CB GIG</i>: 0.94</p>	<p>The combination of the values corresponding to G/M boundary for the two metrics CV and GFI as described above gave a preliminary limit, compliant with the REFCOND Guidance.</p> <p>Following a pressure / impact analysis, this limit was then adjusted at a higher level for almost all the types to derive the G/M boundary.</p> <p>EQR-IBGN at G/M boundary: R-M1: 0.81</p> <p>National average : 0.80</p>
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Appendix (FR): Missing major taxonomic groups

EPT-Taxa can be seen as the most sensitive taxonomic groups in Mediterranean rivers types. A positive value of this metric indicates that at least one of the three most sensitive major taxonomic groups is still present in the community. In the Mediterranean datasets, a minimum of 6 EPT taxa is encountered at “good status” (Figure 1). The disappearance of EPT-Taxa can only be suspected in the class “bad”. Therefore the most sensitive major taxonomic groups are always present at good status.

The number of orders represents the total number of “major taxonomic groups”. The mean number of orders per sample observed at different ecological status is represented in figures 2 and table 1 for the different datasets. The difference in the total number of orders between high and good status is no more than two (Figure 2 and table 1). Thus it appears clearly that at good status there is no or only very limited loss of “major taxonomic groups”.

Table 1: Mean numbers of orders per ecological quality classes based on the French IBGN. (1 = bad status to 5 = high status)

MS class	Mean(NbOd)
1	6.0
2	11.1
3	11.9
4	12.0
5	13.7

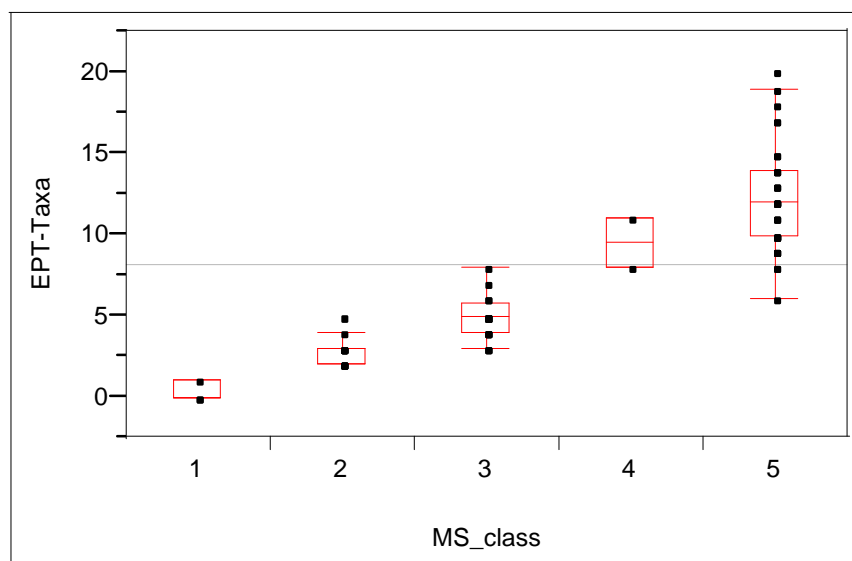


Figure 1: Distribution of the number of EPT taxa per ecological status classes based on the French IBGN. (1 = bad status to 5 = high status)

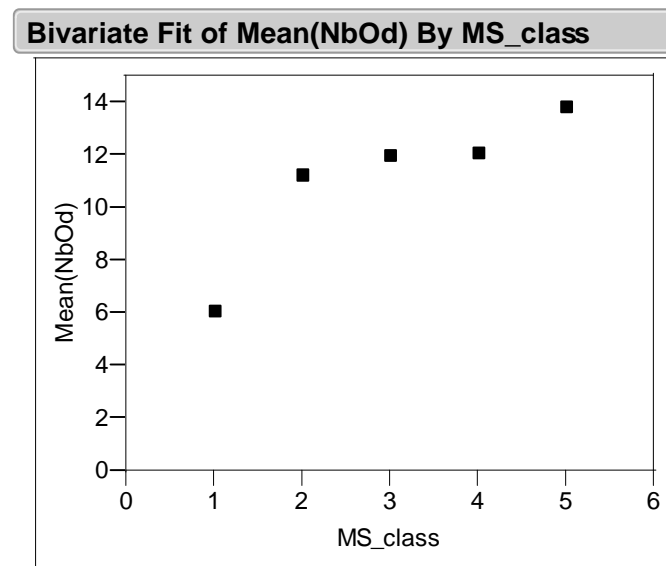


Figure 2: Mean numbers of orders per ecological quality classes based on the French IBGN. (1 = bad status to 5 = high status)