Country	**Sweden**	
Classification System:	General Quality Assessment Classification. Swedish EPA regulations (NFS 2008:1)	
General Description	Pressure criteria, as outlined in the REFCOND guidance, were used to establish populations of minimally disturbed sites. Median values of selected indices (those used in ecological classification, see below) from the "reference" population(s) were used to represent expected conditions, and an Ecological Quality Ration (EQR) was calculated for each metric. For stream macroinvertebrate assemblages three metrics are used (i) the Average Score per Taxon (ASPT) is used as a measure of general ecological quality; (ii) the DJ-index (Dahl & Johnson 2004), a multimetric index consisting of measures of diversity (number of EPT taxa), composition (% Crustacea and % EPT taxa) and tolerance ((ASPT and Sabrobic Index; Zelinka & Marvan 1961), is used to assess effects of nutrient enrichment and (iii) the MISA index (Johnson and Goedkoop 2007), a multimetric index consisting of measures of (diversity (Number of Families and number of taxa of Gastropoda and Ephemeroptera); composition (ratio of relative abundance of Ephemeroptera/Plecoptera); tolerance (AWIC; Davy-Bowker et al. 2005) and behaviour (% shredders) is used to assess the effects of acid stress. Our multimetric indices incorporate measures of diversity, taxonomic composition and tolerance as stipulated by the WFD. Hence, it is not possible to fill-in the criteria for setting class boundaries separately.	
Criteria for Boundary Setting	**High/Good boundary**	**Good/Moderate boundary**
Taxonomic composition and abundance	Defined as the 25th-percentile of EQRs of "reference" populations (see above) for ASPT (general ecological quality), MISA (acidification) and DJ-index (nutrient enrichment).	Defined using either percentile distribution or linear regression. For MISA, the intercept between pH 5.6 (an established ecological breakpoint on the x-axis) and MISA EQRs (on the y-axis) was defined as the boundary (Figure 1). For ASPT and the DJ-index no ecological thresholds have been established. For these two metrics, a 25% decrease in EQR from the high-good boundary, which equates to a 44% deviation in EQR values from the average (median) reference EQRs was used.
Ratio of disturbance sensitive to insensitive taxa	Defined as the 25th-percentile of EQRs of "reference" populations (see above) for ASPT (general ecological quality), MISA (acidification) and DJ index (nutrient enrichment).	Defined using either percentile distribution or linear regression.

		For MISA, the intercept between pH 5.6 (an established ecological breakpoint on the x-axis) and MISA EQRs (on the y-axis) was defined as the boundary (Figure 1). For ASPT and the DJ-index no ecological thresholds have been established. For these two metrics, a 25% decrease in EQR from the high-good boundary, which equates to a 44% deviation in EQR values from the average (median) reference EQRs was used.
Level of diversity	Defined as the 25th-percentile of EQRs of "reference" populations (see above) for ASPT (general ecological quality), MISA (acidification) and DJ index (nutrient enrichment).	Defined using either percentile distribution or linear regression. For MISA, the intercept between pH 5.6 (an established ecological breakpoint on the x-axis) and MISA EQRs (on the y-axis) was defined as the boundary (Figure 1). For ASPT and the DJ-index no ecological thresholds have been established. For these two metrics, a 25% decrease in EQR from the high-good boundary, which equates to a 44% deviation in EQR values from the average (median) reference EQRs was used.

Appendix (Sweden)

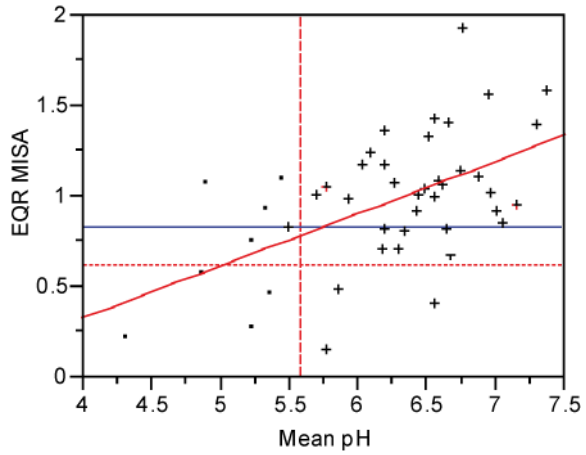

Figure 1:

Relationship between EQR MISA and mean pH. The vertical line shows the breakpoint where significant ecological effects occur (pH = 5.6). The blue line and red (dotted) horizontal lines show H/G and G/M boundaries, respectively. The H/G boundary is defined as the 25th-percentile of index values of a reference population (set using pressure criteria) and the G/M boundary as the intercept at pH 5.6. Crosses denote reference and dots impaired sites.

References:

Dahl, J. & R.K. Johnson. 2004. A multimetric macroinvertebrate index for detecting organic pollution of streams in southern Sweden. Archiv für Hydrobiologie, 160: 487-513.

Johnson, R.K. & Goedkoop, W., 2007. Bedömningsgrunder för bottenfauna I sjöar och vattendrag – Användarmanual och bakgrundsdokument, Rapport 2007:4 (in Swedish). Department of Environmental Assessment. Swedish University of Agricultural Sciences.

Davy-Bowker, J., J.F. Murphy, G.P. Rutt, J.E.C. Steel & M.T. Furse. 005. The development and testing of a macroinvertebrate biotic index for detecting the impact of acidity on streams. Arch Hydrobiol. 163: 383-403.