

Nutrient targets for lakes and rivers in Europe



Eutrophication

Water Framework Directive :
aims to reach Good status

Ecological assessment systems:

- Biological quality elements:
- Phytoplankton, macrophytes etc
- Intercalibrated among MS

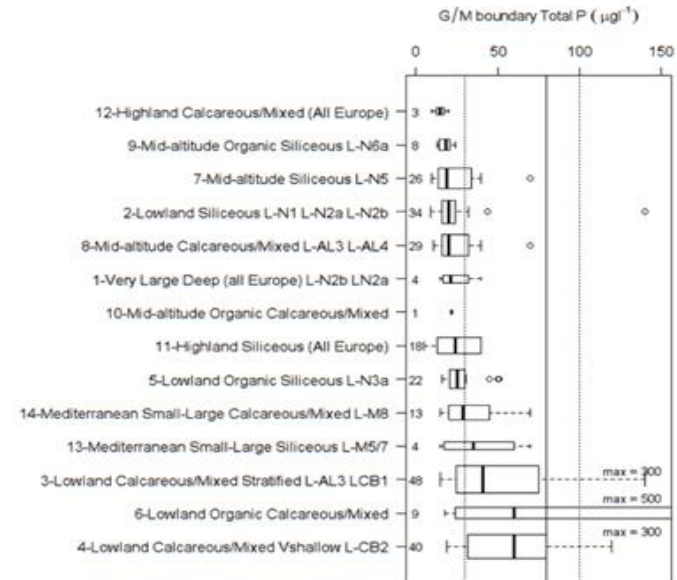
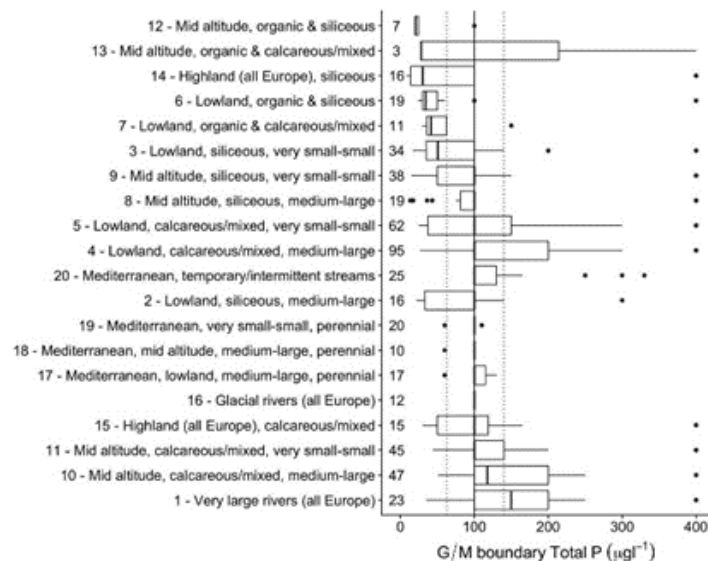
Supporting quality elements:

- Nutrient thresholds
- Should be set by MS
- Should support Good status

Nutrient boundaries: different among MS

Rivers

Lakes



Reasons: (1) typology, (2) approach

Poikane, S., Kelly, M.G., Herrero, F.S., Pitt, J.A., Jarvie, H.P., Claussen, U., Leujak, W., Solheim, A.L., Teixeira, H. and Phillips, G., 2019. *Nutrient criteria for surface waters under the European Water Framework Directive: Current state-of-the-art, challenges and future outlook*. *Science of the Total Environment*, 695, p.133888.

WG ECOSTAT Nutrient work

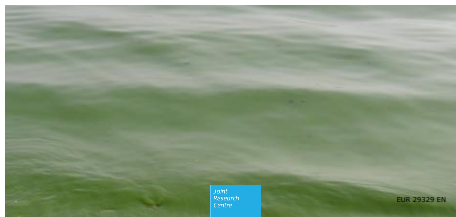


JRC SCIENCE FOR POLICY REPORT

Best practice for establishing
nutrient concentrations to support
good ecological status

Geoff Phillips, Martyn Kelly, Heliana Teixeira,
Fuensanta Salas, Gary Free, Wera Leujak,
Jo-Anne Pitt, Anne Lyche Solheim, Gábor Várбірó,
Sandra Poikane

2018



+ Tool – kit to derive nutrient boundaries



- Guide on how to set boundaries
- Ranges of most probable thresholds for broad types for checking
- Statistical approaches to set boundaries
- User-friendly tool-kit in Excel, R and Shiny

Poikane, S., Phillips, G., Birk, S., Free, G., Kelly, M.G. and Willby, N.J., 2019. Deriving nutrient criteria to support 'good' ecological status in European lakes: an empirically based approach to linking ecology and management. *Science of the Total Environment*, 650, pp.2074-2084.

Poikane, S., Várбірó, G., Kelly, M.G., Birk, S. and Phillips, G., 2021. Estimating river nutrient concentrations consistent with good ecological condition: More stringent nutrient thresholds needed. *Ecological Indicators*, 121, p.107017.

Salas Herrero, F., Teixeira, H. and Poikane, S., 2019. A novel approach for deriving nutrient criteria to support good ecological status: application to coastal and transitional waters and indications for use. *Frontiers in Marine Science*, 6, p.255.