Supporting document

Lake Classification 2020 Status

Sustainability *at the heart of a living, working, active landscape valued by everyone.*

NIEA Northern Ireland Environment Agency
www.daera-ni.gov.uk

An Agency within the Department of Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

Introduction

For 1st and 2nd cycle River Basin Management Plans Northern Ireland reported the Overall Status of lake water bodies. Based on the 'One out all out' principle, overall status is assessed as the worst of Ecological status and Chemical Status. Therefore, to achieve the overall aim of "Good status", a water body will have to be at least good for both Ecological and Chemical status.

Ecological status comprises biological, general physico-chemical and hydromorphological quality elements. Ecological status is assessed on a 5 band system ranging from High to Bad status. If the physical structure of a water body has been changed for a specific use, it is designated as a Heavily Modified Water Body (HMWB). As a result, it cannot meet Good Ecological Status (GES) but all HMWBs should meet Good Ecological Potential. The Ecological Potential of a water body is also assessed on a 5 band scale i.e. from High to Bad Ecological Potential. For ease of comparison when presenting numbers in each class, ecological status and ecological potential will not be separated (exceptions Tables 1 and 5).

Chemical status assesses those chemicals which have been identified as Priority substances and are assessed as High where any Priority Substance monitored has passed the relevant standard and Moderate where any Priority Substance monitored has failed the relevant standard.

Overall Lake Status

Lake Status was published on 27th August 2020 using data collected up to the end of 2019**.** There was a deterioration in overall Surface Water Status for eight of NI surveillance lakes. Table 1 below presents the Surface Water Status for NI surveillance lakes for WFD 2015, 2018 and 2020 whilst Table 2 presents the breakdown of number for each class for each classification year.

Table 1: Surface Water (SW) Status for NI surveillance lakes 2015, 2018 and 2020

LAKE NAME	2015 SW Status	2018 SW Status	2020 SW Status
Beg	Poor Ecological Status	Poor Ecological Status	Poor Ecological Status
Cam	Poor Ecological Potential	Poor Ecological Potential	Poor Ecological Potential
Castlehume	Good Ecological Status	Good Ecological Status	Moderate Ecological Status
Clea	Moderate Ecological Status	Moderate Ecological Status	Moderate Ecological Status
Erne Lower Lough Kesh	Moderate Ecological Potential	Poor Ecological Potential	Poor Ecological Potential
Erne Lower Lough Devenish	Moderate Ecological Potential	Moderate Ecological Potential	Moderate Ecological Potential
Erne Upper Lough	Moderate Ecological Potential	Poor Ecological Potential	Poor Ecological Potential
Fea	Good Ecological Potential	Good Ecological Potential	Moderate Ecological Potential
Gullion	Bad Ecological Status	Bad Ecological Status	Bad Ecological Status
Lough Island Reavy	Moderate Ecological Potential	Moderate Ecological Potential	Moderate Ecological Potential
MacNean Lower	Bad Ecological Status	Bad Ecological Status	Bad Ecological Status
MacNean Upper	Moderate Ecological Status	Poor Ecological Status	Poor Ecological Status
Melvin	Moderate Ecological Status	Moderate Ecological Status	Moderate Ecological Status
Mourne	Moderate Ecological Potential	Moderate Ecological Potential	Moderate Ecological Potential
Neagh	Bad Ecological Potential	Poor Ecological Potential	Bad Ecological Potential
Portmore	Bad Ecological Status	Bad Ecological Status	Bad Ecological Status
Ross	Moderate Ecological Status	Moderate Ecological Status	Poor Ecological Status
Scolban	Good Ecological Status	Good Ecological Status	Good Ecological Status
Silent Valley	Good Ecological Potential	Good Ecological Potential	Moderate Ecological Potential
Spelga	Good Ecological Potential	Good Ecological Potential	Moderate Ecological Potential
Stoneyford	Poor Ecological Potential	Poor Ecological Potential	Poor Ecological Potential

Table 2: Number of lakes for each Surface Water Status class for WFD 2015, 2018 and 2020.

Surface Water Status Class	No. 2015	No. 2018	No. 2020
High	0	0	0
Good	5	5	1
Moderate	9	6	9
Poor	3	7	7
Bad	4	3	4

There were no lakes at High Surface Water status across all years. The number of lakes at Good Ecological Status dropped from 23.8% in 2015 to 4.8% in 2020. The percentage of lakes at Moderate Surface Water Status remained the same between 2015 and 2020 at 42.9%, whilst the number at Poor Surface Water Status increased from 14.3% to 33.3%. The percentage of lakes at Bad Ecological Status remained the same at 19.1% (Figure 1).

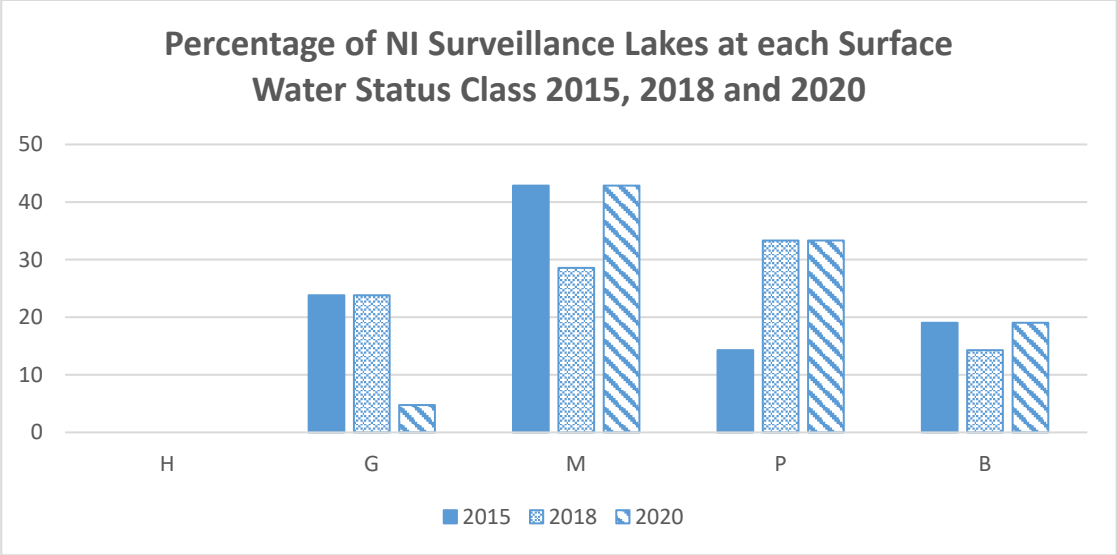

Figure 1: Percentage of NI surveillance lakes at each Surface Water Status Class 2015, 2018 and 2020

The drivers for the 8 lakes that have deteriorated (4 from Good to Moderate and 4 from Moderate to Poor) since 2015 are presented in Table 3.

Table 3: Lakes that deteriorated from 2015 to 2020 and drivers for their Surface Water Status.

	Surface Water Status			
	2015	2018	2020	Driver for deterioration
Castlehume	Good	Good	Moderate	TP, DO i.e. Ecological Status
Fea	Good	Good	Moderate	Cypermethrin i.e. Chemical Status
Lower Lough Erne A (Kesh)	Moderate	Poor	Poor	Diatoms i.e. Ecological Status
Upper Lough Erne	Moderate	Poor	Poor	Diatoms i.e. Ecological Status

	Surface Water Status			
	2015	2018	2020	Driver for deterioration
Upper Lough MacNean	Moderate	Poor	Poor	Macrophytes i.e. Ecological Status
Ross	Moderate	Moderate	Poor	Phytoplankton i.e. Ecological Status
Silent Valley	Good	Good	Moderate	TP, Cypermethrin i.e. Both Ecological and Chemical Status
Spelga	Good	Good	Moderate	TP, Cypermethrin i.e. Both Ecological and Chemical Status

One lake has deteriorated due to Chemical status only, 5 lakes due to Ecological status only and 2 lakes due to both Ecological and Chemical status. Chemical and Ecological status of lakes are considered separately in Sections 3 and 4 respectively.

Chemical Status

All lakes were reported as High Chemical status in 2015 and 2018. However, the assessment of Chemical status in 2020 found that 10 (47.6%) NI surveillance lakes deteriorated to Moderate as shown in Table 4. All chemical status failures are due to these lakes failing the standard for Cypermethrin. Cypermethrin was previously defined as a Specific Pollutant under WFD and therefore included in the assessment of Ecological status until 2018.

In December 2018, Cypermethrin was designated as a Priority Substance by the EU under the Environmental Quality Standards Directive (2013/39/EU), a daughter Directive of the Water Framework Directive (WFD) (2000/60/EC). Due to the high toxicity of Cypermethrin to aquatic life, very small concentrations have been identified to be of concern to lake ecology. An Annual Average (AA) EQS for Cypermethrin of 0.00008µg/l for freshwaters has been specified in this Directive. In addition a MAC of 0.0006µg/l has been set for freshwaters. This is in contrast to the acceptable daily intake (ADI) for human health of 0-0.05g/kg body weight as set out by the World Health Organisation. The cypermethrin levels found in NI lakes are therefore not an issue for Drinking Water or human health.

Cypermethrin will not be surveyed again for these lakes in this cycle and so these Chemical classifications will be carried through to the final river basin management plans in 2021.

Table 4: Chemical Status for NI surveillance lakes 2015, 2018 and 2020

LAKE NAME	Chemical Status 2015	Chemical Status 2018	Chemical Status 2020
Beg	High	High	High
Cam	High	High	Moderate
Castlehume	High	High	High
Clea	High	High	High
Erne Lower Lough Kesh	High	High	Moderate
Erne Lower Lough Devenish	High	High	High
Erne Upper Lough	High	High	High
Fea	High	High	Moderate
Gullion	High	High	High
Lough Island Reavy	High	High	Moderate
MacNean Lower	High	High	High
MacNean Upper	High	High	High
Melvin	High	High	High
Mourne	High	High	Moderate
Neagh	High	High	High
Portmore	High	High	Moderate
Ross	High	High	Moderate
Scolban	High	High	High
Silent Valley	High	High	Moderate
Spelga	High	High	Moderate
Stoneyford	High	High	Moderate

Chemical status is the sole driver for only one lake (Lough Fea) deteriorating from Good overall Surface Water status to Moderate overall Surface Water status (Table 3). For the other lakes where Chemical status is Moderate, the Ecological status is also less than Good.

Ecological Status/Potential

The Ecological Status/Potential for the 21 lake water bodies in 2015, 2018 and 2020 is presented in Table 5.

Table 5: Ecological Status/Potential for NI surveillance lakes 2015, 2018 and 2020

	Ecological Status/Potential 2015	Ecological Status/Potential 2018	Ecological Status/Potential 2020
Beg	Poor Ecological Status	Poor Ecological Status	Poor Ecological Status
Cam	Poor Ecological Potential	Poor Ecological Potential	Poor Ecological Potential
Clea	Moderate Ecological Status	Moderate Ecological Status	Moderate Ecological Status
Erne Lower Lough Kesh	Moderate Ecological Potential	Poor Ecological Potential	Poor Ecological Potential
Erne Lower Lough Devenish	Moderate Ecological Potential	Moderate Ecological Potential	Moderate Ecological Potential
	Good Castlehume Ecological Status	Good Ecological Status	Moderate Ecological Status
Erne Upper Lough	Moderate Ecological Potential	Poor Ecological Potential	Poor Ecological Potential
Fea	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential
Gullion	Bad Ecological Status	Bad Ecological Status	Bad Ecological Status
Lough Island Reavy	Moderate Ecological Potential	Moderate Ecological Potential	Moderate Ecological Potential
MacNean Lower	Bad Ecological Status	Bad Ecological Status	Bad Ecological Status
MacNean Upper	Moderate Ecological Status	Poor Ecological Status	Poor Ecological Status
Melvin	Moderate Ecological Status	Moderate Ecological Status	Moderate Ecological Status
Mourne	Moderate Ecological Potential	Moderate Ecological Potential	Moderate Ecological Potential
Neagh	Bad Ecological Potential	Poor Ecological Potential	Bad Ecological Potential
Portmore	Bad Ecological Status	Bad Ecological Status	Bad Ecological Status
Ross	Moderate Ecological Status	Moderate Ecological Status	Poor Ecological Status
Scolban	Good Ecological Status	Good Ecological Status	Good Ecological Status
Silent Valley	Good Ecological Potential	Good Ecological Potential	Moderate Ecological Potential
Spelga	Good Ecological Potential	Good Ecological Potential	Moderate Ecological Potential
Stoneyford	Poor Ecological Potential	Poor Ecological Potential	Poor Ecological Potential

The indications are that, 13 lakes will remain unchanged across the entire river basin cycle and 7 lakes will deteriorate from the Ecological status reported in 2015. Two of these will also deteriorate due to their Chemical status. Lough Neagh, which improved to Poor Ecological status in 2018 will again be reported as Bad status in 2021 due to its macrophytes which were surveyed again in 2018.

Lake Nitrogen Standard

To date, Total Phosphorus (TP) was the only nutrient assessed as a supporting element in freshwaters. However, evidence from scientific literature suggests that nitrogen also plays a significant role in ecological functioning and the eutrophication process. Lake Nitrogen Standards for WFD were developed by UKTAG, based on a type specific three year mean (annual as a minimum) Total Nitrogen (TN) concentration www.wfduk.org/Lakes-Nitrogen Although not formally adopted as yet by the UK or NI, an investigation was carried out by WADE to classify lakes using the most recent annual TN data and assess if these impacted WFD status. None of the TN classes were worse than TP, therefore there was no impact on Physiochemical, Ecological or Surface Water Status.

Conclusion

There has been a significant decline in lake status since the last publication in 2018, so this most recent published assessment provides valuable evidence to assess progress towards objectives set for lakes in 2021. As lakes are slow to react to changes in water quality, assessments based on data collected up to the end of 2019 are not expected to change greatly by final classification in 2021. In addition, the restrictions imposed by the ongoing Covid-19 pandemic meant that only limited lake data was able to be collected in 2020. Therefore, it was considered that publication of lake data assessments in 2020 would provide timely information for the draft RBMPs and A Lake Quality Update 2020 to the Northern Ireland Water Framework Directive Statistics was published on 27th August 2020:

Northern Ireland Water Framework Directive Lake Quality Update 2020 statistics released | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

Classification of all surface water bodies and groundwater bodies will be updated in 2021 for the final RBMPs and it is proposed that this 2021 WFD classification will report Ecological and Chemical status separately. This will allow us to contextualise any chemical breaches and allow mitigation measures to focus on those pressures impacting the lake ecology.

Northern Ireland Environment Agency
www.daera-ni.gov.uk

For further information:

Integrated Catchment Planning Team
NIEA Water Management Unit
17 Antrim Road, Tonagh, Lisburn Co. Antrim
BT28 3AL

Tel: 028 9263 3481
Email: catchmentplanning@daera-ni.gov.uk
www.daera-ni.gov.uk

An Agency within the Department of Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

INVESTORS IN PEOPLE