

The Second State of Natural Resources Report (SoNaRR2020)

SoNaRR2020 Register freshwater assessment of SMNR

Natural Resources Wales

Final Report

About Natural Resources Wales

Natural Resources Wales's purpose is to pursue sustainable management of natural resources. This means looking after air, land, water, wildlife, plants and soil to improve Wales's well-being, and provide a better future for everyone.

Evidence at Natural Resources Wales

Natural Resources Wales is an evidence-informed organisation. We seek to ensure that our strategy, decisions, operations and advice to Welsh Government and others are underpinned by sound and quality-assured evidence. We recognise that it is critically important to have a good understanding of our changing environment.

We will realise this vision by:

- Maintaining and developing the technical specialist skills of our staff;
- Securing our data and information;
- Having a well resourced proactive programme of evidence work;
- Continuing to review and add to our evidence to ensure it is fit for the challenges facing us; and
- Communicating our evidence in an open and transparent way.

Title: **SoNaRR2020 Register freshwater assessment of SMNR**

Peer Reviews: Internal and external peer review

Restrictions: None

The Second State of Natural Resources Report (SoNaRR2020) contents

This document is one of a group of products that make up the second State of Natural Resources Report (SoNaRR2020). The full suite of products are:

Executive Summary. Foreword, Introduction, Summary and Conclusions. Published as a series of webpages in December 2020

The Natural Resource Registers. Drivers, Pressures, Impacts and Opportunities for Action for eight Broad Ecosystems. Published as a series of PDF documents and as an interactive infographic in December 2020

Assessments against the four Aims of SMNR. Published as a series of PDF documents in December 2020:

SoNaRR2020 Aim 1. Stocks of Natural Resources are Safeguarded and Enhanced

SoNaRR2020 Aim 2. Ecosystems are Resilient to Expected and Unforeseen Change

SoNaRR2020 Aim 3. Wales has Healthy Places for People, Protected from Environmental Risks

SoNaRR2020 Aim 4. Contributing to a Regenerative Economy, Achieving Sustainable Levels of Production and Consumption

The SoNaRR2020 Assessment of Biodiversity. Published in March 2021

Assessments by Broad Ecosystem.. Published as a series of PDF documents in March 2021:

Assessment of the Achievement of SMNR: Coastal Margins

Assessment of the Achievement of SMNR: Enclosed Farmland

Assessment of the Achievement of SMNR: Freshwater

Assessment of the Achievement of SMNR: Marine

Assessment of the Achievement of SMNR: Mountains, Moorlands and Heaths

Assessment of the Achievement of SMNR: Woodlands

Assessment of the Achievement of SMNR: Urban

Assessment of the Achievement of SMNR: Semi-Natural Grassland

Assessments by Cross-cutting theme. Published as a series of PDF documents in March 2021:

Assessment of the Achievement of SMNR: Air Quality

Assessment of the Achievement of SMNR: Climate Change

Assessment of the Achievement of SMNR: Energy Efficiency

Assessment of the Achievement of SMNR: Invasive Non-native Species

Assessment of the Achievement of SMNR: Land use and Soils

Assessment of the Achievement of SMNR: Waste

Assessment of the Achievement of SMNR: Water Efficiency

Updated SoNaRR evidence needs. Published in March 2021

Acronyms and Glossary of terms. Published in December 2020 and updated in March 2021

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Freshwater Natural Resource Register Assessment of SMNR

SoNaRR2020

Aim 1: Stocks of Natural Resources are safeguarded and enhanced

Whilst there is a wealth of pro-active river and wetland restoration work ongoing involving many sectors and stakeholders, the overall state of our freshwater ecosystems is poor due to a complex combination of the pressures described above. Only 44% of rivers achieve good ecological status under the water framework directive.

Demand for water is likely to increase in the future which will exert increasing pressure on freshwater ecosystems.

Aim 1: Progress towards meeting the aim

- 1.1 Acidification of freshwater from atmospheric deposition is decreasing
- 1.2 Upland lakes in Wales are generally in good condition and improving. (NRW, 2016a)
- 1.3 Metal mine strategy successes.
- 1.4 A significant number of physical barriers to migratory fish have been removed or mitigated.
- 1.5 A variety of river restoration work is ongoing across Wales taking an SMNR collaborative approach involving community engagement. Projects range from local initiatives such as Taclo'r Tywi on the Afon Tywi to large scale cross-border projects such as the LIFE Dee River, a European-funded project encompassing a range of interventions to benefit the habitats and species of the river Dee SAC. NRW are currently setting up an Integrated River Restoration Programme to co-ordinate and plan rivers work in Wales.
- 1.6 Dwr Cymru report a water saving of 200Ml/d due to a reduction in industry uptake and leakage.
From Water Efficiency Chapter
- 1.7 Water companies have committed to a target to reduce supply leakage by 15% by 2025. Water Resources management Plans 2019.
From Water Efficiency Chapter
- 1.8 UK wide initiatives to raise awareness of water leakage ,e.g. the Leaky Loos campaign, co-ordinated by Waterwise, UK Water Efficiency Strategic Steering Group and Wales Water Efficiency Group. All are working with UK Government to

introduce water efficiency labelling on water appliances.

From Water Efficiency Chapter

- 1.9 The Wales Water Efficiency Group was formed in Nov 2019 to co-ordinate research in to water efficiency technologies, communications, and awareness raising of the need to conserve water in Wales This group links in to the UK Water Efficiency Strategic Steering Group. Both groups are led by Waterwise.
From Water Efficiency Chapter

Aim 1: Obstacles remaining to meeting the aim

- 1.10 The majority of freshwater SAC features were assessed as unfavourable in 2012 and continue to be unfavourable.
- 1.11 66% of river water bodies fail to achieve good ecological status under the WFD.
- 1.12 Lowland lakes in Wales are generally in poor condition and deteriorating. (NRW, 2016a).
- 1.13 All Habitats Directive freshwater features are in unfavourable status, with the exception of otter.
- 1.14 Continued widespread agricultural diffuse pollution resulting in elevated nutrient and sediment loadings into freshwaters.
- 1.15 Illegal removal of gravel from rivers is a significant problem on some catchments, and results in direct loss of invertebrate and fish habitat.
- 1.16 Continued degradation and modification of wetland habitats as a result of infrastructure and development.
- 1.17 The area of pond habitat has vastly reduced during recent decades, with up to 90% of lowland ponds in the UK lost in the 20th century through succession or direct infilling (Hayhow et al. 2019). A survey of 126 ponds across Wales found that 13 (10%) marked on current OS maps had been filled in for agricultural cultivation (Shaw 2017).
- 1.18 Water vole populations in Wales have declined by 89% since 1995. (Matthews et al, awaiting publication)
- 1.19 Three species – white-clawed crayfish, freshwater pearl mussel and southern damselfly - are at risk of extinction in Wales. (Habitats Directive 2013-2018)
- 1.20 The latest salmon and sea trout stock assessments show continuing decline since the last SONARR (Cefas et al. 2020; NRW 2020).
- 1.21 Climate change projections for increased frequency of prolonged dry weather periods increasing pressure on water supply.
From Climate Change Chapter

Aim 2: Resilient Ecosystems

No freshwater ecosystem type achieves a high score for all four resilience attributes. All ecosystem types have at least one low-scoring attribute, with the exception of upland lakes.

Lowland rivers and floodplains have a low resilience score for all four attributes, whereas upland rivers score low for diversity but medium for extent, condition and connectivity. For standing waters, lowland higher nutrient lakes score low for diversity, extent and condition but high for connectivity. Marl lakes are medium for diversity, low for extent and condition and high for connectivity. Ponds score medium for diversity and connectivity but low for extent and condition. Upland lower nutrient lakes score high for diversity, extent and connectivity, and medium for condition.

From Aim 2: Resilient Ecosystems Chapter

Aim 2: Progress towards meeting the aim

- 2.1 Increasing awareness and implementation of nature- based solutions to mitigate pollution and flood risk e.g. promotion of use of SUDS and natural flood management techniques.
- 2.2 Continued research into the use of biological control agents to control widespread INNS such as the Himalayan Balsam rust fungus.

Aim 2: Obstacles remaining to meeting the aim

- 2.3 There are no extensive areas of intact natural floodplain in Wales. Floodplains in Wales are in very poor condition. More than 75% of floodplains are highly developed (intensive agricultural land or urbanised land), with less than 25% being natural habitats (Rothero et al. 2018)
- 2.4 Continued physical modification of water courses. Length and area of rivers has reduced significantly over the last 200 years due to straightening and channelization, the rate of this is now very slow. (Hearn & Hatton-Ellis 2018)
- 2.5 Continued threat from existing and new INNS.
- 2.6 Continued pressure on water resources. Resilience to abstraction is likely to reduce with the forecast of more frequent and prolonged periods of drought.
- 2.7 Persistent organic pollutants (POPs originate from a wide range of current and historic sources and although now banned, remain widespread in freshwater food chains, especially in former industrial catchments of South Wales. (Lambert & Wagner 2018; Windsor et al. 2019)

Aim 3: Healthy Places for People

Wales' freshwater ecosystems provide rich and varied opportunities for recreation, and are valued for their cultural and landscape importance. They also play a vital role in the regulation of flood risk.

However, weaknesses and failings in current regulation regimes contribute to poor ecosystem health, in particular in relation to pollution and physical degradation.

Aim 3: Progress towards meeting the aim

- 3.1 93% of adults in Wales took part in some sort of outdoor recreation at least once a year with 10% participating in waters ports, 11% fishing and 34% wildlife watching. (NRW, 2016b)
- 3.2 Approximately 40,000 rod licences are issued in Wales annually although the figure 10 years ago was closer to 55,000 and there is scope to increase sales through recent marketing initiatives such as the recently launched. “Fishing in Wales” initiative.
- 3.3 Increasing awareness and implementation of nature- based solutions to mitigate pollution and flood risk e.g. promotion of use of SUDS and natural flood management techniques.

Aim 3: Obstacles remaining to meeting the aim

- 3.4 Inadequacies of various regulatory regimes, and failings in the implementation of regulatory regimes, result in ongoing degradation to freshwater ecosystems.

For example, development and infrastructure resulting in physical modification to water courses, continued development in flood plains, lack of compliance with good agricultural practice resulting in water pollution, lack of mechanism in felling licencing to protect freshwater features.

- 3.5 Reducing flows due to abstraction from rivers and lakes can limit access to water sports and swimming. Reduced flow or stagnation of water in rivers and lakes can result in a health hazard, restricting access to outside, recreational space. From Water Efficiency Chapter

Aim 4: A Regenerative Economy

Aim 4: Progress towards meeting the aim

- 4.1 The number of hydropower schemes in Wales increased significantly between 2010 and 2019, with an estimated 182 megawatts (MW) of installed hydropower capacity in Wales (Welsh Government, 2018b)
- 4.2 NRW’s ongoing [Restoring Sustainable Abstraction](#) programme works with licence holders to reduce the amount of water from the environment.
- 4.3 There are a range of projects and initiatives looking at water efficiency such as Cardiff University’s [Water Research Institute](#). Welsh Government’s Water Strategy for Wales, 2015, outlines a range of key objectives for the short, medium and long term (WG, 2015).

- 4.4 Increased recognition that flood risk management needs to take a catchment management approach incorporating nature-based solutions and multiple benefits. This is reflected in the new Flood and Coastal Erosion Risk Management (FCERM) policy and TAN 15.
- 4.5 Waste water treatment improvement schemes delivered by AMP6 and planned for AMP 7 and 8.

Aim 4: Obstacles remaining to meeting the aim

- 4.6 Direct impact of restricted water resource availability including an adverse impact on health and well-being, reduced water for irrigation of agricultural crops and limited economic growth in those sectors dependent on water.
From Water Efficiency Chapter
- 4.7 The infrastructure and ecological impacts associated with future water transfer schemes, both within Wales and between Wales and England.
- 4.8 Losses of soil and nutrients from agricultural land and the resulting pollution of freshwater ecosystems. Unsustainable land management practices are a legacy of the historical drive towards intensive agriculture at the expense of food quality and the environment.