

THE OPINIONS OF THE COMMUNITIES WHO
RELY UPON RIVERS FOR LIVELIHOODS AND
HOBBIES, TOWARDS NITRATE VULNERABLE
ZONES IN THE UK, AND THEIR VIEWS
REGARDING THE ALL-WALES NVZ

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introduction and rationale

- ▶ The use of nitrate based fertilisers in agriculture have contributed significantly to the deterioration of fresh water ecosystems, by the process of eutrophication.
- ▶ In order to protect the freshwater environment Nitrate Vulnerable Zones (NVZ's) were introduced. Prior to the Welsh government's decision regarding an all-Wales NVZ, coverage consisted of 55% (England) 14% (Scotland) and 2.3% (Wales) (Welsh government, 2014).
- ▶ There has been research conducted on the effectiveness of NVZ's and the attitudes and opinions of Farmers. But very little research has been conducted on those affected by nitrate pollution, such as Anglers.

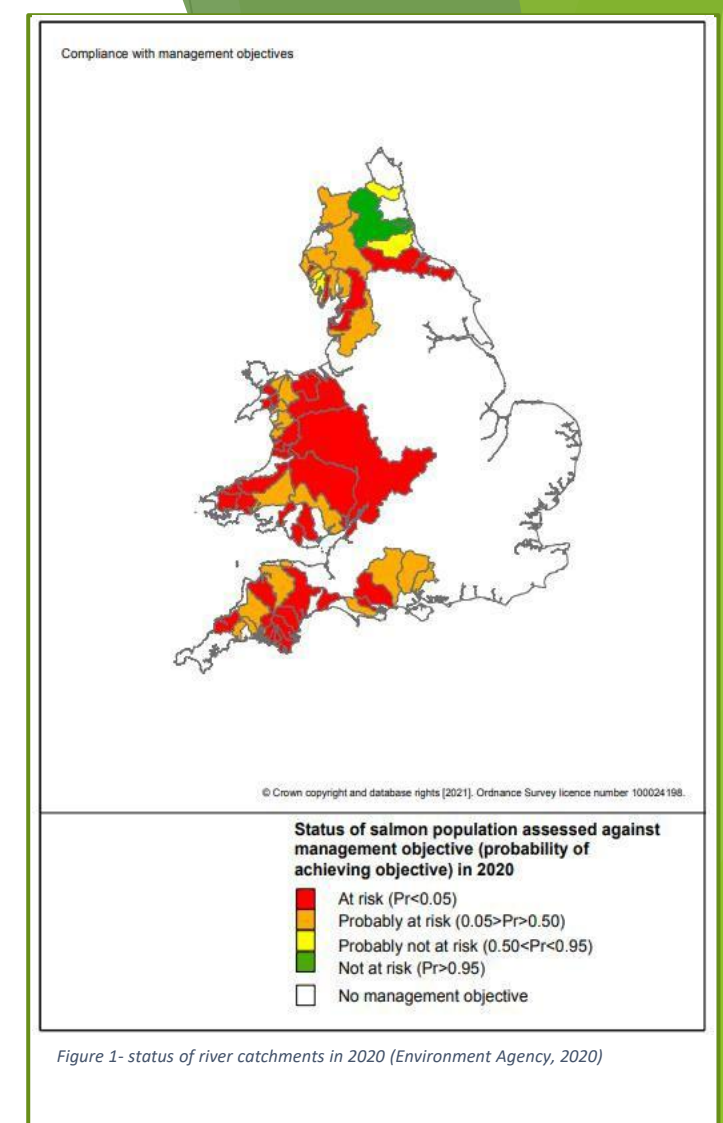
Aims and Objectives

The main aims of this study is to collect and understand the opinions and attitudes of people who are reliant upon the rivers for their livelihoods or recreation. The categories of opinions and attitudes this study aims to collect is:

- ▶ The Impact of nitrate pollution on anglers
- ▶ The impact of nitrate pollution on the environment
- ▶ Responsibility of the various stakeholders
- ▶ Their attitudes on farmers
- ▶ Their knowledge, awareness, and attitudes towards NVZ's
- ▶ The opinions of the all-Wales NVZ, and also a hypothetical nationwide NVZ

Literature

- ▶ Farmers are responsible for 70-80% of all nitrates within British rivers, and comes from agricultural sources (Ferrier et al., 2001; Defra, 2004; Neal et al, 2006)
- ▶ All 22 principle salmon rivers are classified as 'at risk' in Wale, with a -92% decrease in the number of salmon caught within a five year period (GOV,2021; NRW salmon, 2018)
- ▶ Over half of all freshwater species are in decline, 13% of which are now facing extinction (Wild Trout Trust, 2017)
- ▶ In Wales, out of the 107 bodies of water, only 42 passed their SAC phosphorous compliance levels, showing a 60% failure (NRW, 2019)
- ▶ Studies surrounding the effectiveness of NVZ's, mainly conducted in Scotland, concerning the effectiveness (Barnes, 2008; Barnes, 2009; Macgregor, 2006; Macgregor, 2015).



Methodology

Data was to be collected by a questionnaire consisting of 25 questions, and by interviews of relevant participants, designed to evaluate the opinions and attitudes of the participants in several categories:

- ▶ Demographics
- ▶ Awareness of NVZ's and nitrate pollution
- ▶ Human impact
- ▶ Environmental impact
- ▶ Responsibility
- ▶ Views and opinions on NVZ's
- ▶ All Wales NVZ

Literature used for the design of the questions mainly oriented around the Welsh government All-Wales NVZ consultation to farmers (Welsh Government, 2016), but adapted to another participant group. Other studies examining the opinions and attitudes of farmers towards NVZ's was also used to create the questions (Barnes, 2008)

Results

Demographics

- ▶ In total 31 participants met the essential criteria of this study.
- ▶ 39% of participants worked within the aquaculture industry, 98% of which are also involved in recreational activities
- ▶ Majority of participants are residents of England (71%), Wales (23%), Scotland (6%)

Awareness of NVZ's

- ▶ Participant awareness of NVZ's was overall poor, with the exception of participants who worked within the industry, 83% of which choosing moderate to very high awareness
- ▶ In both interviews it was stated that anglers had a poor awareness of farming regulations, laws and practices, but also the impact on the river ecosystem

Table 1 Frequencies of awareness of NVZ's Within the Overall Sample

How aware are you about NVZ's	Total Sample (N = 31)	
	n	%
Very High	2	6.5
High	6	19.4
Moderate	10	32.3
Little	10	32.3
None	3	9.7

Results

Human Impact

- ▶ Great deal of uncertainty on the impact of livelihoods and recreational hobbies, with the majority choosing 'maybe' (42%)
- ▶ 67% of participants that work within the industry chose 'yes'
- ▶ Great deal of concern was given to the health impacts, with 77% of all participants choosing 'Yes'

Environmental impact

- ▶ Overall opinions showed that that nitrate pollution is largely impactful on the freshwater environment, 54.8% of participants selecting 'Great'
- ▶ When asked what is a greater priority, between agriculture or the environment. 77% of participants stated that the environment is of greater importance

Table 2 Impact on livelihood or hobbies impact from nitrate pollution

Has your livelihood or hobbies been affected by nitrate pollution	Total Sample (N = 31)	
	n	%
yes	11	35
No	6	19
maybe	13	42
N/a	1	3

Table 3 Impact the environment

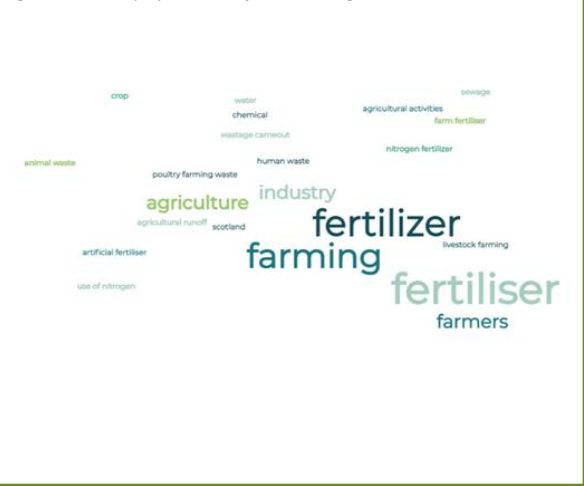
Impact of Freshwater wildlife	Total Sample (N = 31)	
	n	%
Very Great	2	6.5
Great	17	54.8
Moderate	7	22.6
Small	3	9.7
Very small	2	6.5
None	0	0

Results

Responsibility

- ▶ When asked what the greatest source of pollution 78% of participants stated farming and fertiliser.
- ▶ Farmers are seen as largely responsible for the cause although participants do also express the responsibility of the government in terms of protection
- ▶ Farmers are viewed as making less effort in tackling nitrate pollution when compared to the government

Figure 2 word display answers of what is the greatest nitrate source



Views and opinions of NVZ's and the All-Wales NVZ

- ▶ 71% of participants stated that rivers were not protected before the All-Wales laws were introduced
- ▶ Participants showed great support for the control of nitrate based products
- ▶ Majority chose 'no' when asked whether the nitrate laws are too severe on farmers
- ▶ Large support for the all-Wales NVZ, but also great uncertainty in terms on whether it will be effective. But also support for an all-UK NVZ

Table 4 comparison between the views of how much farmers contribute to pollution compared to how much effort they do to reduce pollution

	Total Sample (N = 31)					
	Not at all	very small	small	moderate	great	very great
how much have farmers contributed to freshwater nitrate pollution?	0.0%	6.5%	9.7%	12.9%	54.8%	16.1%
How much effort have farmers made to reduce nitrate pollution?	0.0%	22.6%	38.7%	22.6%	16.1%	0.0%

Conclusion

- ▶ Overall poor awareness of NVZ's within the Angling community with the exception of those that work within the industry.
- ▶ Participants showed uncertainty with regards to how they have been affected by nitrate pollution.
- ▶ Large concern given to human health.
- ▶ Majority welcome the all-Wales NVZ, prioritising, although unsure if it will be effective.
- ▶ Responsibility has been generally placed upon farmers, criticised for their poor attitude and lack of effort.
- ▶ Overall it has shown that there may be cultural problems within not only the farming community but also within the angling community itself.
- ▶ That the perceived negative attitudes towards farmers, prioritising income over the environment is also supported by literature (Macgregor,2015; HSE GOV, 2009; Barnes, 2009; Barnes,2008; Willock et al,1999).

Limitations and future studies

There is very little literature within this field surrounding the impact of secondary stakeholders such as anglers, by the effects of nitrate pollution. The study has given insight to a small group that is affected by pollution.

There are however things I would change within this study:

- ▶ Demographics- Greater details into participant location, years of experience
- ▶ Methodology- Change method of survey distribution, more extensive testing of the questionnaire for better data

Future studies that could be conducted:

- ▶ The cultural attitudes of farmers, specifically Welsh farmers and English farmers
- ▶ The cultural attitudes Anglers
- ▶ Awareness of public on nitrate pollution

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Any Questions?