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# Montgomeryshire Wildlife Trust - Wild Skills, Wild Spaces project - Evaluation Report

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# WILD SKILLS, WILD SPACE - EXECUTIVE SUMMARY

- Beginning in April 2021 and running for 24 months, Wild Skills, Wild Spaces (WSWS) aimed to deliver and evaluate a range of nature-based activities (ecotherapy) designed to improve the health, skills, and wellbeing of local communities in Powys. Over 12 week periods, Montgomeryshire Wildlife Trust (MWT) simultaneously ran weekly nature-based programmes for adults and young people.
- Throughout the programme, 232 participants (adults = 96; young people = 136) were referred onto WSWS with 214 (adults = 78; young people = 136) attending at least one session.
- The evaluation of WSWS was conducted by a team from the Centre for Health, Activity and Wellbeing Research (CAWR) at Cardiff Metropolitan University. The evaluation used a mixed methods approach including a pre- and post-WSWS participant survey, and interviews with participants, deliverers, and referrers. A total of 181 WSWS participants responded to either the pre- or post-WSWS survey (84.58% response rate), with 158 responding to both surveys (73.83% response rate).
- Survey responses indicated that 163 participants completed the 12-week programme, presenting a retention rate of 76.17% for those who attended at least one session.
- Results from the quantitative analysis demonstrated that scores for wellbeing increased overall and across numerous categories. Particularly apparent were the wellbeing scores for adults, those referred from mental health services, and those with low mental health scores prior to WSWS, all of which significantly improved bringing the wellbeing scores into alignment with the general population within Wales and Powys. Participant scores for connection with nature were relatively high pre-WSWS and this level was maintained post-WSWS with a minimal increase for the majority of categories. Overall physical activity levels across the groups stayed relatively consistent.
- Feedback from interviews with 27 participants, four deliverers, and three referrers, highlighted positive experiences particularly relating to WSWS having supported participants' social confidence, mental health and wellbeing, and sense of purpose. Such experiences were facilitated via a safe and inclusive environment, enjoyable and engaging sessions, being in nature, and social interaction. Additionally, barriers and challenges were discussed including delivery resources, transportation, and group dynamics.
- Of those that responded, 100% of adults and 96% of young people positively stated they would like to continue on the programme.
- Context specific evidence for positive benefits of WSWS within MWT is presented. Specifically, WSWS has been shown to support components of [The Well-being of Future Generations Act](#) and [Five Ways to Wellbeing](#).
- Overall, WSWS has supported individuals and the community which they are within. Particularly apparent is the enhancement of people's wellbeing through improved social confidence and opportunities to interact in a safe and non-judgemental environment within nature. Such aspects are vital in the current climate with concerns about loneliness, cost of living, and the environment.



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*The Wild Skills, Wild Spaces project is a partnership between:*



## REPORT OVERVIEW

This report provides an overview evaluation of the two-year Wild Skills, Wild Spaces (WSWS) nature-based, ecotherapy programme led, and delivered by, Montgomeryshire Wildlife Trust (MWT). Wild Skills, Wild Spaces is funded through the Sustainable Management Scheme - Welsh Government Rural Communities - Rural Development Programme 2014-2020, which is funded by the European Agricultural Fund for Rural Development and the Welsh Government. The evaluation has been undertaken by a team from the Centre for Health, Activity, and Wellbeing Research (CAWR), at Cardiff Metropolitan University (Cardiff Met). CAWR were commissioned by MWT to design and deliver the evaluation.

The evaluation used a mixed methods approach incorporating both outcome and process evaluation methods, with input from participants, stakeholders, and deliverers (further information on the design is provided in the [Evaluation Framework](#)). The findings concern both young people (YP; under 18 years of age) and adults (those 18 years and older) and relate to wellbeing, connection to nature, and physical activity.

## BACKGROUND SUMMARY OF EVIDENCE FOR WILD SKILLS, WILD SPACES

### *Health and wellbeing*

An individual with good mental health and wellbeing can be described as someone who realises their own abilities, can cope with the normal stresses of life, can work productively, and is able to contribute to their community (World Health Organisation, 2018).

Recently published statistics from the Office for National Statistics (Office for National Statistics, 2022) reported that approximately 50% of the UK population have a long-standing health problem, the most common of which were allergy, high blood pressure, low back disorder, and depression.

Specific to mental health and wellbeing, prior to COVID-19 pandemic, 11.7% of Welsh people experienced severe mental health issues (Wales Fiscal Analysis, 2021), while the pandemic has placed further pressures on people's mental health and wellbeing (Poortinga et al., 2021). Furthermore, the average rating of wellbeing within Wales has continued to deteriorate with wellbeing levels reducing from 2018/19 to 2021/22 (Office for National Statistics, 2021; Welsh Government, 2022b).

People diagnosed with a mental disorder are at risk of premature death, with mortality being estimated between 5 to 15 years earlier compared to the general population (Plana-Ripoll et al., 2019).

The need to support people's physical and mental health has never been more apparent, with national and international strategies designed to improve wellbeing. Within Wales, for

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example, the Wellbeing of Future Generations Act (2015) requires public bodies in Wales to think about the long-term impact of their decisions via seven wellbeing goals.

### ***Nature on prescription***

To support the wellbeing challenges faced within the UK, social prescription has become ever more present. Social prescription (also known as community referral) aims to support individuals to take greater control of their own health and is a means of enabling health and care professionals to refer people to a range of local, non-clinical services. Social prescription uses a holistic approach and perceives that people's health is determined by social, economic, and environmental factors (Office for Health Improvement and Disparities, 2022).

A form of social prescription is nature on prescription/green prescription. Generally, nature on prescription involves socially prescribed activities that are focused upon exposure to nature. Programmes which use nature on prescription often use multiple nature-based activities such as: conservation, wilderness focused (e.g., bushcraft), care farming, creative activities (e.g., green woodwork), and horticulture and gardening (see Fullam et al., 2021; Haywood et al., 2023).

An umbrella term which is often used for the aforementioned nature-based activities and practices is '*ecotherapy*' and can include environmental therapies (e.g., horticultural therapy, gardening, forest bathing) and animal-assisted therapy (Williams et al., 2020). An ecotherapy approach aims to help people connect with nature to aid in dealing with physical and mental illnesses (see Summers & Vivian, 2018).

Such nature-based interventions and contact with nature have been shown to facilitate wellbeing (Lynch et al., 2020). While exposure to nature has positive benefits for peoples' health and wellbeing (Sumner et al., 2022).

Specifically for those individuals living with mental health problems, nature-based interventions have the potential to support in the treatment of depressive, post-traumatic stress, alcohol use, and schizophrenia spectrum disorders, while being considered a cost-effective complementary intervention (Shanahan, et al. 2019; Williams et al., 2020).

## WILD SKILLS, WILD SPACES PROJECT SUMMARY

- Wild Skills, Wild Spaces aimed to deliver and evaluate a range of nature-based activities<sup>1</sup> (ecotherapy) designed to improve the health, skills, and wellbeing of local communities in Powys.
- The project was funded for 24 months (April 2021-2023) through the Sustainable Management Scheme - Welsh Government Rural Communities - Rural Development Programme 2014-2020, and delivered by MWT. CAWR are the commissioned evaluation partner.
- The programme involved participants taking part in nature-based activities once a week over a 12-week period.
- Activities took place at MWT's nature reserves and include activities such as bushcraft skills, green woodwork, crafts, tree pruning, animal and plant identification, growing plants and vegetables, harvesting, cooking, conservation tasks, and habitat and biodiversity improvement. All activities were delivered by specifically trained project officers from MWT.
- Participants who took part in the WSWS programme came from a variety of backgrounds and ages, and were referred onto the programme from primary care, secondary care, third sector organisations, and educational settings.
- The 12-week programmes have been evaluated by Cardiff Met by a team from CAWR.
- The evaluation used a mixed methods approach which involved both quantitative and qualitative data collection methods, including surveys and interviews. Both a process and outcome evaluation were conducted, therefore allowing learning regarding how the project operates (process) and also the perceived and actual benefits of taking part (outcome).

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<sup>1</sup> For the purpose of this report, we have used the term 'nature-based activities' throughout.

## EVALUATION FRAMEWORK

### *Evaluation aim and objectives*

The aim of the evaluation was to investigate the effectiveness of the WSWS 12-week programme on the participants' wellbeing, connection to nature, and levels of physical activity.

The evaluation had two objectives:

1. To undertake an outcome evaluation with three elements:
  - Quantitatively measure any changes before (pre) and after (post) taking part in WSWS in wellbeing, connection to nature, and levels of physical activity.
  - Qualitatively explore participant experiences, opinions, and perceived outcomes of taking part in WSWS.
  - Qualitatively explore perspectives of the referrers and deliverers of WSWS in respect to its delivery and perceived outcomes for them as referrers and deliverers, and for participants.
2. To undertake a process evaluation to better understand how WSWS operates and the participant journey through WSWS.

### *Evaluation approach*

To achieve the aim and objectives, a mixed methods approach was employed using surveys and interviews.

#### **Surveys**

Surveys were administered pre and post the 12-week programme to measure any change in wellbeing (via the Warwick and Edinburgh Well-being Scale), connection with nature (via the Nature Relatedness Scale), and physical activity levels (via the International Physical Activity Questionnaire). Additionally, the surveys contained open ended questions which offered participants the opportunities to share experiences of the project in their own written words. During the post-survey, participants were also asked to complete a satisfaction survey regarding their participation in WSWS. Please see '[Participants](#)' section for participant information.

#### **Interviews**

Interviews were conducted with a sub-sample of participants, referrers, and deliverers to better understand their experiences of the programme (please see '[Participants](#)' section for participant information). Towards the end of 12-week programmes, identified participants were asked to discuss their experiences. During interviews participants were asked questions about the following areas:

- Their general experience of the programme

- 
- The potential influence of the programme upon:
    - wellbeing and mental health;
    - connection with nature and the outdoors;
    - physical activity;
    - new or developed skills.
  - Their future involvement in nature related activities
  - Potential improvements to WSWS and any other comments

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## RESULTS

The results section presents the findings from the evaluation and concerns:

- [Participants](#)
  - Referral and retention
  - Survey responses
  - Interviews
  - Participant journey maps
- [Wellbeing](#)
- [Connection to nature](#)
- [Physical activity](#)
- [Experiences of the programme](#)
- [Interviews](#)
- [Unexpected and additional benefits from WSWS participation](#)
- [Description of community impact at the four WSWS locations](#)

## Participants

### Referral and retention

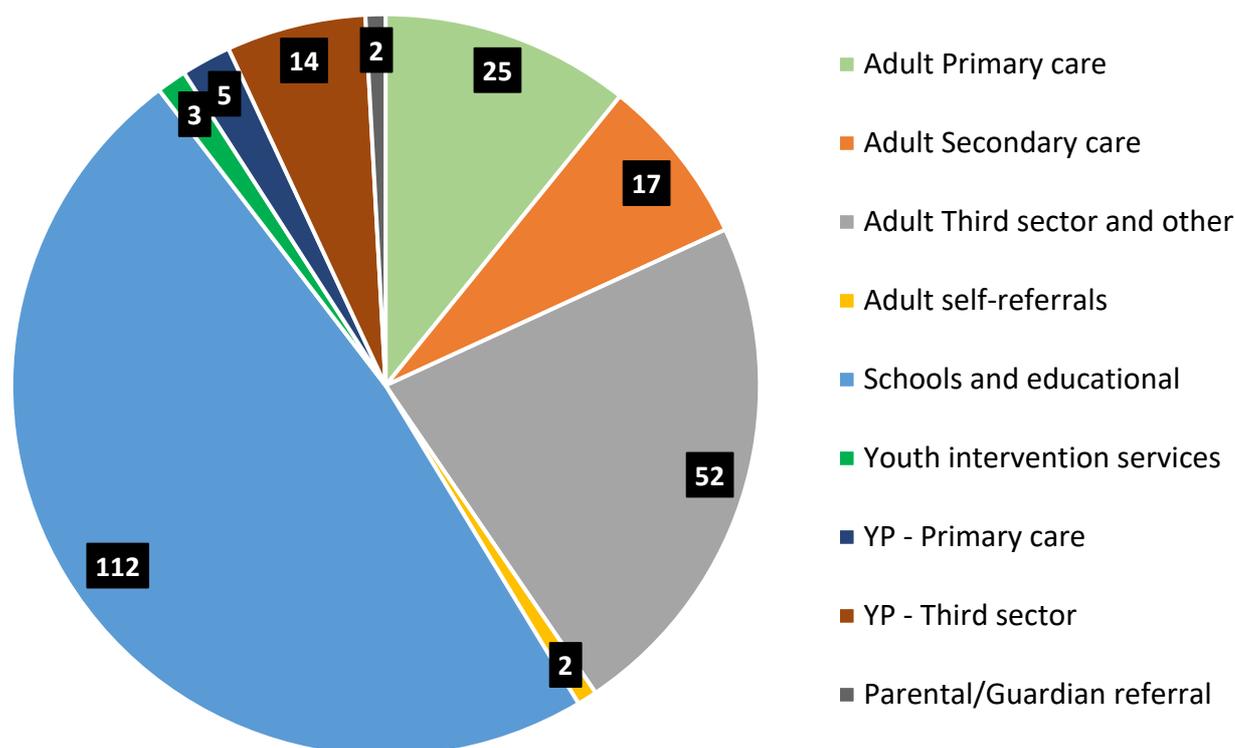
A total of 232 people aged between 11-69 years were referred onto the WSWs programme.

Adult referrals (n=96) have come from primary care (n=25), secondary care (n=17), third sector and other (n=52), and self-referrals (n=2).

Young people (YP; those aged under 18 years; n=136) were referred via schools and educational settings<sup>2</sup> (n=112), youth intervention services (n=3), primary care (n=5), third sector (n=14), and parental/guardian referral (n=2).

Of the 232 individuals referred onto WSWs, 214 participates (78 adults and 136 YP) engaged in at least one WSWs session (92.24% take up rate).

Figure 1: Pie chart of referral routes and numbers of referrals per route for WSWs



<sup>2</sup> Adults and YP sessions are separate, and all YP sessions are organised via schools and educational settings.

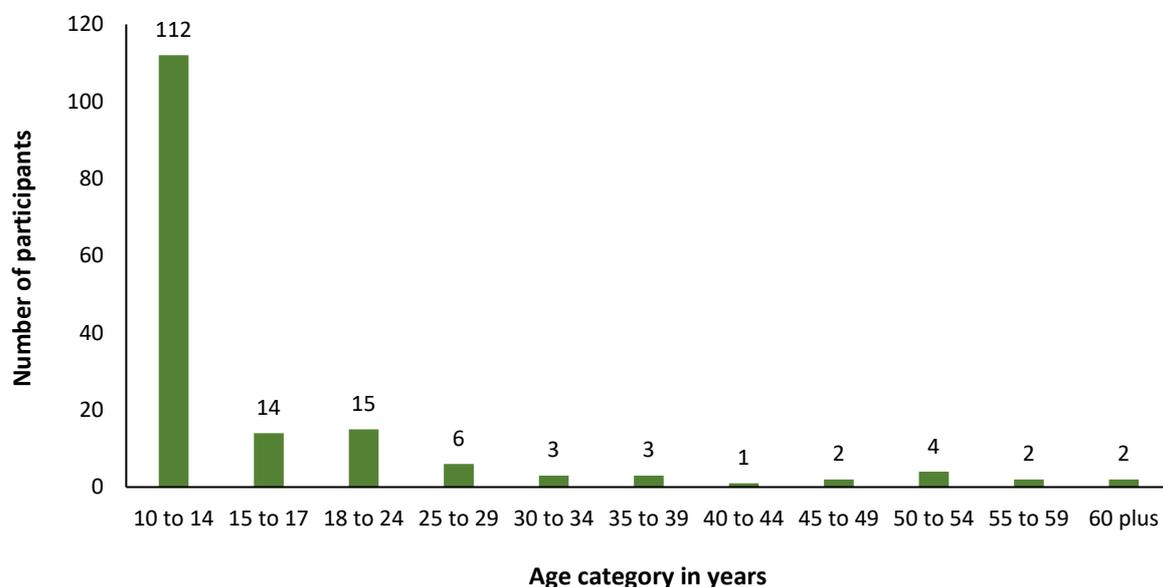
## Survey responses

A total of 181 WSWS participants responded to either the pre or the post survey (84.58% response rate), with 158 responding to both surveys (73.83% response rate).

Survey respondents were aged between 11 and 68 years ( $M=17.39$ ;  $SD=11.15$ ), and of those who indicated their gender 59 identified as female, 100 as male, and two as non-binary.

Survey responses indicated that 163 participants were viewed by deliverers to have completed the 12-week programme, presenting a retention rate of 76.17% for those who attended at least one session of (see Table 1 and 2 for participant journey maps for further details).

*Figure 2: Graph representing the number of participants by age category who completed the 12-week WSWS programme.*



## Interviews

Seventeen individual interviews and six paired interviews, with a total of 27 WSWS participants (adults =16; YP =11) have been conducted. Interviews lasted between 8 and 24 minutes ( $M=14$  minutes) and took place face to face at WSWS sites. Additionally, deliverers<sup>3</sup> ( $n=4$ ) and referrers ( $n=3$ ) have taken part in a total of nine online interviews lasting between 24 and 55 minutes ( $M= 43$  minutes).

<sup>3</sup> The project manager is included in the deliverers group

Table 1: Participant journey map - Adult

Referral type	Engaged in WSWS at least once	Received survey response	Completed 12 WSWS	Examples of further activities
Primary care N=25	→ 19			<ul style="list-style-type: none"> <li>• N=13, continued into the MWT 'Friends of' group</li> <li>• N=12, refer onto another 12-weeks of WSWS</li> <li>• N=1, joined a sport club</li> <li>• N=2, volunteered in other sectors</li> <li>• N=3, went into part time employment</li> <li>• N=1, went into full time employment</li> <li>• N=1, achieved outdoor first aid course award</li> <li>• N=13, received John Muir award</li> <li>• N=2, received John Muir Explorer award</li> </ul>
Secondary care N=17	→ 15	→ 48	→ 39	
Third sector and other N=52	→ 43			
Self-referrals N=2	→ 1			
Total: 96	78	48	39	

Table 2: Participant journey map - Young people

Referral type	Engaged in WSWS at least once	Received survey response	Completed 12 WSWS	Examples of further activities
Educational setting N=112	→ 112			
Youth intervention services N=3	→ 3			
Primary care N=5	→ 5	→ 133	→ 124	<ul style="list-style-type: none"> <li>• N=10, volunteered with MWT</li> <li>• N=2, received John Muir award</li> </ul>
YP third sector N=14	→ 14			
Parental/guardian referral N=2	→ 2			
<b>Total: 136</b>	<b>136</b>	<b>133</b>	<b>124</b>	

## Wellbeing

Wellbeing was measured using the Warwick and Edinburgh Well-being scale (WEMWBS). Scores range from a minimum of 14 to a maximum of 70 with a higher score suggesting a more positive mental wellbeing. In Wales, the general population (aged 16+ years) has been found to have an average of 51.4 in 2018/19 and 49 in 2021/22, and more specifically 51.7 in Powys (location of WSWS; Public Health Wales, 2020a).

### Wellbeing - Overall

A total of 144 participants completed the pre- and post-WEMWBS with mean wellbeing scores increasing (statistically significantly) from pre- to post-WSWS.

Table 3: Mean scores for wellbeing pre- and post-WSWS

Pre-WSWS wellbeing score	Post-WSWS wellbeing score	Change in wellbeing score
47.67 (SD <sup>4</sup> =11.71)	49.37 (SD=10.36)	1.7 sig <sup>5</sup> ↑

### Wellbeing - Adult and YP

Adults' (aged 18 years or older; n=37) mean wellbeing scores increased (statistically significantly) following WSWS taking the pre-WSWS mean score from 45.05 to 49.81. The post-WSWS mean score of 49.81 reflects the recent wellbeing score for the general population within Wales (see Table 2).

Table 4: Mean WEMWBS scores for adults

Powys <sup>6</sup> 2018-19	Wales 2018-19	Wales <sup>7</sup> 2021-22	Pre-WSWS	Post-WSWS	WSWS Change
51.7	51.4	49	45.05 (SD=12.34)	49.81 (SD=10.09)	4.76 sig ↑

Young people's mean wellbeing score using WEMWBS (n=107) shows a minimal increase following WSWS taking the pre-WSWS mean score from 48.58 (SD=11.4) to 49.22 (SD=10.49).

Comparative scores for YP have used the short form of the WEMWBS<sup>8</sup>, for which the minimum score is 7 and the maximum score is 35. For young people (n=111), the short form WEMWBS mean pre-WSWS was 23.62 and post-WSWS was 24.07. Both WSWS scores showed similarities

<sup>4</sup> SD = Standard deviation which represents how much the members of a group differ from the mean value for the group.

<sup>5</sup> Sig = a statistically significant score

<sup>6</sup> Scores from 2018-19 were taken from the National Survey for Wales 2018/19 (Welsh Government, 2019)

<sup>7</sup> Scores taken from the National Survey for Wales online trial: July 2021 to January 2022 of which approx. 2,000 people took part in (Welsh Government, 2022b)

<sup>8</sup> While YP completed the full WEMWBS the short form scores were calculated to enable comparisons

to scores for YP across Wales, with the average score for a person aged between 11 and 16 years being 24 in 2018 and 23 in 2021 (Public Health Wales 2020b).

*Table 5: Mean WEMWBS short form scores for young people*

Powys <sup>9</sup> 2017-18	Wales 2017- 18	Wales 2021 <sup>10</sup>	Pre-WSWW	Post-WSWS	Change
23.9	24	23	23.62 (SD=5.76)	24.07 (SD=5.48)	0.45 ↑

### Wellbeing - Gender

All genders increased in wellbeing scores post the 12-week programme.

*Table 6: Mean WEMWBS scores as a function of gender <sup>11</sup>*

Gender	Pre-WSWS wellbeing score	Post-WSWS wellbeing score	Change in wellbeing score
Female (n=53)	47 (SD=11.26)	49.23 (SD=10.16)	2.23 ↑
Male (n=80)	48.91 (SD=11.21)	50.36 (SD=9.74)	1.45 ↑

### Wellbeing - Referral type

WSWS referral routes were split into those from mental health services (primary care, secondary care, third sector, and youth intervention services) and those who were identified from within educational settings (schools and colleagues), self-referrals were not included due to low numbers.

Those from mental health services demonstrated a lower wellbeing score prior to WSWS and increased significantly in their wellbeing score post the 12-week programme. Those from school settings had an initially higher score (in line with the Welsh average) and maintained this post-WSWS.

<sup>9</sup> 2017/18 data was taken from Public Health Wales which used data from surveys including the National Survey for Wales, Annual Population Survey, and the School Health Research Network.

<sup>10</sup> Score was informed by the School Health Research Network Student Health and Wellbeing survey data.

<sup>11</sup> Due to the low number and thus the potential for identification, some gender categories scores have not been included in the report.

Table 7: Mean WEMWBS scores as a function of referral type

Referral route	Pre-WSWS wellbeing score	Post-WSWS wellbeing score	Change in wellbeing score
Mental health services (n=47)	45.94 (SD=10.5)	49.09 (SD=9.89)	3.15 sig ↑
Education (n=96)	48.37 (SD=12.18)	49.33 (SD=10.54)	0.96 ↑

### Wellbeing – Wellbeing category scores

Public Health Wales (2020a) categorised the wellbeing scores from the WEMWBS full version as: high (60-70), mid (41 to 59), and, low (14 to 40).

For those categorised as having a high wellbeing score pre-WSWS the mean wellbeing score decreased significantly. For those categorised as mid at pre-WSWS the mean wellbeing score increased minimally. For those categorised as having a low wellbeing score pre-WSWS their score post-WSWS increased significantly.

Table 8: Table demonstrating WEMWBS scores as a function of wellbeing categories.

Category pre-WSWS	WB pre-WSWS mean	WB post-WSWS mean	Change
High (n=24)	65.21 (SD=3.16)	59.75 (SD=6.44)	5.46 sig ↓
Mid (n=81)	49.38 (SD=5.17)	50.75 (SD=8.22)	1.37 ↑
Low (n=39)	33.33 (SD=6.48)	40.1 (SD=8.72)	6.77 sig ↑

At an individual level, prior to completing WSWS 39 of the participants were categorised as having a low wellbeing score, 81 as mid, and 24 as high. Following WSWS the total in the low group decreased, increased in the mid, and increased in the high. Post-WSWS, the majority of participants (n=91) stayed within the same category, 35 participants moved up a category, and 18 moved down a category (see Table 9).

Table 9: WEMWBS category total numbers pre- and post-WSWS

Wellbeing score category	Pre-WSWS total	Total category moves	Post-WSWS total
High	24	Stayed in high = 13 Moved to mid = 11 Moved to low = 0	25
Mid	81	Moved to high = 12 Stayed in mid = 62 Moved to low = 7	96
Low	39	Moved to high = 0 Moved to mid = 23 Stayed in low = 16	23

### Connection to nature

Connection to nature was measured using the Nature Relatedness Scale (NRS; Nisbet & Zelenski, 2013), of which scores range from 1 (low) to 5 (high) for how connected an individual feels to nature. Previous scores using the NRS have indicated that average scores ranged from 3.0 to 3.5, with 70% of the scoring ranging between 2.2 and 4.3.

#### Connection to nature - Overall

A total of 155 participants completed the pre- and post-NRS with scores staying consistent from pre- to post-WSWS.

Table 10: NRS mean scores pre- and post-WSWS.

Pre-WSWS NRS score	Post-WSWS NRS score	Change in NRS score
3.57 (SD=0.6)	3.6 (SD=0.67)	0.03 ↑

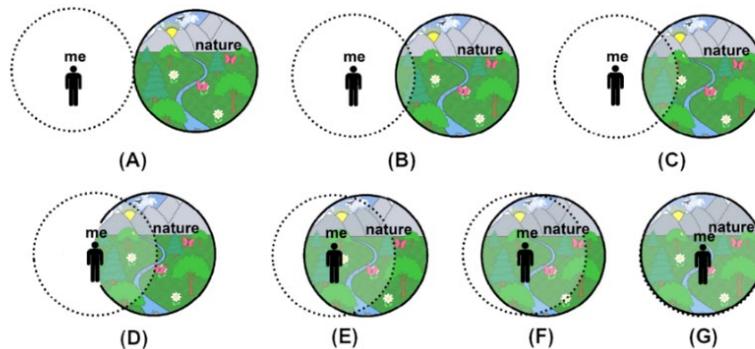
#### Connection to nature - Adults and YP

Mean scores for adults and YP using the NRS indicate that generally participants prior to the 12-week programme held a relatively high level of connection to nature which stayed consistent post-WSWS.

Table 11: NRS mean scores for adults and young people.

Mean (SD)	Pre-WSWS NRS	Post-WSWS NRS	Change in NRS score
Adults (n=37)	3.83 (SD=0.58)	3.99 (SD=0.69)	0.14 ↑
YP (n=118)	3.49 (SD=0.59)	3.48 (SD=0.62)	0.01 ↓

Following engagement with the survey, deliverers felt that some YP struggled to complete the NRS, as such an additional option was provided. Specifically, YP were also invited to complete an illustrated extension of the inclusion of nature in self scale (Kleespies et al., 2021; see image below). The illustrated question asked participants to select the image which best represented their connection to nature with scores ranging from A (low) to G (high).



Pre- and post-WSWS, the most common selected image was F (pre=20, post=18). Overall, the majority of YP selected a close connection image at pre and maintained this at post with 40 staying the same, 22 increasing, and 12 decreasing (see Table 12).

Table 12: Pre- and post-WSWS connection with nature image selection

Image	Pre-image frequency count	Post-image frequency count
A	3	1
B	6	4
C	5	8
D	19	13
E	7	16
F	20	18
G	14	14

### Connection to nature - Gender

When exploring gender, scores remained consistent post the 12-week programme, while females scored significantly higher than males at both pre- and post-WSWS.

Table 13: Mean WEMWBS scores as a function of gender <sup>12</sup>

Gender	Pre-WSWS wellbeing score	Post-WSWS wellbeing score	Change in wellbeing score
Female (n=58)	3.71 (SD=0.64)	3.78 (SD=0.71)	0.07 ↑
Male (n=86)	3.48 (SD=0.56)	3.5 (SD=0.65)	0.02 ↑

### Connection to nature - Referral type

Referrals via mental health services demonstrated a statistically significant increase in their connection to nature while those from education stayed consistent post-WSWS.

Table 14: Mean WEMWBS scores as a function of referral type

Referral route	Pre-WSWS wellbeing score	Post-WSWS wellbeing score	Change in wellbeing score
Mental health services (n=48)	3.78 (SD=0.64)	3.93 (SD=0.69)	0.15 sig ↑
Education (n=106)	3.47 (SD=0.57)	3.44 (SD=0.64)	0.03 ↓

### Connection to nature - Wellbeing category scores

Public Health Wales (2020) categorised wellbeing scores from the WEMWBS full version as: high (60-70), mid (41 to 59), and low (14 to 40).

For all wellbeing score categories, the NRS scores remained consistent post-WSWS. Additionally, the high WEMWBS score group held the highest NRS score and vice-versa (see Table 12).

Table 15: WEMWBS scores as a function of wellbeing categories

WEMWBS category pre-WSWS	NRS pre-WSWS mean	NRS post-WSWS mean	Change
High (n=24)	3.79 (SD=0.51)	3.82 (SD=0.55)	0.03 ↑
Mid (n=81)	3.61 (SD=0.53)	3.64 (SD=0.67)	0.04 ↑
Low (n=38)	3.35 (SD=0.72)	3.39 (SD=0.77)	0.04 ↑

<sup>12</sup> Due to the low number and thus the potential for identification some gender categories scores have not been included in the report.

## Connection to nature – Lower NRS scores

Previous research has stated that the scores for the NRS generally ranged from 3.0 to 3.5 (Nisbet & Zelenski, 2013). To investigate if those with lower NRS scores showed any differences in change over time compared to higher scores, participants were categorised into NRS scores below 3.0 and NRS scores above or equal to 3.0. The above or equal to group score stayed consistent post-WSWS, while the category of below 3.0 increased statistically significantly.

Table 16: WEMWBS scores as a function of wellbeing categories

NRS score category pre-WSWS	NRS pre-WSWS mean	NRS post-WSWS mean	Change	
Above or equal to 3.0 (n=129)	3.75 (SD=0.46)	3.76 (SD=0.62)	0.01	↑
Below 3.0 (n=26)	2.64 (SD=0.33)	2.81 (SD=0.44)	0.17 sig	↑

## Physical activity

Physical activity levels were measured using the International Physical Activity Questionnaire (IPAQ) which categorises participants' physical activity levels as either low, moderate, or high using information about physical activity from across the previous week. Additionally, the IPAQ records an individual's daily sitting time.

### Physical activity levels - Overall

MET categories:

A total of 55 participants completed the pre- and post-IPAQ. Pre-WSWS 31 participants were categorised as having high physical activity levels, 15 as moderate, and 9 as low; post-WSWS 27 high, 20 moderate, and 8 low. Therefore, there was a reduced number of participants in the high physical activity level post-WSWS, an increase in moderate, and a decrease in low (for further detail see Table 17).

Sitting time:

Mean sitting (n=48) time pre-WSWS was 402.27 minutes a day (6.7 hours; SD=218.76) and post-WSWS was 416.67 minutes (6.95 hours; SD=184.89). While the overall mean minimally increased post-WSWS, at the individual level, mean sitting for 23 participants decreased, six stayed the same, and 19 increased.

## Physical activity levels - Adults and YP

MET categories:

Twenty adults and 35 YP completed the pre- and post-IPAQ with three adults and nine YP moving to a higher physical activity level category, 10 adults and 17 YP staying in the same, and seven adults and nine YP moving to a lower category (see Table 14).

Table 17: IPAQ categories pre- and post-WSWS as a function of age

IPAQ categories	Adult or YP	Pre-WSWS IPAQ category totals	Total category moves	Post-WSWS IPAQ category totals
High physical activity	Adult	8	Stayed high = 4 Moved to mod = 3 Moved to low = 1	6
	YP	23	Stayed high = 14 Moved to mod = 7 Moved to low = 2	21
Moderate physical activity	Adult	8	Moved to high = 1 Stayed mod = 4 Moved to low = 3	8
	YP	7	Moved to high = 4 Stayed mod = 3 Moved to low = 0	12
Low physical activity	Adult	4	Moved to high = 1 Moved mod = 1 Stayed low = 2	6
	YP	5	Moved to high = 3 Moved mod = 2 Stayed low = 0	2

Sitting time:

Adults' mean sitting time for pre-WSWS (n=20) was 440.05 minutes sitting a day (7.33 hours; SD=232.58) and post-WSWS was 449.5 minutes (7.5 hours; SD=208.238). Post-WSWS, sitting time decreased for half the adults, increased for six, and stayed the same for four. For YP (n=29) mean sitting time for pre-WSWS was 374.76 minutes a day (6.25 hours; SD=204.66) and post-WSWS was 390 minutes (6.5 hours; SD=164.121). Of the 29 YP, mean sitting time increased for 13, decreased for 14 and stayed the same for two.

Following engagement with the survey, deliverers felt some YP were struggling to complete the IPAQ. As such, for YP the IPAQ was replaced with a single item measure (Scott et al., 2015). The single item measure asked participants to state the number of days they had been physically active across the week. A mean of 4.4 days was selected by YP (n=49) pre-WSWS and 4.2 post, therefore a mean decrease by 0.2 days. However, the most common number of days selected for pre-WSWS was four and post-WSWS was six.

## Experiences of the programme

### WSWS Satisfaction/experience

During the post-WSWS survey, participants were asked to complete a satisfaction review. The review included one multiple choice questions concerning the referral process, and four open text responses questions, relating to: what participants enjoyed the most; what participants least enjoyed; what could be improved; and, if they would like to continue taking part in ecotherapy.

The responses from each of the open text response questions were analysed separately using content analysis and inductively organised into categories. Following analysis, a full table of response for three questions was created, incorporating the developed categories, examples of text responses, and frequency counts. Responses for all five questions are summarised below (see [appendix 1](#) for full tables).

#### 1. "What have you most enjoyed about taking part in Wild Skills, Wild Spaces?"

- 149 of the participants responded to the open response question.
- Text responses yielded 19 categories which were mentioned a total of 264 times.

Table 18: Summary table for categories participants enjoyed the most about WSWS.

Enjoyed most category	Examples of text responses	Adult (n=78)	YP (n=186)	Total frequency	%
Preparation of and taking part in outdoor cooking and drinking	"Making nettle crisps"	8	60	68	25.76%
Socialising and meeting new people	"Meeting people friendly empathetic people"	12	23	35	13.26%
Getting out of the house/being outside / being in nature	"Getting outside more than usual" "Spending time in nature"	10	20	30	11.36%
Woodwork and craftwork	"Learning new skills such as the wood working for creating spoons"	12	16	28	10.61%

#### 2. "What have you least enjoyed about Wild Skills, Wild Spaces?"

- 113 responses to the open question.
- Text responses yielded 20 categories which were mentioned a total of 108 times.

Table 19: Summary table for categories participants enjoyed the least.

Least enjoyed category	Examples of text responses	Adult (n=21)	YP (n=87)	Total frequency	%
Nothing, enjoyed everything	<i>"Nothing"</i>	8	37	45	41.67
Cold, rain, and/or poor weather	<i>"Hate it when it rains"</i>	5	29	34	31.48
Not enough time at WSWS	<i>"Only doing it [WSWS] once a week"</i>	1	2	3	2.78
Evaluation survey / paperwork	<i>"Paperwork"</i>	0	3	3	2.78

3. *"How do you think the programme could be improved in the future?"*

- 101 participants responded to the open response question.
- Text responses yielded 23 categories which were mentioned a total of 106 times.

Table 20: Summary table for ways participants felt WSWS could be improved.

Improve category	Examples of text responses	Adult (n=25)	YP (n=76)	Total frequency	%
Not sure or can't be improved	<i>"Not sure it could be"</i>	8	28	36	33.96
More time at WSWS	<i>"Making sessions longer"</i>	3	20	23	21.70
Comfort	<i>"New chairs"</i>	0	7	7	6.6
More trips off reserve	<i>"More trips off the reserve"</i>	3	2	5	4.72
More cooking	<i>"More cooking"</i>	0	5	5	4.72

4. *"Do you want to continue taking part in ecotherapy?"*

- 100% of adult participants who responded to the question (n=36) and 96% of young people (n=100) replied positively stating they would like to continue the programme

(e.g., “Yes - I would like to volunteer at my local reserve - I have applied I have re-referred onto a new programme”).

5. Participants were asked, “How would you rate the referral process – good, average, poor?”
  - 97% of adults (n=34) rated the referral route as high as possible, while young people rated it as good 78% of the time and average for 22%. No participants rated the referral route as poor.

## **Interviews**

To better understand the experiences of the programme, a total of 32 interviews were conducted with 27 WSWS participants (P; adults n=16; YP n=11), three WSWS referrers (R), and four WSWS deliverers (D). Interviews with participants took place face-to-face at WSWS sites, included seventeen individual and six paired interviews, and lasted between 8 and 24 minutes (M=14 minutes). A total of nine online interviews were completed by deliverers and referrers, lasting between 24 and 55 minutes (M= 43 minutes; see ‘[Participants](#)’ for further participant information). Analysis of interviews involved thematic analysis and results were organised into three themes, concerning: facilitators of positive WSWS experiences; barriers and challenges to the effectiveness of WSWS; and, associated benefits of WSWS (see Table 21 for a summary of the results).

### *1. Facilitators of positive WSWS experiences*

The ways in which the WSWS programme facilitated positive outcomes and experiences were described by all participants, deliverers, and referrers. Aspects which facilitated positive outcomes (e.g., improved mental health and wellbeing, increased sense of purpose) encompassed environmental, relational, and individual factors.

### *2. Barriers and challenges to the effectiveness of WSWS*

As well as facilitators, barriers and challenges to the effectiveness of the WSWS programme were described during interviews. Barriers and challenges generally included aspects related to resource constraints and operational factors.

### *3. Associated benefits of WSWS*

During interviews participants, deliverers, and referrers all highlighted perceived benefits for those individuals engaged in WSWS. Associated benefits encompassed psychological, social, and physical components.

Table 21: Summary of interview results

Theme	Sub-theme	Example quotes
Facilitators of positive WSWs experiences	<ul style="list-style-type: none"> <li>• Autonomy support environment</li> <li>• A safe and inclusive environment</li> </ul>	<p><i>P13: Usually there are multiple options on what you can do, and if you're struggling you can get away from it, you can sit here you can go over there, so it's nice to have that freedom.</i></p>
	<ul style="list-style-type: none"> <li>• Enjoyable and engaging sessions</li> <li>• Being in nature</li> <li>• Social interaction</li> <li>• Opportunity for constant participation</li> </ul>	<p><i>P17: I have anxiety when it comes to meeting new people and that helped an awful lot and knowing that I would be included, no matter what, that was a big, big thing and [the deliverers] are just so kind, they're just, oh, they're the kindest people I've ever met, really they are and they're really caring and really thoughtful as well, so they're very considerate people.</i></p>
Barriers and challenges to the effectiveness of WSWs	<ul style="list-style-type: none"> <li>• Delivery resources vs demands</li> <li>• Limited transport</li> <li>• Fluctuations in mental health levels</li> <li>• Referral numbers</li> <li>• Group dynamics</li> <li>• Evaluation</li> </ul>	<p><i>D1: We offer a central pick up or a central drop off, one or the other, but not both, so depending on what is favoured in the group, they all pick up or prefer a drop off. I have to weigh it up like that, otherwise it would eat in to too much of our delivery time sadly, so that's hopefully something we could rectify in the future, maybe a volunteer driver or something to support with that, because I think we need to get more interest and benefit a wider catchment area.</i></p> <p><i>D2: A lot of our time, as staff, is taken up with, you know, we're both [deliverers], out on site with the participants, but we're also doing all the office work and chasing and doing all the phone calls and that kind of aspect.</i></p>
	Associated benefits of WSWs	<ul style="list-style-type: none"> <li>• Enhanced social confidence</li> <li>• Improved mental health and wellbeing</li> <li>• Increased sense of purpose</li> <li>• Physical health benefits</li> <li>• Time spent in nature and outside</li> <li>• Learning and transferring skills</li> <li>• Support for people in need</li> </ul>

## ***Unexpected and additional benefits from WSWS***

During data collection and conversations, a number of unplanned and unexpected benefits were highlighted as a result of WSWS. The table below illustrates the benefits gained as a result of WSWS.

*Table 22: Unexpected and additional benefits of WSWS*

Area	Example
Awards attained	John Muir and John Muir Explorer awards received by WSWS participants
	WSWS won an NHS Forest 2021 Award for Engaging People with Nature
	WSWS awarded Litter Pick Champions status by Keep Wales Tidy
	Severn Farm Pond Awarded Green Flag Status for 2023 (annually reviewed)
Participant reach	Project reached people with additional learning needs
	Young people engaged in the programme which was originally expected to be adult focus
Employment and volunteering	Participants volunteer with MWT
	Participants went onto full and part time employment
	Participants volunteered outside of WSWS
Participant creativity	Poems and art were developed by WSWS participants
	Photography during sessions
University engagement	Photography of WSWS used in a university qualification
	Cardiff Metropolitan University students engaged with WSWS by designing media
	Dissemination activity from CAWR team (see <a href="#">appendix 2</a> )

## ***Description of community impact at the four WSWs locations***

Below an overview is provided of the wildlife reserves and sites used for WSWs. Specifically, the review will focus upon the impacts which WSWs participants have made to the sites over the two-year programme, the sites being:

- Llyn Coed y Dinas
- Severn Farm Pond
- Cultivate
- Dolforwyn Woods

### *Llyn Coed y Dinas*

Once a gravel pit in Welshpool, Llyn Coed y Dinas is now a nature reserve containing a bird hide, pathways, an orchard, and a Nature Play area. The WSWs participants have maintained this area providing conservation work and enabling the public to keep accessing the site with ease. The work on this site has focused upon the maintenance of the dead hedges, tree pruning and care, and other conservation work. Additionally, a new nature and wellbeing learning centre has been built.



## Severn Farm Pond

Developed in a local industrial estate, Severn Farm Pond has seen a large amount of time and financial resources invested into the site over the last two years supported by the WSWS participants. Particularly apparent is the boardwalk repair, which at the start of the project was unsafe to walk on and result in sections being unable to be accessed by the general public. The WSWS participants and team have worked to remove and replace 100 metres of the board work (see images below), which now has been completely repaired meaning future generations will have full access to the whole reserve.



Severn Farm Pond has also been enhanced with the addition of containers which will be used for educational sessions and other learning during adverse weather. This area has additionally been developed through the clearing of space for an outdoor education area with space for activities, cooking, and a mud kitchen.



The improvement and upkeep of Severn Farm Pond has been maintained by WSWS participants through additional artwork and sign creation, conducting maintenance work of the site, and creating new areas for plants, vegetables, and wildlife to flourishing.



## *Cultivate*

While not a Wildlife Trust reserve, Cultivate Community Garden is a 2.5 acre growing site in Newtown. The garden is surrounded by residential estates and the site is accessible to the public.

The participants from WSWS have developed this site through growing vegetables on the patches and building and maintaining the site. For example, WSWS participants they have built and installed a child safety gate, built and maintained fences, and created compost bins.



## *Dolforwyn Woods*

Dolforwyn Woods is an area of mixed woodlands which supports a range of woodland plants. The most obvious influence on this reserve of the WSWs project has been the development of a nature and wellbeing classroom structure and toilet being built, including solar panels. The new buildings will enable continued work at the site and support future conservation work. Currently, a number of conservation and wildlife activities take place such as surveying of wildlife numbers, while the WSWs participants have built and installed 81 new nest boxes provided by Men's Shed Llanfyllin.



## DISCUSSION AND IMPACT

This evaluation has highlighted that WSWs has had a positive influence in several areas which have the potential to impact people and communities within Powys and Wales, these are discussed below. Additionally, a table ([Appendix 3](#)) has been developed to demonstrated examples of ways in which WSWs support the Well-being of Future Generations Act (2015).

### 1. Improved psychological wellbeing

Psychological wellbeing is a concern in Wales and the UK, with average ratings of wellbeing deteriorating over recent years (Office for National Statistics, 2021; Welsh Government, 2022b). Interview and survey data highlighted the positive influence of Wild Skills, Wild Spaces upon wellbeing. For example, compared to pre-WSWS scores, post-WSWS participants' wellbeing scores increased, particularly adults, females, those referred from mental health services, and those with low mental health scores prior to WSWs. Thus, WSWs is an example of how social prescribing can be effectively used within community settings via nature-related activities to support wellbeing. Through the improvement of psychological wellbeing WSWs supports a number of acts, plans, and agendas such as the Well-being of Future Generations Act (2015) and the A Healthier Wales plan.

### 2. Improved social confidence and relationships

Loneliness is an important area for governments in the UK to consider (see Campaign to End Loneliness, 2023) with people who state they are lonely having lower mental wellbeing on average than those who are sometimes lonely or never lonely (Welsh Government, 2022a). One of the key themes described in interviews and surveys was that participants gained a sense of increased social confidence and had the opportunity to make new friends and interact with people during WSWs.

### 3. Opportunities for physical activity

Physical activity is a global challenge for all and particularly for people with mental health problems (Firth et al., 2019). While statistical analysis did not demonstrate a change in physical activity levels, interviews indicated that for many participants WSWs was the main reason they left the house during the week, thus promoting an opportunity for increased physical activity at WSWs sessions (which lasted for three hours and involved low to vigorous level physical activity). Aligning with the Welsh Government's healthy lifestyle behaviours, WSWs provides participants with opportunities to take part in physical activity and could be an avenue to support them to achieve the recommended 150 minutes of physical activity per week (UK Chief Medical Officers', 2019).

### 4. Enhanced life skills

Participants emphasised that some of the most enjoyable aspects of WSWs was the learning of new skills particularly cooking, woodwork, and crafts. During interviews a host of participants discussed skills they had taken from WSWs and then used in their everyday life from growing vegetables to building bird boxes at home. The learning and development of new skills has been

associated with enhanced wellbeing (e.g., self-determination theory) and links to aspects of the five healthy lifestyle behaviours such as the eating of five or more portions of fruit or vegetables.

## **5. Opportunities to develop through qualifications, volunteering, and employment**

Recent statistics from the Office for National Statistics (2023) stated that unemployment in Wales was the joint-highest across the UK (February and April 2023). Additionally, with the cost-of-living crisis, many people and families within Wales are struggling financially. To support people in the local community WSWS has offered a free nature-based activity for those with mental health problems who may not otherwise be able to afford support. Furthermore, participants who took part in WSWS have gone onto gain awards and qualifications, volunteering experience, and employment.

## **6. Time in nature and conservation work**

Environment and climate change was a main concern in the recent ONS survey. Wild Skills, Wild Spaces focused upon connection to nature, the development of conservation skills, and the learning of wildlife related knowledge. Participants who engaged in WSWS showed relatively high nature connection scores prior to WSWS while these scores went onto stay consistent or improve minimally for the majority. Connections to nature and spending time in nature have both been frequently linked to positive wellbeing and mental health in research (e.g., Capaldi et al., 2015) which survey and interview feedback supported. Furthermore, the opportunity to complete the sessions outdoors in nature enabled continuation of WSWS during the COVID-19 pandemic<sup>13</sup> and its recovery. Thus, WSWS could continue to support those living with mental health problems during the pandemic when other services may no longer have been available to them.

## **7. Community enhancement and sense of purpose**

Throughout WSWS, participants maintained the MWT reserves supporting the local communities access to good quality nature reserves, therefore promoting 'A Wales of cohesive communities' (Well-being of Future Generations Act, 2015). Participants expressed a sense of purpose when completing tasks and working on the reserves, such as sense of purpose and meaning is a key aspect to eudaimonic wellbeing and flourishing (Keyes, 2002; Ryff, 2017).

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<sup>13</sup> WSWS was able to continue during certain times of the COVID-19 pandemic while following Government guidelines.

## LIMITATIONS & FUTURE RESEARCH

While the report has described benefits and outcomes from WSWS, it is important to note that a number of limitations are apparent, and that future research is required to further understand the influence of nature-based activities upon wellbeing, nature connection, and physical activity.

- **Interpretating results**

Positive change was described throughout the report, however due to the nature of the activities and the multiple variables which influence an individual's wellbeing, connection to nature, and physical activity levels, the described changes can only be viewed to coincided with WSWS engagement rather than WSWS being identified as the sole cause of the change.

- **Differences in nature-based activities**

When comparing change over time it is important to note that the 12-week WSWS nature-based activities were not a set programme, and the environment was ever changing. Therefore, WSWS was not a closed or controlled environment, and thus numerous aspects influenced the programme and the impact of WSWS.

- **Longitudinal understanding**

The WSWS survey was completed at two time points (pre- and post-WSWS), therefore preventing understanding of the long-term influence of WSWS. As such, continued data collection (e.g., 6 weeks post, 6 months post) may be considered to better understand the long-term impact of WSWS.

- **Level of connection to nature**

For the majority of participants, nature connection scores were relatively high, and it may be suggested that participants self-selected to be part of WSWS based upon their interest in nature. Therefore, future projects could explore the feasibility for a similar project to be developed which targets those individuals with lower levels of connection to nature. Such a project may include shorter 'taster' sessions to engage potential participants.

- **Retention**

Further investigation into the reasons for negative results (e.g., high wellbeing group decreasing in wellbeing post-WSWS), non-take up following referral, and dropout from WSWS is recommended. By increasing an understanding for take up and dropout, future programmes may be able to facilitate programmes to support both take up and retention. Any future research should be balanced with an awareness for research demands with the wellbeing of participants being placed at the forefront at all times.

## SUMMARY

- Beginning in April 2021 and running for 24 months, Wild Skills, Wild Spaces (WSWS) aimed to deliver and evaluate a range of nature-based activities (ecotherapy) designed to improve the health, skills, and wellbeing of local communities in Powys. Over 12 week periods, Montgomeryshire Wildlife Trust (MWT) simultaneously ran weekly nature-based programmes for adults and young people.
- Throughout the programme, 232 participants (adults = 96; young people = 136) were referred onto WSWS with 214 (adults = 78; young people = 136) attending at least one session.
- The evaluation of WSWS was conducted by a team from the Centre for Health, Activity and Wellbeing Research (CAWR) at Cardiff Metropolitan University. The evaluation used a mixed methods approach including a pre- and post-WSWS participant survey, and interviews with participants, deliverers, and referrers. A total of 181 WSWS participants responded to either the pre- or post-WSWS survey (84.58% response rate), with 158 responding to both surveys (73.83% response rate).
- Survey responses indicated that 163 participants completed the 12-week programme, presenting a retention rate of 76.17% for those who attended at least one session.
- Results from the quantitative analysis demonstrated that scores for wellbeing increased overall and across numerous categories. Particularly apparent were the wellbeing scores for adults, those referred from mental health services, and those with low mental health scores prior to WSWS, all of which significantly improved bringing the wellbeing scores into alignment with the general population within Wales and Powys. Participant scores for connection with nature were relatively high pre-WSWS and this level was maintained post-WSWS with a minimal increase for the majority of categories. Overall physical activity levels across the groups stayed relatively consistent.
- Feedback from interviews with 27 participants, four deliverers, and three referrers, highlighted positive experiences particularly relating to WSWS having supported participants' social confidence, mental health and wellbeing, and sense of purpose. Such experiences were facilitated via a safe and inclusive environment, enjoyable and engaging sessions, being in nature, and social interaction. Additionally, barriers and challenges were discussed including delivery resources, transportation, and group dynamics.
- Of those that responded, 100% of adults and 96% of young people positively stated they would like to continue on the programme.
- Context specific evidence for positive benefits of WSWS within MWT is presented. Specifically, WSWS has been shown to support components of The Well-being of Future Generations Act and Five Ways to Wellbeing.
- Overall, WSWS has supported individuals and the community which they are within. Particularly apparent is the enhancement of people's wellbeing through improved social confidence and opportunities to interact in a safe and non-judgemental environment within nature. Such aspects are vital in the current climate with concerns about loneliness, cost of living, and the environment.

## RECOMMENDATIONS

Below are 11 recommendations accompanied with brief supportive points which should be considered by policy makers, funders, and deliverers when planning, developing, and conducting programmes to promote health and wellbeing which incorporate nature.

### **1. Nature-based programmes should be included within the larger model for social prescribing to support health and wellbeing.**

- Results from this report and other nature based programmes/interventions have highlighted the potential benefits of such approaches upon health and wellbeing (see Sumner et al., 2022; Twotig-Bennett & Jones, 2018).
- The use of nature-based programmes aligns with the All Wales Model for Social Prescribing (2022).

### **2. Nature-based programmes may be particularly salient for those receiving mental health support.**

- WSWS demonstrated significant improvements for wellbeing scores for those with low scores pre-WSWS and for those referred onto the programme from mental health services.
- Nature-based interventions have the potential to support in the treatment of depressive, post-traumatic stress, alcohol use, and schizophrenia spectrum disorders, while being considered a cost-effective complementary intervention (Shanahan, et al. 2019; Williams et al., 2020).

### **3. Programmes aiming to promote physical and mental health should incorporate natural environments when possible.**

- Connecting with nature can aid in dealing with physical and mental illnesses (Summers & Vivian, 2018).
- Exposure to nature has positive benefits for peoples' health and wellbeing (Sumner et al., 2022).

### **4. Programmes should consider their impact on the world and interaction with it for future generations.**

- Aligning with the Well-being of Future Generations Act (2015), programmes such as WSWS promote the conservation and protection of nature and wildlife during their programme activities.
- With increased concerns for the environment and climate change (Office for National Statistics, 2022) programmes incorporating conservation work have the potential to support such concerns.
- Programmes set in natural open environments have the potential to adapt and continue during challenging times (e.g., COVID-19 pandemic), when other services may no longer been available.

### **5. Accessing programmes in nature should be supported.**

- Travelling to and from nature-based programmes is not possible for all, therefore access to transport option should be made available where possible (e.g., minibus or taxi allowance).
- Consideration and adaptations should be made to enable people with different needs to participate in programmes.
- To promote participation and the associated benefits of enhanced nature connection, shorter 'taster' sessions can be run to engage those who may feel less connection to nature.

### **6. Time for social interaction should be embedded into programme planning.**

- WSWS emphasised the importance of social interaction with such interactions supporting individuals' social confidence and anxiety in and away from the programme, while countering the potential for loneliness and its associate negative influences.
- Time for social interaction should be provided without pressure to participate or judgement.

## **7. Activities should be meaningful and incorporate a sense of belonging, which can be facilitated in nature.**

- Belonging is a fundamental human need that all people are driven to satisfy (Allen et al., 2021).
- Programmes which facilitate active time in nature and activities with wildlife facilitate a connection to nature, which is a predictor of wellbeing (Richardson & Hamlin, 2021; Richardson et al., 2022).
- Providing choice and freedom during programme activities supports a sense of autonomy, personal connection, and meaning to the activity (Ryan & Deci, 2017).
- Nature based activities within an individual's local community (e.g., conservation work) provides greater opportunities for perceived ownership and belonging and therefore can enhance social capital and personal value.

## **8. Promote engagement in similar activities away from programmes.**

- Engaging in nature-based activities away from referred programmes can further enhance the associated health and wellbeing benefits and supports continuation of such benefits following the ending of programmes.
- Attaining physical activity guidelines (UK Chief Medical Officers', 2019) during session may not be possible. As such, individuals should be supported to engage in physical activity during leisure time and active travel (Vella et al., 2023).
- Life skill development should be encouraged via the transferring of skills learnt in a nature-based programme (e.g., growing vegetables) into other environments (e.g., home, community gardens).

## **9. Transitional support should be provided to facilitate moving on from a referred programme and into community based support.**

- When coming to the end of a programme with a set timeframe individuals can feel a sense of trepidation (Hughes et al., 2019).
- Moving from a fully supported programme into a similar community activity or voluntary role can lead to high levels of dropout.
- Transitioning into community based support should be communicated and considered from the start of the programme to help individuals prepare for the change.
- Support should be provided to find relevant clubs, educational settings, volunteer roles, and/or community activities to support continued engagement.

## **10. Deliverers should have knowledge and awareness of nature, wildlife, and mental health.**

- The level of knowledge and skills related to nature and wildlife can influence the ability of deliverers to support individuals' engagement and activity availability.
- If possible, during recruitment for programme roles, those with lived experience and from diverse backgrounds should be encouraged to apply in an aim to promote engagement from all backgrounds.
- Deliverers may be exposed to distressing information and guilty knowledge during session. Therefore, deliverers should be helped to prepare for such situations while being assisted to off-load after programme delivery to support with their own mental health and wellbeing.

## **11. Administrative support role to be included as part of the programme team.**

- To enable deliverers more time to develop relationships with individuals it is suggested that where possible specified time is designated or an individual is employed to provide administrative support, particularly during the referral process.
- Large amounts of time are needed to develop referrer and programme relationships to enhance awareness of new and existing programmes (see Welsh Government, 2022c).

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## APPENDICES

### Appendix 1: Participant experiences of the WSWs programme

#### 1. “What have you enjoyed most about taking part in Wild Skills, Wild Spaces?”

‘Enjoyed most’ category	Examples of text responses	Adult (n=78)	YP (n=186)	Total frequency	%
Preparation of and taking part in outdoor cooking and drinking	<i>“I enjoy cooking curry the most, I chopped the chicken put I in the frying pan”</i>	8	60	68	25.76
Socialising and meeting new people	<i>“Meeting lovely people”</i>	12	23	35	13.26
Getting out of the house/being outside / being in nature	<i>“Getting out the house”</i>	10	20	30	11.36
Woodwork and craftwork	<i>“Whittling”</i>	12	16	28	10.61
Everything	<i>“Everything – the whole experience”</i>	4	17	21	7.95
Learning new skills	<i>“Learning new skills”</i>	12	3	15	5.68
Learning about nature / wildlife	<i>“Learning about wildlife”</i>	6	7	13	4.92
Having activities / game to do	<i>“Activities”</i>	0	12	12	4.55
New experiences / activities	<i>“Trying new things”</i>	5	5	10	3.79
Building shelters / dens	<i>“Den building”</i>	0	9	9	3.41
Peaceful and relaxing environment	<i>“Relaxing environment”</i>	2	4	6	2.27
Growing vegetables and foraging	<i>“Planting veg patch”</i>	4	0	4	1.52
Deliverers	<i>“[name of deliverers] helping us”</i>	0	4	4	1.52
Walking	<i>“Walking”</i>	0	3	3	1.14
Support with mental health	<i>“The introduction of new people which helped my anxiety”</i>	2	0	2	0.76
Physical aspects / exercise	<i>“Exercise”</i>	0	1	1	0.38
Quality of the programme	<i>“The structure of the program – professional setup”</i>	1	0	1	0.38
Poetry	<i>“Writing nature poems”</i>	0	1	1	0.38
Missing school lessons	<i>“Get to miss lessons”</i>	0	1	1	0.38

2. "What have you least enjoyed about the Wild Skills, Wild Spaces course?"

'Least enjoyed' category	Examples of text responses	Adult (n=21)	YP (n=87)	Total frequency	%
Nothing, enjoyed everything	"Nothing"	8	37	45	41.67
Cold, rain, and/or poor weather	"Hate it when it rains"	5	29	34	31.48
Not enough time at WSWS	"Only doing it [WSWS] once a week"	1	2	3	2.78
Evaluation survey / paperwork	"Paperwork"	0	3	3	2.78
Couldn't do an activity they wanted	"The fact that we couldn't do whittling that towards the end"	1	1	2	1.85
Whittling	"Whittling"	1	1	2	1.85
Going home	"Having to go home (sad face)"	1	1	2	1.85
Dead hedging	"Dead hedging"	0	2	2	1.85
Food type	"I didn't like the pumpkin soup"	1	1	2	1.85
Weren't allowed to climb trees	"Can't climb trees"	0	2	2	1.85
Getting dirty	"Not a fan of putting my hands in soil"	1	1	1	1.85
Others dropping out	"When new people come into the group and don't stay on consistently is very important to me"	1	0	1	0.93
Outdoor cooking and kettle preparation	"Fires"	0	1	1	0.93
Travel issues	"Sometimes I wasn't able to get to the session due to transport issues"	1	0	1	0.93
Cleaning	"Cleaning"	0	1	1	0.93
Litter picking	"Litter picking"	0	1	1	0.93
Lack of choice	"Was forced to do it"	0	1	1	0.93
Missed a school lesson	"That I missed maths"	0	1	1	0.93
Too close to nettles	"Too close to nettle"	0	1	1	0.93
Not having people know in the group	"Not having people I know with me"	0	1	1	0.93

### 3. "How do you think the programme could be improved in the future?"

'Improvement' category	Examples of text responses	Adult (n=32)	YP (n=74)	Total frequency	%
Not sure or can't be improved	<i>"Not sure it could be"</i>	8	28	36	33.96
More time at WSWS	<i>"Making sessions longer"</i>	3	20	23	21.70
Comfort	<i>"New chairs"</i>	0	7	7	6.6
More trips off reserve	<i>"More trips off the reserve"</i>	3	2	5	4.72
More cooking	<i>"More cooking"</i>	0	5	5	4.72
More walks	<i>"More walks"</i>	3	1	4	3.72
More specific detailed skill and/or knowledge development	<i>"More education on carbon impact"</i>	4	0	4	3.72
More volunteers / people in the groups	<i>"More volunteers"</i>	2	2	4	3.72
More nature craft	<i>"More nature craft"</i>	3	0	3	2.83
More planting	<i>"More planting"</i>	2	0	2	1.89
More hot food and drink	<i>"Could have done with more hot food and more hot drink"</i>	1	0	1	0.94
Guest speaker	<i>"I'm interest in birds of prey and I'd be interested in seeing a guest speaker"</i>	1	0	1	0.94
Increased access to transport	<i>"Access to transport"</i>	1	0	1	0.94
More team based activities	<i>"More team building activities"</i>	1	0	1	0.94
Quicker activities	<i>"Quicker activities"</i>	0	1	1	0.94
Woodwork	<i>"Woodwork"</i>	0	1	1	0.94
Bring a pet	<i>"Bring a pet along?"</i>	0	1	1	0.94
More practical and less games	<i>"If we did more useful practical stuff, and less games and if the games were different each day, that'd be better."</i>	0	1	1	0.94
Friends could come at same time	<i>"if my friend [name] could come"</i>	0	1	1	0.94
Football	<i>"Football"</i>	0	1	1	0.94
Ordering of session	<i>"Do cooking first then start talking"</i>	0	1	1	0.94
Making bird boxes	<i>"Making bird boxes"</i>	0	1	1	0.94
Middle of week	<i>"Do it on Wednesdays it is the middle of the week and WSWS would pick it up"</i>	0	1	1	0.94

## Appendix 2: Dissemination

- The below table highlights all completed and accepted dissemination of the WSWS project

Date	Type of dissemination and title	Other information
June 2023	<ul style="list-style-type: none"> <li>Poster presentation at CAWR conference</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 30 attendees</li> </ul>
March 2023	<ul style="list-style-type: none"> <li>Postgraduate seminar at Cardiff Met</li> <li>“Physical activity for mental health”</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 10 students</li> </ul>
February 2023	<ul style="list-style-type: none"> <li>Cardiff Met undergraduate recorded lecture and face-to-face seminars</li> <li>“Interdisciplinary perspectives to mental health and physical activity: A case study of Wild Skills, Wild Spaces”</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 30 students took part in face-to-face seminars</li> </ul>
September 2022	<ul style="list-style-type: none"> <li>Health Enhancing Physical Activity EU Conference – An ecosystem approach to health enhancing physical activity promotion</li> <li>Oral presentation</li> <li>“‘This has just given me life back’ – mixed methods evaluation of the Wild Skills, Wild Spaces ecotherapy project, Wales, UK.”</li> </ul>	<ul style="list-style-type: none"> <li>International conference taking place at Université Côte d’Azur</li> </ul>
July 2022	<ul style="list-style-type: none"> <li>‘How Green Spaces Promotes Wellbeing’, Positively Rural webinar series. WSWS given as an example of an ecotherapy project shown to enhance wellbeing.</li> <li>YouTube video of the project shown.</li> </ul>	<ul style="list-style-type: none"> <li>Online presentation and Q&amp;A session</li> <li>Approx. 20 attendees</li> </ul>
June 2022	<ul style="list-style-type: none"> <li>British Psychology Society - Division of Health Psychology Annual Conference 2022</li> <li>Poster presentation</li> <li>“Evaluating ‘Wild Skills, Wild Spaces’ an ecotherapy programme”</li> </ul>	<ul style="list-style-type: none"> <li>2 day event taking place in Bristol, UK</li> </ul>
March 2022	<ul style="list-style-type: none"> <li>Green Lung Recovery Project – Tewkesbury Nature Reserve</li> <li>Online webinar</li> <li>“A Conversation about Health and Wellbeing, Nature and Social Prescribing”</li> </ul>	<ul style="list-style-type: none"> <li>WSWS was described and spoken about as a case study</li> <li>48 participants attended the webinar</li> </ul>

March 2022	<ul style="list-style-type: none"> <li>Looking to the Horizon - Future Directions in Social Prescribing Research Conference</li> <li>Oral presentation</li> <li>"Wild Skills, Wild Spaces: An evaluation of an ecotherapy programme"</li> </ul>	<ul style="list-style-type: none"> <li>Wales School for Social Prescribing Research (WSSPR) funded by Health and Care Research Wales annual meeting and celebration of Social Prescribing Research in Wales</li> <li>A total of 115 people were at the event</li> <li>The presentations will be circulated to the 333 Wales Social Prescribing Research Network (WSPRN) members</li> </ul>
March 2022	<ul style="list-style-type: none"> <li>Postgraduate seminar at Cardiff Met</li> <li>"Physical activity for mental health"</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 15 students</li> </ul>
February 2022	<ul style="list-style-type: none"> <li>Cardiff Met undergraduate recorded lecture and face-to-face seminars</li> <li>"Interdisciplinary perspectives to mental health and physical activity: A case study of Wild Skills, Wild Spaces"</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 45 students took part in face-to-face seminars</li> </ul>
November 2021	<ul style="list-style-type: none"> <li>Rural Health Care Wales Conference</li> <li>15 minute conference presentation (hybrid event)</li> <li>"Wild Skills, Wild Spaces: An evaluation of an ecotherapy programme"</li> </ul>	<ul style="list-style-type: none"> <li>40 delegates registered in person at the Conference venue (maximum number due to Covid guidelines / social distancing)</li> <li>Additional 245 registered to attend online</li> </ul>
September-October 2021	<ul style="list-style-type: none"> <li>Cardiff Met undergraduate lecture</li> <li>WSWS was used as a client for the Design for Real Futures Cultures students</li> </ul>	<ul style="list-style-type: none"> <li>6 students engaged and created designs based upon the WSWS project</li> </ul>
September 2021	<ul style="list-style-type: none"> <li>Online article</li> <li>Overview of the project hosted on Cardiff Met news page "Wild Skills, Wild Spaces"</li> </ul>	<ul style="list-style-type: none"> <li>240 views to date</li> </ul>

### **Appendix 3: WSWS and the Well-being of Future Generations Act (2015)**

WSWS demonstrates evidence for reaching all seven of the well-being goals of the Well-being of Future Generations Act (2015) to differing levels. The table below demonstrates examples of ways in which WSWS influenced each of the well-being goals.

Seven well-being goals	Examples of ways in which WSWS supported Well-being of Future Generations Act (2015)
A prosperous Wales	<ul style="list-style-type: none"> <li>• Connection to nature scores and link with conservations</li> <li>• Conservation work in sessions</li> <li>• Participants developed skills</li> <li>• Participants attained qualifications</li> <li>• Participants went into volunteer roles</li> <li>• Participants went into employment</li> <li>• Qualitative feedback on environment and nature</li> </ul>
A resilient Wales	<ul style="list-style-type: none"> <li>• Connection to nature scores and links with conservations</li> <li>• Conservation work during WSWS sessions</li> <li>• Tracking and recording of wildlife</li> <li>• Building and putting up of birdboxes at WSWS and at home</li> <li>• Learning to grow and cook food sustainably</li> </ul>
A healthier Wales	<ul style="list-style-type: none"> <li>• Increased opportunity for physical activity due to being in nature</li> <li>• Increased wellbeing scores</li> <li>• Nature connection scores linked to wellbeing</li> <li>• Volunteers continuing to engage in the future programme</li> <li>• Using nature to support wellbeing</li> </ul>
A more equal Wales	<ul style="list-style-type: none"> <li>• People living with mental health problems offered a free nature based programmes including transportation options which they may not have been able to attend otherwise</li> </ul>
A Wales of cohesive communities	<ul style="list-style-type: none"> <li>• Project has maintained local wildlife sites</li> <li>• Promoted events at nature reserves and invited the community (e.g., Christmas market)</li> <li>• Volunteer work</li> <li>• Litter picking</li> </ul>
A Wales of vibrant culture and thriving Welsh language	<ul style="list-style-type: none"> <li>• Arts promoted in the sessions such as drawing, poetry, and whittling</li> <li>• Welsh language is provided where possible</li> <li>• 30 days of nature promoted activity in nature</li> </ul>
A globally responsible Wales	<ul style="list-style-type: none"> <li>• Promote nature and conservation work</li> <li>• Promote Wales nature reserves</li> <li>• Maintain nature reserves and habitat for future generations (e.g., boardwalk)</li> </ul>



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