



Scottish Golf's Contribution to the 2020 Challenge for Scotland's Biodiversity

Prepared by:



On behalf of:



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Disclaimer

All information is correct to our knowledge at time of report completion.

Authors:

Carolyn Hedley and Lynn Jopling

Contact Details:

Scottish Golf

The Duke's, St Andrews

Fife, KY16 8NX

Tel: 01334 466477

Web: www.scottishgolf.org Email: c.hedley@scottishgolf.org



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Introduction

The Scottish Government recently launched the **'2020 Challenge for Scotland's Biodiversity - A Strategy for the conservation and enhancement of biodiversity in Scotland'**:

"This 2020 Challenge is a supplement to the Scottish Biodiversity Strategy (2004), focused on desired outcomes for 2020. It shows how the Scottish Government, its public agencies, Scottish business and others can contribute to the Strategy's aims as well as supporting sustainable economic growth. With the publication of this document, the Scottish Government designates the two strategy documents together, as comprising the Scottish Biodiversity Strategy. The 2020 Challenge provides greater detail in some areas, responds to new international targets, and updates some elements of the 2004 document. The three-year reporting cycles for the strategy will ensure that progress is recorded and necessary action taken. The Scottish Biodiversity List (2004) will be reviewed and help focus priorities."

For more than 16 years Scottish golf clubs have received direct environmental advice and awareness raising from Scottish Golf, (previously operating as the Scottish Golf Union (SGU) and their wholly owned subsidiary the Scottish Golf Environment Group (SGEG)), The R&A and previously Scottish Natural Heritage (SNH), along with a variety of inputs from other advisors/environmental experts. We are confident that in many clubs across Scotland, biodiversity is being protected and improved and the sector is actively supporting and contributing to the many local and national targets and priorities detailed in the Scottish Biodiversity Strategy (2004) and the new 2020 Challenge documents.

We have evidence of examples supporting the 2020 Challenge objectives at club level with many good case studies produced. Many Local Biodiversity Action Plans (LBAPs) include the golf sector, following close work by SGEG staff with the regional teams, and we encourage many clubs to work directly with government funded and supported LBAP organisations to ensure our desired outcomes are aligned at LBAP level where possible.



However, a comprehensive review of the golf sector's activities and achievements as a whole has not yet been conducted. We feel this is an opportunity to conduct a larger scale review of the Scottish Golf Sector in relation to the relevant key environmental areas detailed in the 2020 Challenge document.

Proposed deliverables of this report

- Summary of how national and international golf sector organisations are addressing sustainability and the Scottish golf sector's interaction with environmental sector organisations.
- For each 2020 Challenge for Biodiversity strategy section this report details:
 - What Scottish Golf and previously SGEG have done and are currently doing to advise and support clubs towards the strategic outcomes
 - How golf is contributing to the key steps and the promotion of key messages
- Case study examples of where good practice is being demonstrated.
- Scottish Golf, on behalf of The R&A, has also conducted a national survey to gather data of current natural assets and activities of the golf clubs and courses across Scotland in line with the 2020 Challenge structure.
- Identification of future actions and support/funding requirements to assist the golf sector to meet the relevant 2020 Challenge targets.



Biodiversity in Scottish Golf

Scotland is a special place for biodiversity; not only for the sheer number of species it supports, but also for its complex mosaic of habitats and scenery which makes up our rich and varied landscape.

Nature is measured in terms of biodiversity of wildlife and habitats. Biodiversity, which is short for biological diversity, is the term used to describe the variety of life on Earth. It is in our forests and mountains, our rivers and seas, our golf courses. Biodiversity is the natural capital which supports all our lives. It is vital for our survival and is a key measure of the health of our planet.

Biodiversity provides us with a range of services including supporting leisure activities such as golf and tourism, providing food, building materials, resources for education, medicine and research and broader ecosystem services.

Scotland is the home of golf and our courses are renowned the world over for their scenic beauty and stunning landscapes, with many found in areas designated as National Scenic Areas, Areas of Outstanding Natural Beauty, Areas of Great Landscape Value or Designed Landscapes.

Of all the major land based sports, golf has the greatest interaction with the environment. There are nearly 600 golf courses in Scotland, all of which are a significant part of our national landscape heritage and permanent green areas which are important sanctuaries for plants and wildlife.

Scotland's golf courses occupy approximately 38,000 hectares (see survey section of this report) and many host nationally and internationally designated nature sites, proving golfing areas are often important for their wildlife and habitats.

All golf courses have something to offer in terms of biodiversity. There are numerous ways a club can enhance their natural habitats and contribute to wildlife conservation, many of which incur very little or no financial cost and some can even save the club money in the long run.



Golf courses interact with the aesthetic qualities of their surroundings and on the character of their local landscapes, whether they are links courses that have evolved from the original topography and vegetation, those within historic parkland estate landscapes, or the more recent golf courses with greater earth-shifting and design. Landscape character and structure including vegetation types and cover, colours and textures, views and vistas to and from the surrounding countryside and coastlines, should all be taken into consideration in course design and management to make the most of the golf course landscape characteristics ultimately benefiting the golfing experience.

As the key asset of any golf club is the golf course itself, it is vital that this is of the highest possible quality to retain and attract members and visitors. In addition to quality playing surfaces, issues such as nature conservation and enhancement, landscape and cultural heritage, climate change, sustainable turf management and pollution prevention all need to be considered along with the ever increasing amount of environmental legislation. Clubhouses, maintenance facilities and professional shops are all areas where significant cost savings can be achieved through water and waste management and energy efficiency.

Addressing environmental issues in conjunction with making golf facilities economically efficient and socially inclusive will enable golf clubs to be managed more sustainably.

“A golf course which has been sensitively designed and managed in a way which works with nature rather than against it, is normally more interesting and challenging.” “Golf is a test against the hazards that nature provided.” Colin Montgomerie.

In recent years addressing nature and sustainability issues in general has become common place across the global golf sector, and the Scottish Golf Sector has led the way for many years.



Sustainability and the Scottish golf sector

The key organisations and groups that contribute to environmental awareness and practical actions in the sector are detailed below:

Scottish Golf

In Oct 2015, Scottish Golf, the new unified governing body for golf in Scotland was formed, an amalgamation of the Scottish Golf Union (SGU) and the Scottish Ladies' Golfing Association (SLGA). The new body also incorporates the previously wholly owned subsidiary organisation the Scottish Golf Environment Group (SGEG).

Since the early 1990's Scottish Golf has taken a leading role in promoting sustainability to their affiliated member golf clubs, supporting them in addressing their environmental issues and managing their courses and clubhouses for a sustainable future.

While environmental awareness and enthusiasm in the sector is ever increasing, golf clubs, like all small businesses, are facing increasing climatic, legislative and economic challenges. The Scottish Golf Environment Manager and Club Services team, with a network of technical golfing/course management and environmental specialists for further support and guidance, help clubs address these challenges with a free environmental advisory service. This includes:

- Direct advice through **club liaison, club visits, environmental audits, and advisory reports** to help implement environmental best practice in clubs.
- Forward programming of environmental activities by assisting with **Environmental Action Plans**.
- Encouraging and providing assistance to clubs to gain **recognition** for their environmentally responsible activities with the GEO OnCourse® platform and Certified® Eco-label.





- On-going development of **Environmental Support Tools** including downloadable technical best practice information and publications, templates for recording, monitoring and reporting and club case studies.
- Working with partner organisations and via the Scottish Golf Education Group to provide **Environmental Education and Training** seminars for golf course and facility managers.
- Implementation of an **Environmental Communication Plan** to provide clubs with environmental news, legislation and project funding updates through the website www.scottishgolf.org, direct communications, Club E-bulletins and social media channels (@EnvironmentGolf).
- The Scottish Golf Charitable Trust also raises valuable funds for this sustainability work.

The advice provided can be designated to six key areas:



Nature: Best practice advice on how to conserve and enhance the biodiversity of the golf course through on-going, informed management of species and habitats. With links to specialist ecological consultants and government services across Scotland, this helps clubs ensure that their actions will have a positive impact on the landscape character of the golf course and surrounds linking with LBAPs and the National Coastal Change Assessment programme.



Community: Advice on education and internal communication for golf course users, club members and staff regarding on-going environmental management of the golf facility. Advice on how to co-operate positively on local environmental and community issues through appropriate partnerships with specialist national and local individuals and action groups. Advice on the sensitive management and understanding of archaeology, landscape history and cultural heritage.



Water: Advice on water use efficiency and supply for the golf course, clubhouse and other built areas of the golf facility.



Energy: Advice on how to minimise energy consumption and maximise energy efficiency throughout the golf facility and encourage the use of renewable technologies. Scottish Golf is a member of the 2020 Climate Group – subgroup for sport, events and tourism.



Supply Chain: Advice on sustainable resource management through purchasing and turf management procedures and practices to minimise the quantity of materials used. Advice on how to minimise the amount of waste produced and to ensure that all handling and disposal practices meet with legal compliance and best environmental practices. Scottish Golf works closely with Resource Efficient Scotland.



Pollution Control: Advice on best environmental practices to prevent pollution and to protect the quality of water, air and soil and comply with all environmental legislation. Scottish Golf is a member of the SEPA led Diffuse Pollution Management Action Group and the NetRegs Business Advisory Group.



Scottish Golf works closely with a variety of Scottish and UK golfing sector organisations to promote best practice, deliver sustainability projects and provide education.

British and International Golf Greenkeepers' Association (BIGGA)

BIGGA is dedicated to the continuing professional development of its 6000 greenkeeper and turf professional members and, in serving their needs, strives through education and training for standards of excellence in golf course management throughout the greenkeeping profession.

As well as hundreds of events, educational seminars and development opportunities each year, the Association organises the BIGGA Turf Management Exhibition each January and also boasts an unrivalled education programme featuring hundreds of hours of seminars, workshops and presentations under the Continue to Learn umbrella.

BIGGA is aware that greenkeepers make decisions that are significant to the sustainability performance of the industry and which, to a large degree, determine golf's reputation as a responsible steward.

BIGGA members support golf clubs by:

- Providing high quality playing surfaces managed for healthy turf grasses, not the colour of it.
- Maintaining stunning golf landscapes that are rich in wildlife.
- Reusing waste products and trying to eliminate waste at source.
- Working with watersheds and natural ecological processes as far as possible.

In conjunction with industry partners, BIGGA promotes technological innovation, particularly in turfgrass management, the use of recycled water and renewable energy to reduce any adverse impacts of course management.

BIGGA is committed to supporting the further development of their members' knowledge and skills, to continue to act as leaders in sustainable golf. BIGGA recognises that sustainability is a journey rather than a destination, and that greenkeepers can play a leadership role within golf and within local communities. Nature and wider sustainability issues are regularly featured in the monthly magazine Greenkeeper International. *Source:* www.bigga.org.uk



Greenkeeper Training Committee (GTC)

The Greenkeepers Training Committee (the GTC) is dedicated to improving and promoting the education and training of all golf greenkeepers. Training courses and qualifications are available to allow ambitious and enthusiastic greenkeepers to work towards becoming greenkeeping management professionals. A comprehensive training manual, published by the GTC in several European languages, helps guide greenkeepers through their chosen career in association with recognised training providers. Sustainability issues are included in these training manuals and course syllabus for all recognised training providers.

Source: www.the-gtc.co.uk

Scotland's Rural College (SRUC) – Elmwood Campus

Over recent years, SRUC Elmwood has gained recognition as the premier training provider to the golf industry. All golf programmes lead to degree and master degree provision and the courses cover all three main areas of the golf industry: Golf Course Management, Golf Facility Management, Professional Golf and Coaching.

The campus operates an 18 hole golf course, driving range and short game practice area to allow a full range of practical training and education to be undertaken at a professional level, and gives students excellent hands on experience.

Sustainability in golf course management is a key part of the curriculum and student greenkeepers get modules in environmental issues and nature and habitat conservation throughout their courses.

Source: www.sruc.ac.uk

Scottish Association of Golf Course Architects (ScotGCA)

The ScotGCA is the body representing the golf course architecture profession in Scotland with the aim to offer affordable support and guidance to new golf developments and to existing Scottish clubs, helping them with course improvements including safety issues, course appraisals, bunker renovation, maintenance regimes, course restoration and new holes. Sustainability is considered at all stages by members of ScotGCA and biodiversity issues and opportunities are a key part of the design and construction process.

Source: www.scotagca.co.uk



Sports Turf Research Institute (STRI)

Through eighty years of extensive research on the design, construction and maintenance of golf greens and courses, STRI provide agronomic advice on the latest techniques, products and machinery to use to achieve quality across UK golf courses.

The STRI Environmental Planning & Management team provides support and planning for environmental and ecological matters including impact assessments, management planning, landscape surveys, woodland and tree surveys, wildlife and protected species audits, waste management and legal compliance.

Source: www.stri.co.uk

STRI has supported the Scottish Golf in the production of many technical best practice publications including:

- Climate change on Scottish golf courses
- Control of pests, weeds and diseases and pesticide use on Scottish golf courses
- Turf Management Fact Sheets

Sustainability and International Golf Organisations

The R&A

Based in St Andrews, The R&A assumes responsibility for the administration of the Rules of Golf in 138 countries throughout Europe, Africa, Asia-Pacific and the Americas and is the organiser of The Open, one of the world's great sporting events. The success of The Open enables R&A investment in the development of the sport around the world. This includes the support of sustainability initiatives in and through golf.

The R&A is a world leader in the promotion of sustainability in golf, providing advocacy and support for education, research and advisory programmes through its affiliated partners, the national governing bodies of the sport.



The R&A promotes best practice on all aspects of golf course management, with specific references to ecological and conservation issues, and aims to help to grow the game of golf in a commercially, environmentally and socially sustainable way.

The Open is staged annually on one of ten of the UK's finest links courses. The R&A protects the ecology and promotes wider sustainable course management at the venues of The Open. An ecological consultant is employed by The R&A to provide guidance to all Open venues on habitat management for wildlife, and to prepare Site Protection and Site Restoration Plans for each staging of The Open. All Open venues are GEO Certified®.

The Open's sustainability programme, GreenLinks, covers every aspect of staging the championship from procurement to waste management, energy efficiency to nature protection.

Sources: <http://www.randa.org/>
<http://randa.org/golfcoursemanagement> and <http://www.theopen.com/>

The European Golfing Association (EGA)

The Association, based in Switzerland, is presently composed of 46 member countries.

The EGA Ecology Unit was founded in January 1994 jointly launched by the EGA, the Royal and Ancient Golf Club of St Andrews and PGA European Tour in recognition of the need for a coordinated approach to environmental issues in golf.

The Committed to Green Programme took over responsibility for promoting an increasing awareness of the environmental impact of golf and the desire to make the game ever more sustainable from the EGA Ecology Unit in 1999. It was run by the Committed to Green Foundation and a number of countries launched their own, related environmental certification schemes. The programme was supported by national stakeholders within the golf and environmental sector ensuring the independent work within the programme. Committed to Green ceased operations in 2003.

The European Golf Association continues to recognise and promote the work of The R&A, Golf Environment Organization, Federation of European Golf Greenkeepers Associations, the European



Institute of Golf Course Architects and the member governing bodies across Europe that actively promote sustainability, such as the work of Scottish Golf.

The EGA constituted Golf Course and, latterly, Sustainable Golf Committees represented the sport at the European Union from 2009 to 2014, focusing mainly on environmental issues. Golf Europe, established in 2015, is now the vehicle for such activities, with a wider remit which encapsulates all matters relating to golf and sustainability.

Source: <http://www.ega-golf.ch/>

Golf Europe

Golf Europe, established in 2015, is a group of major golf stakeholders collaborating to develop golf and enhance the sport's contribution to European society. Its aim is to utilise the resources of the sport to greatest effect and to work closely with external partners to achieve its objectives.

The Europe 2020 strategy, which outlines the European Union's vision for the 21st century, includes sustainability as a key driver for economic growth and resource efficiency. In this context, Golf Europe's activities of growing the sport of golf in an environmentally, socially, economically and integrally sustainable way are in line with and contribute to realising Europe's 2020 vision. Europe 2020 strategy seeks to generate economic growth through an intelligent, sustainable and inclusive economy. Golf Europe recognises that golf's growth can directly contribute to this vision for Europe.

Golf Europe will:

- build on the work of the EGA Golf Course and Sustainable Golf Committees and further develop itself as a trusted stakeholder on EU policy's legislative development
- provide the European golf industry a useful and effective interface to the EU Institutions and vice versa
- help support and guide industry associations and practitioners to get the most out of sustainability and Golf Europe's relationship with the EU Institutions
- generate data and case studies, both strategic and grass roots, which demonstrate golf's value
- identify and widely promote golf's social, economic and environmental value.



Golf Environment Organization (GEO)

GEO, is an international not for profit organisation. Supported by a growing number of golf industry partners and sponsors, GEO is a catalyst for credible and increasingly visible sustainability action across golf course and club management; new golf development and golf tournaments.

GEO is a member of the Natural Capital Forum. GEO is the only sports based member of the ISEAL Alliance for global voluntary standards and certification and has developed the GEO OnCourse® and Certified® eco-label which has a section on Nature. It has also developed guidelines for sustainable golf course construction.

Source: www.golfenvironment.org

Federation of European Golf Greenkeepers Associations (FEGGA)

In 2000 FEGGA produced its Environmental Policy Document, endorsed by all Member Associations of FEGGA. The FEGGA Policy Document encourages the implementation of an Environmental Programme, along with clear guidelines in establishing the programme. FEGGA very much realises the importance of good environmental management within golf, both dealing with the issues and also promoting the positive work done within golf throughout Europe.

Source: www.fegga.org

European Institute of Golf Course Architect (EIGCA)

Members of the EIGCA believe stewardship of the environment is a cornerstone of their profession. Its Statement of Environmental Policy outlines the philosophy and principles which its members commit to support and promote, and it believes that collaboration between a wide range of organisations is the key to addressing this complex global problem.

Through its membership of the Golf Environment Organization's Industry Forum, EIGCA has supported the development of pioneering new guidance for sustainable golf development.

EIGCA members embrace the responsibility to play their own part in promoting more sustainable golf development. Golf Course Architects are perhaps uniquely positioned to do this, at the heart of the development process, with both the knowledge and the contacts to make a difference.

Source: www.eigca.org



European Golf Course Owners Association (EGCOA)

The EGCOA is committed to working in partnership with environmental organisations and government agencies to further their understanding of environmental issues to be addressed.

The EGCOA communicates the latest environmental challenges and solutions to owners, demonstrating the role owners can play as advocates for environmental sustainability in golf course maintenance and development in the future. The EGCOA actively encourages and assists its members in producing the most sustainable management and development plans for their courses and contributes to the implementation of the GEO agenda.

Source: www.egcoa.eu

United States Golf Association (USGA)

The USGA Green Section develops and disseminates sustainable management practices that produce better playing conditions for better golf. The results of USGA supported scientific research programmes advance the long-term viability of the sport through sustainable resource management and environmental protection.

Through consultancy, education and outreach, the USGA Green Section has a well-defined mission to provide education products and real-world solutions on golf course management, environmental responsibility, and economic sustainability.

Source: <http://usga.org/Course-Care/Golf-and-the-Environment/The-USGA-s-Environmental-Commitment/>



Interaction between environmental organisations and Scottish Golf

Scottish Golf aims to continue to network and develop partnerships with a wide range of relevant environmental sector specialists and organisations to identify common goals and support us with the delivery of our action plans and promotion of golf sector environmental achievements.

Delivery of our advisory service also enables golf facilities to contribute to many of the Scotland's national environmental and social policies and targets. Through key partnerships we will be able to increase the understanding of golf within wider regional and national environmental sector organisations and continue to be regarded as the key primary source of information regarding golf and environmental issues by the golf sector, the environmental sector and the wider public.

Government Organisations

Scottish Government

- Between 2002 and 2008 SGEG received Sustainable Action Fund grants from the Scottish Executive for a variety of 'Sustainable Golf' projects which included research into the ecological impact of three new golf courses and communication of sustainability through publications, newsletters and the website.
- SGEG represented the golf sector in the Scottish Government consultation with recreational land users regarding Marine Scotland's National Marine Plan/Offshore renewables.
- The Scottish Golf Union was part of the Steering Group of the Ryder Cup Green Drive, contributing to the Site Protection Plan by leading the liaison with SEPA. Project managing one of the Ryder Cup Outreach Funds (funded by the Scottish Government and Ryder Cup Europe), biodiversity projects were implemented in Perth & Kinross golf clubs. Many of the projects contribute to the Tayside Biodiversity Partnership targets and thus contribute to the 2004 'Biodiversity is in our Hands' strategy.
- Scottish Golf is contributing to the current National Coastal Change Assessment research programme (led by Scottish Government and SNH).



Scottish Natural Heritage (SNH)

- SNH were a key funder of SGEG from 1999 to 2007 enabling an increase in biodiversity advisory resource and a grant fund for club nature projects.
- Scottish Golf coordinates with SNH on their Sharing Good Practice events.

Local Biodiversity Partnerships (LBAPs)

- 18 of the 34 LBAPs had golf in their urban plans of which seven have a specific Golf Action Plan (Biodiversity in our Hands 2004)
- Scottish Golf will continue to encourage clubs to be involved in LBAP activities and projects.
- Further details can be found in **Appendix 1**, with the Tayside link being particularly detailed.

Scottish Environment Protection Agency (SEPA)

- Scottish Golf represents the golf sector as members of the Scottish Environment Protection Agency (SEPA) led Diffuse Pollution Management Advisory Group (DPMAG) to ensure pollution control legislation such as the WFD Controlled Activities Regulations is communicated to golf.
- Scottish Golf is assisting SEPA with communications about their River Basin Management Plans/Priority Catchment work, and promotes the SEPA Water Environment Fund for water course improvement projects.
- Scottish Golf is a member of the NetRegs Business Advisory Group is currently working to develop a golf specific section on the national online legislation website.

Visit Scotland

- Visit Scotland is represented on the Scottish Golf Development Committee and as part of their golf marketing campaigns regularly focus on the natural and landscape benefits of golfing holidays in Scotland.

Forestry Commission Scotland (FCS)

- Clubs are encouraged to liaise with FCS mostly regarding Felling Licences and tree disease issues.



Ministry of Defence (MOD)

- Clubs are encouraged to liaise with the MOD on planning and boundary issues.

Centre for Ecology and Hydrology (CEH)

- The latest scientific developments from CEH concerning invasive species are noted by Scottish Golf.

Countryside Ranger Services

- Scottish Golf liaises with various countryside Ranger services across Scotland on a practical project basis.

Historic Scotland (HS)

- Where appropriate, contact is made with HS regarding landscape designations and other heritage issues.

Nature and Wildlife Organisations

Many nature and wildlife organisations work with Scottish Golf and directly with existing golf courses and new golf developments. Some of these organisations are listed below:

Scottish Wildlife Trust (SWT)

Royal Society for the Protection of Birds (RSPB)

Regional Biological Records Centres

Biodiversity Action Reporting System (BARS)

Various Botanic Gardens

The Woodland Trust

Plantlife

Herpetological Conservation Trust

Herpetological Society

National Amphibian and Reptile Survey (NARS)

Amphibian and Reptile Conservation (ARC)

National Trust for Scotland

Butterfly Conservation Trust for Scotland



British Trust for Conservation Volunteers (BTCV)

Flora Locale

Chartered Institute of Ecology and Environmental Management (CIEEM)

British Trust for Ornithology (BTO)

Greenspace Scotland

Arboricultural Association

Keep Scotland Beautiful (KSB)

Bat Conservation Trust (also Local Bat groups e.g. in the Lothians, Fife and Perth & Kinross)

Mammal Society

Badger Society Scotland

Whale and Dolphin Conservation Society

Educational Institutes

University of Highlands and Islands (UHI)

- Golf Management courses annually visit Askernish golf course.

St Andrews University

- Coastal management and saltmarsh re-establishment research projects on golf courses.

Scottish Rural College (SRUC)

- Elmwood College – Golf education (as above).
- Sand Dune and Shingle Network, Liverpool Hope University, Department of Geography and Environmental Science.

Independent Ecological Consultants

Scottish Golf encourages club engagement and facilitates the introduction of the numerous specialist ecological experts that work within the golf sector.

Corporate Volunteers that have worked with golf

Various organisations work with golf clubs with corporate volunteering for practical projects, e.g. BT, Prudential and Standard Life.



How can Scottish Golf contribute to the 2020 Challenge for Biodiversity strategy?

For each of the 2020 Challenge for Biodiversity strategy section Outcomes we have investigated how SGU/SGEG have previously contributed to the key steps and the promotion of key messages and how Scottish Golf will continue to advise and support clubs in the future.

The key steps relevant to the golf sector are discussed using various examples and reference to case studies in Appendix 2.

Future areas of work in the sector that would benefit from Government support are highlighted.

2020 Challenge Strategy Outcomes and Key steps are in italics below.

1 Healthy ecosystems

Outcome

Scotland's ecosystems are restored to good ecological health so that they provide robust ecosystem services and build our natural capital.

Key steps

• Encourage and support ecosystem restoration and management, especially in catchments that have experienced the greatest degradation.

Scotland's golf courses occupy approximately 32,000 hectares, the majority of which is located in central Scotland, an area of increased urban expansion and habitat loss. Golf courses can, if managed appropriately, offer valuable green space and biodiversity havens, particularly in urban areas. Golf has worked closely with Greenspace Scotland and in particular the Edinburgh and Lothians Greenspace Trust to ensure greenbelt areas are protected.



Some courses in Scotland have been built on post-industrial brownfield sites such as Pumpherston Golf Club in West Lothian which was built in 2002 on the site of a shale oil refinery winning several prestigious environmental awards. Cowdenbeath Golf Club in Fife was originally built as a 9 hole course on the old Dora Coal mine site.

• Use assessments of ecosystem health at a catchment level to determine what needs to be done. Key messages of this step being; Devise an effective means of assessing ecosystem health and restore and enhance ecosystems.

Scottish Golf would welcome a catchment approach which recognises the potential of golf course land to contribute to biodiversity and ecosystem health. Scottish Golf would also welcome and promote the benefits of any ecosystem health assessment tool. On an individual golf course scale SGEG has advised and initiated many ecosystem enhancement projects. For detailed examples refer to the Case Studies in the next section of this report.

• Government and public bodies, including SNH, SEPA and FCS, will work together towards a shared agenda for action to restore ecosystem health at a catchment-scale across Scotland. A key message of this step being; Coordinate policies and action across Government and public bodies, and involve others including managers of land and sea and non-governmental bodies.

As discussed in the previous section of this report, Scottish Golf work closely with all the Government Agencies at both national and regional scale, various public bodies and NGO's as well as private and public landowners and managers. All local authority Planning Departments have been made aware of the free best practice publications available.

Scottish Golf can contribute to a number of the targets in the Scottish Wildlife 'Trust 50 for the Future' document. For example *“target #26 - Re-naturalise 30% of Scotland’s Urban Green spaces through a range of small measures including a shift to native tree planting and creation of wildflower meadows.”*



- *Establish plans and decisions about land use based on an understanding of ecosystems. Take full account of land use impacts on the ecosystems services that underpin social, economic and environmental health.*

Golf course land, if managed correctly, can provide both a haven for wildlife and widespread socio-economic benefits. This has been demonstrated in two recently commissioned reports into the Economic and Social impacts of golf in Scotland.

“The Value of Golf to Scotland’s Economy (KPMG 2013)” report states that:

“Scotland’s total golf economy is estimated to generate £1.171 billion in revenues for the wider Scottish economy. On these earnings, the game supports a £496 million gross value added (GVA) contribution to GDP. This is 0.4% of the country’s total economic output in 2011 or, put another way, £1 million in every £250 million of Scottish economic output is partly dependent on the game of golf.

It is estimated that the golf industry supports approximately 20,000 people in employment in Scotland (or 0.8% of the total number of people employed in Scotland).

Golf facilities contributed £582 million to the Scottish economy. From this top line revenue, these facilities support £231 million of GVA contribution to Scottish GDP and 12,380 people in employment.

Golf participation in Scotland, measured as a percentage of population, is among the highest in Europe. More than 4.5% of the population are registered golf club members and, according to the 2011 Scottish Household Survey, 8% of the population plays golf at least 12 times a year.

Scottish Golf Tourism generated £120 million of revenue in 2011, in addition to visitor green fee revenues, their spending on equipment whilst visiting and attendance at tournaments which were considered in other clusters. Golf tourism contributed £57 million GVA to Scotland’s economy and employed 2,100 people and paid wages totalling £35 million.



The Open Championship generated £140 million in 2015 and 5 of the 10 Open venues are in Scotland.

Expenditure on new capital equipment and construction activities at golf facilities generated £252 million in expenditure in Scotland in 2011. This spend supported a £108 million GVA contribution to Scottish GDP, 2,700 people in employment and £69 million in wages.

Production and retail sales of golf supplies (equipment, apparel and accessories) generated £157 million in revenue for the Scottish economy in 2011. This revenue supported approximately 1,660 jobs that paid almost £26 million in wages and contributed £72 million in GVA to Scotland's GDP."

A study into the **Social Impacts of Golf in Scotland** was also commissioned by the SGU in 2013.

Key findings included:

"With Scotland recognised as the 'home of golf', the sport plays a historic and fundamental role in the country's social and cultural fabric. Driving grass root golf participation and elite performance is a key remit of both sportscotland and Scottish Golf, but establishing the sport on the social agenda of Scottish residents and visitors is equally as important. It has long been acknowledged that sport can go beyond purely participation; it has the ability to reach and affect a wide range of economic and social outcomes.

The health of a society can be enhanced through an active (and passive) 'engagement' with sport. Where the 2014 Ryder Cup is expected to provide the Scottish economy with £100m, the outcome of hosting the event will also impact on national identity and social cohesion; job creation and learning and development opportunities; increased participation and healthier lifestyles, to name just a few.

While economic impact assessments have traditionally been used as a tool to justify strategic decisions and investment, social impact modelling is a relatively newer approach. It considers that the impact of a sport goes beyond direct, indirect and induced expenditure and the creation of jobs, that sport can change lives and communities in other non-financial ways. This project sets out to investigate those ways, and the implications for, and involvement of golf in Scotland."

This Social study and organisations such as Golf and Health (www.golfandhealth.org) also have relevance to the outcomes of 2020 Challenge Section 3 – Biodiversity, Health and Quality of Life.



2 Natural Capital

Outcome

Natural resources contribute to stronger sustainable economic growth in Scotland, and we increase our natural capital to pass on to the next generation

Key steps

- *Encourage wide acceptance and use of the Natural Capital Asset Index (2012)¹², including a comparable measure for the marine environment.*

Scottish Golf would welcome and promote the use of NCAI in golf. Nature rich golf courses are more attractive to the sustainable tourism market. A biodiverse golf course adds immeasurable value to the player experience and, in turn, to the longevity and sustainability of the golf club and its course. A golf club's natural assets support sustainable economic growth of the whole golf facility.

The economic value of golf to Scottish economy is detailed in the study previously mentioned. How much is down to tourism income due to landscape and enjoyment of outdoors and natural capital is not measured/immeasurable – NCAI will help with this if it includes golf as well as farming and forestry.

- *Undertake a major programme of peatland conservation, management and restoration.*

Scottish Golf could promote and raise awareness of such projects in areas near to affiliated golf clubs in Scotland. This could help raise awareness of ecosystem catchment management and the role in which the golf sector could play as well as boosting possible volunteer numbers and minimising land use conflict.



3 Biodiversity, health and quality of life

Outcome

Improved health and quality of life for the people of Scotland, through investment in the care of green space, nature and landscapes

As mentioned previously 'Social Impact of Golf in Scotland' study is also relevant to this outcome.

Key steps

- *Provide opportunities for everyone to experience and enjoy nature regularly, with a particular focus on disadvantaged groups.*

Golf courses offer opportunities for the local community to socialise, enjoy leisure time and experience greenspace and wildlife. Many courses are host to Right of Ways, bridleways, community tree planting and school nature projects as well as local biodiversity group activities. Examples of all of these can be seen in the case studies provided in Appendix 2 with a summary of case studies in the matrix in the next section of this report.

A particularly good example of golf providing opportunities for everyone is that of The Hermitage in Edinburgh. This is a social enterprise run and managed by Autism Ventures Scotland. Set in 22 acres of the beautiful Braid Hills, the Hermitage is a peaceful place, boasting a 9-hole golf course. The clubhouse has a large cafe area, dance studio and therapy room.

- *Support local authorities and communities to improve local environments and enhance biodiversity using green space and green networks, allowing nature to flourish and so enhancing the quality of life for people who live there.*

Golf courses in Central Scotland in particular offer greenspace that is utilised by the local community to exercise and play sport but also to walk the dog and feel the positive mental benefits of the outdoors. Scottish Golf would like to see a move towards more local community environmental improvement works being undertaken by local community members on golf club land. The Fairmont,



St Andrews case study, 'SSSI Management with Community Involvement', is a good example of how club and community came together to make improvements to the coastal path and ecology of the SSSI adjacent to their course.

• *Build on good practice being developed by the National Health Service (NHS) and others to help encourage greenspace, green exercise and social prescribing initiatives that will improve health and wellbeing through connecting people with nature.*

Golf serves as a way of encouraging green exercise to all ages and abilities. Many courses are suitable for chair users. The Scottish Golf has links with the Scottish Disability Golf Partnership which is governed and operated by disabled people and was the first golfing organisation in the world, to incorporate anyone of any age with a physical, sensory or intellectual disability, that interferes with playing or learning about the game of golf.

• *Increase access to nature within and close to schools, and support teachers in developing the role of outdoor learning across the Curriculum for Excellence.*

Golf courses can serve as local places for outdoor education. Many clubs have hosted school biodiversity projects, from tree planting and bat box making, to providing an outdoor classroom for nature studies with SWT and Buglife. Golf could play a role in increasing access to nature and healthy living. Both Dundonald Links and Craigie Hill GC have supported environmental education of local school children and junior golfers, for further details please refer to the case study section. Scottish Golf also aims where possible to link clubs with local schools participating in the eco-schools programme.

Legacy projects following the Open Championships at St Andrews and Royal Troon include biodiversity projects by Keep Scotland Beautiful in conjunction with local schools and groups.



- *Encourage public organisations and businesses to review their responsibilities and action for biodiversity, and recognise that increasing their positive contribution to nature and landscapes can help meet their corporate priorities and performance.*

Scottish Golf encourages golf clubs to review their environmental responsibilities and actions through Environmental Audits and assisting with Nature Action Plans.

Scottish Golf supports clubs to progress through the GEO OnCourse® programme. Clubs can register with this step-by-step online programme to help plan, achieve and promote the sustainability improvements appropriate for their site, bringing valuable business benefits and showcasing leadership.



4 Wildlife, habitats and protected places

Outcome

The special value and international importance of Scotland's nature and geodiversity is assured, wildlife is faring well, and we have a highly effective network of protected places.

Key steps

- *Ensure that the management of protected places for nature also provides wider public benefits.*

Many of Scotland's golf courses host regionally and nationally designated nature sites.

- *Integrate protected areas policy with action for wider habitats to combat fragmentation and restore key habitats.*

Golf course habitat has potential to act as connectivity between protected sites. One particular case study that highlights the benefits of linking a SWT nature reserve to a golf course and then throughout the region is from Dundonald Links, 'Habitat Linkage and Community Involvement'.

- *Develop a wildlife management framework to address the key priorities for sustainable species management, conservation and conflict issues, including reintroductions and invasive non-native species.*

Scottish Golf would welcome such a framework as many golf courses have biological records, both formal and informal, of current priority species such as red squirrel and Scottish wildcat. Many parkland golf courses experience invasive non-native species due to their proximity to estate land, with particular reference to Rhododendron and Himalayan Balsam.

- *Involve many more people than at present in this work and improve our understanding of the poorly known elements of nature.*

Golfers and golf staff are often out on the course. They are in a position to play a vital role in contributing to this key step and this section outcome. Helped by Government incentives they could



become *volunteer 'experts'* and play a major part in developing knowledge of our wildlife and its role in sustaining life. Many other non-golfers use the over 32,000 hectares of golf land throughout Scotland. Scottish Golf would welcome support to reach out to this sector of potential *volunteer 'experts'* in an attempt to involve more people.



5 Land and freshwater management

Outcome

Nature is faring well, and ecosystems are resilient as a result of sustainable land and water management

Key steps

- *Support 'High Nature Value' farming and forestry.*

Support for 'High Nature Value' golf should be considered alongside farming and forestry.

- *Put in place the management necessary to bring Scotland's protected areas into favourable condition and improve the ecological status of water bodies.*

Golf land managers may have a role to play here as many courses host or are adjacent to protected areas. Examples of golf course managers, public bodies and communities working together to address the challenges facing biodiversity are included in the case studies section.

As part of SEPA's Diffuse Pollution Management Action Group, Scottish Golf has assisted SEPA in its priority catchment work, helping to liaise with golf course owners regarding watercourse walks to survey ecological status and diffuse pollution impacts. In the Ayrshire priority catchment, SGEG also assisted in delivering follow on training to greenkeepers.

- *Ensure that biodiversity and ecosystem objectives are fully integrated into flood risk management plans, and restore wetland habitats and woodlands to provide sustainable flood management.*

Many of Scotland's golf courses are prone to flooding and such integrated flood risk management plans are often workable around the playing of the sport. Scottish Golf regularly gives advice on Sustainable Drainage (SuDS) solutions to clubs that are addressing climate change impacts on their



course drainage. Many of these solutions provide biodiversity and ecosystem enhancement and contribute, in turn, to a low carbon economy.

- ***Provide clear advice to land and water managers on best practice.***

Pollution prevention and control advice with relevant legislation is available to all clubs and we will continue to communicate further best practice advice produced from the Scottish Government and our partner environmental organisations.

- ***Land and water managers need to be more aware of the important role nature plays in their business.***

As discussed extensively in this report Scottish Golf promotes this message and would welcome any further Government support for our advisory service that is available.



6 Marine and coastal

Outcome

Scotland's marine and coastal environments are clean, healthy, safe, productive and biologically diverse, meeting the long-term needs of people and nature.

Key steps

- *Adopt a Scottish Marine Plan and develop regional marine plans to aid balanced decision-making in the marine environment.*

SGEG represented the golf sector in the SG consultation with recreational land users regarding Marine Scotland's National Marine Plan/Offshore renewables.

- *Improve understanding of how coastal ecosystems are likely to adapt to climate change and develop appropriate strategies for coastal zone management.*

Scottish Golf represents the golf sector in the SNH/Scottish Government Coastal Change Assessment Programme (NCCA) and offer guidance on coastal issues and ecology to clubs. SGEG was also involved with a Coastal Management Plan for St Andrews Links Trust, this is detailed in the, 'Coastal erosion and dune repair' case study.

Scottish Golf is a member of the Sand Dune and Shingle Network based at Liverpool Hope University.



7 Measuring progress

Outcome

A framework of indicators that we can use to track progress

We encourage clubs to record, monitor and benchmark their turf management activities and product use through a turf management policy and to feed into industry recording, monitoring and reporting online systems such as the GEO OnCourse® programme.

We also encourage clubs to keep formal and informal biological records/species sightings and to feed this data into regional and national biological record centres. A good example of this is the Bioblitz event that took place at Kingarrock Golf Club at the Hill of Tarvit in Fife, the report of this can be found in the case study section.

Key steps

- *Work more closely with the growing number of volunteers to develop our understanding of the changing state of nature.*

Scottish Golf will promote new national surveys and species counts/assessment techniques where possible.

- *Publish a terrestrial habitat map for Scotland*

This would be an invaluable tool that golf clubs can use to gain a better understanding of their catchment ecology.



Case Studies and Publications

As previously mentioned, we regularly compile case studies of examples of best practice on Scottish golf courses. These case studies demonstrate how we are contributing to many aspects of the 2020 Challenge for Biodiversity strategy sections. These case studies can be found in Appendix 2 and are available for download along with the other publications listed below from www.scottishgolf.org.

Many of these case studies are linked to from the R&A website golf course management pages at <http://randa.org/golfcoursemanagement>.

CASE STUDIES		Most relevant 2020 Challenge						
		Section						
		1	2	3	4	5	6	7
1	Nature - Bee Conservation and Grassland Management - Various clubs	X			X	X		
2	Nature - Species conservation - Sand Martin - Elmwood GC and St. Michaels GC	X			X	X		
3	Nature - Grassland Management - Coatbridge GC	X				X		
4	Nature - Hedge planting- Peebles GC	X				X		
5	Nature - Pond Creation - Auchterarder GC	X				X		
6	Nature - Pond Management - Mortonhall GC				X			
7	Nature - Species Conservation - Orchids - Callander GC	X			X	X		
8	Nature - Species Protection - Bats - Ratho Park GC	X			X	X		
9	Nature - Woodland Management for Bats - Downfield GC					X		
10	Nature - Species Protection - Bats - Dalmunzie GC & Dunning GC			X	X	X		
11	Nature - Species Protection - Barn owl - Dunkeld & Birnam & Dunning GC			X		X		
12	Nature - Species Protection - Sea pea - Carnoustie	X			X	X		
13	Nature - Grassland Management for wildflowers using Yellow Rattle - Kingarrock, Hill of Tarvit				X			
14	SSSI Management with Community Involvement – Fairmont St Andrews			X	X	X		
15	Nature - Biological recording - Niddry Castle GC			X		X		X
16	Nature - Tree and Shrub Planting - The Glen GC	X				X		
17	Nature - Species & Habitat Conservation for Native Species - Craigie Hill GC	X			X	X		
18	Nature - Coastal Erosion and Dune Repair - St Andrews Links Trust						X	



19	Nature - Woodland Management and Species Protection - Red Squirrel - Downfield GC	X			X	X		
20	Nature & Community - Habitat Linkage & Community Involvement - Dundonald Links				X			
21	Nature & Community - Club volunteers plant native trees and nectar-rich flowering plants for pollinating insects - St Fillan's GC			X		X		
22	Nature, Community & Waste - Family Day at The Hermitage Golf Course			X		X		
23	Management Planning – Habitat enhancement - Mortonhall GC			X				
24	Community - Education & Awareness - Access Management - Various Clubs			X		X		
25	Community - Education & Awareness - Environmental Brochure - Coatbridge GC			X		X		
26	Community - Education & Awareness - Environmental Brochure - Mortonhall GC			X		X		
27	Community - Education & Awareness - Juniors SSSI - Machrihanish Dunes			X		X		
28	Nature - Pond creation & Sustainable Drainage - Torphinhill					X		
29	Pollution Control & Nature - Sustainable Drainage and Pond Creation - Melrose GC					X		
30	Pollution Control & Nature - Sustainable Drainage and Pond Creation - Haddington GC					X		
31	Course Construction & Nature - Designated Area - Machrihanish Dunes			X	X	X		
32	Course Construction & Cultural Heritage - Designed Landscapes - Kingarrock, Hill of Tarvit			X	X	X		
33	Course Construction & Nature - New Junior Course - Pitlochry GC			X	X	X		

Publications

Nature Conservation for Golf Course Development (SGEG 2004)
 Environmental Issues in Golf Course Construction (SGEG 2005)
 Landscape Guidelines for Golf Course Development (SGEG 2007)

The Open Old Course 2010 Environment Booklet
 The Open Carnoustie 2007 Environment Booklet
 The Open Turnberry 2009 Environment Booklet



Phase 1 Habitat Survey and Map - Glencorse GC (Lumsden 2007)

Hill of Tarvit Bioblitz Report

NRC Biodiversity Studies of New golf courses (Elmwood, Dukes, Linlithgow)

A future full research study would detail other nature publications and papers about golf.



Scottish Golf Nature Survey 2015

Methodology

Scottish Golf has kept comprehensive records of the advice it has given to clubs in the last 16 years, including evidence of good practice and future recommendations. Many of the clubs have then gone on to continue to work with us for many years, increasing their knowledge and the variety of projects implemented.

Details of how these clubs have implemented recommendations and information from clubs we have not worked with directly (who may or may not have received other expert advice) would help us to compile a comprehensive review of the golf sectors ongoing activities and achievements as a whole.

So to supplement this report we have conducted a 'Scottish Golf Nature Survey' to gather key information relevant to the 2020 Challenge for Biodiversity strategy. A questionnaire was created in an electronic 'survey monkey' format and can be found in Appendix 3.

The R&A and the LBAP officer for Midlothian were consulted prior to distribution via the Scottish Golf Club E-Bulletin and via BIGGA direct to greenkeepers. CPD points were also available for those BIGGA members completing the survey.

Data gathered will feed into our overall records and will help identify areas of strength and potential new case studies, and areas of weakness in knowledge or activity that can help focus future advisory work and awareness raising.

Analysis of Survey Results

There are 563 Scottish Golf affiliated golf clubs in Scotland. Some additional resort/commercial clubs are not affiliated, some clubs do not own a course, and some clubs have more than one course. The R&A recently produced the 'Golf Around the World' report which stated there are 552 golf facilities in Scotland.

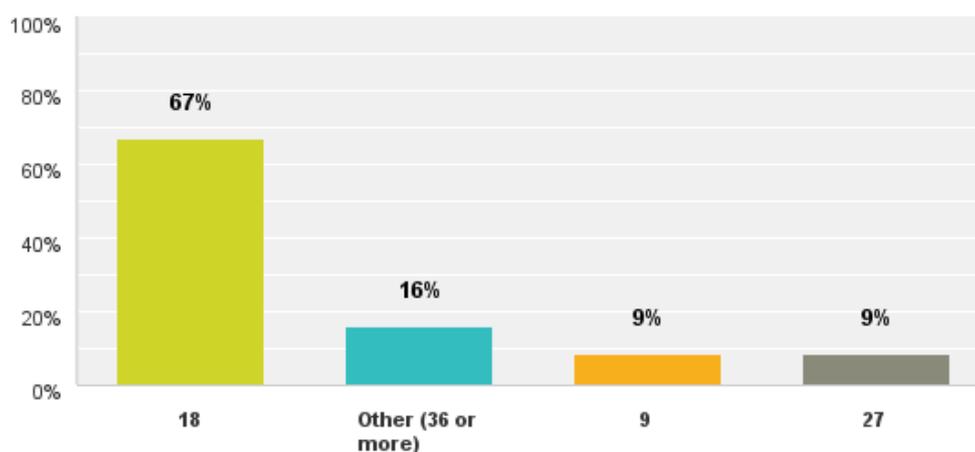


We received 83 responses representing 15% of Scottish Clubs and facilities. Following analysis, key findings are presented below:

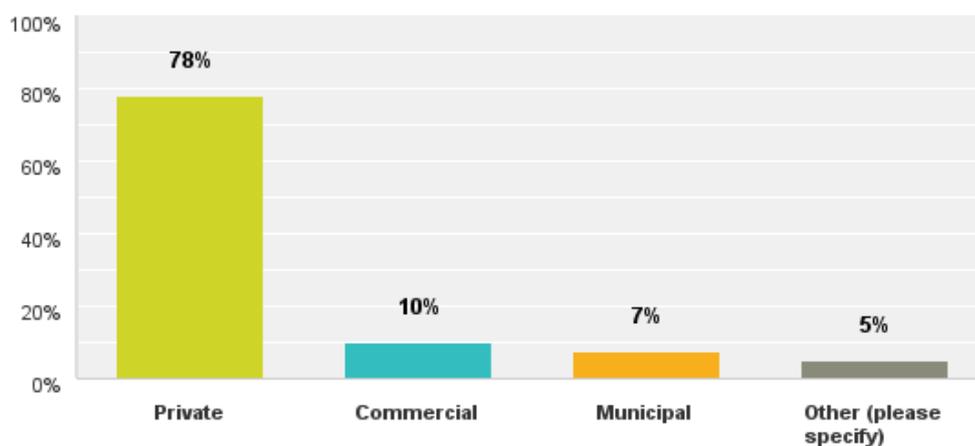
Club data - General

Q1-3 Club Details (confidential)

Q4 How many holes does your course have?



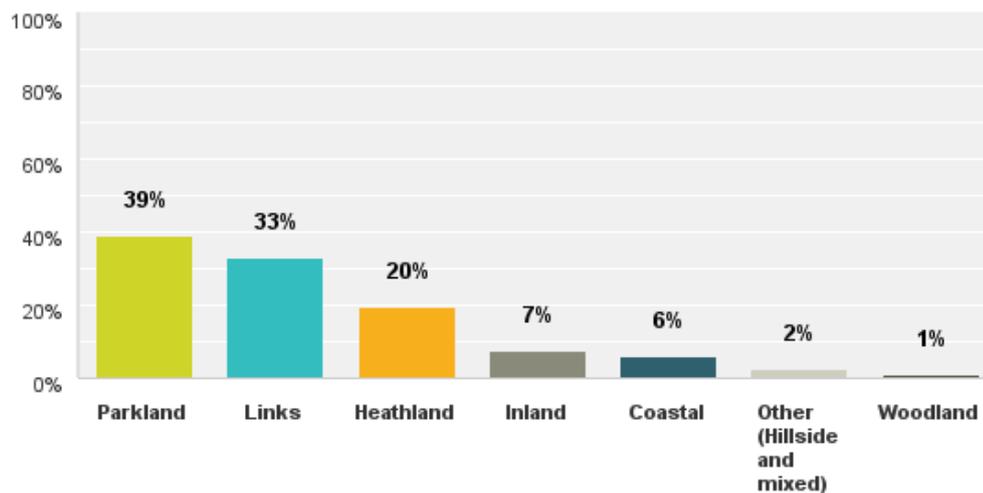
Q5 How is your course owned?



'Other' includes courses owned by the town and managed by a trust such as St Andrews Links Trust.



Q6: What type of course do you have?

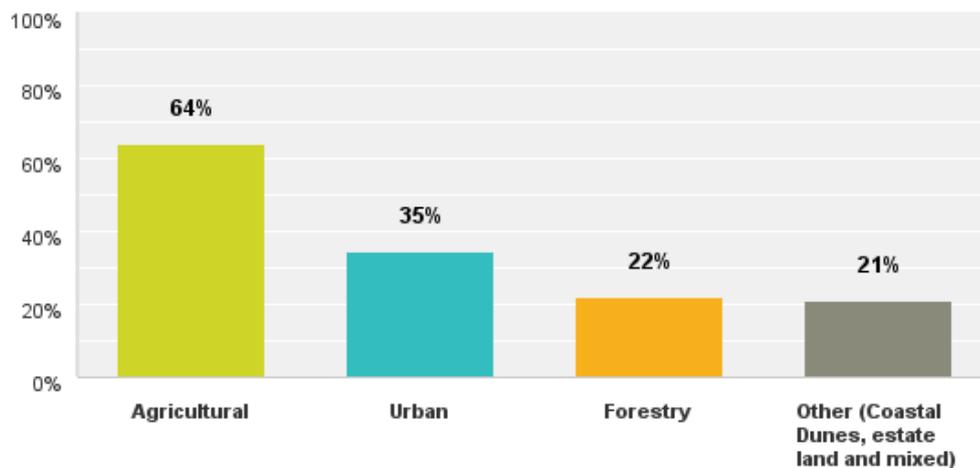


Number of holes, course ownership and course type of the survey respondents is comparable with known national % variations so our survey gives a good representation of Scottish clubs.

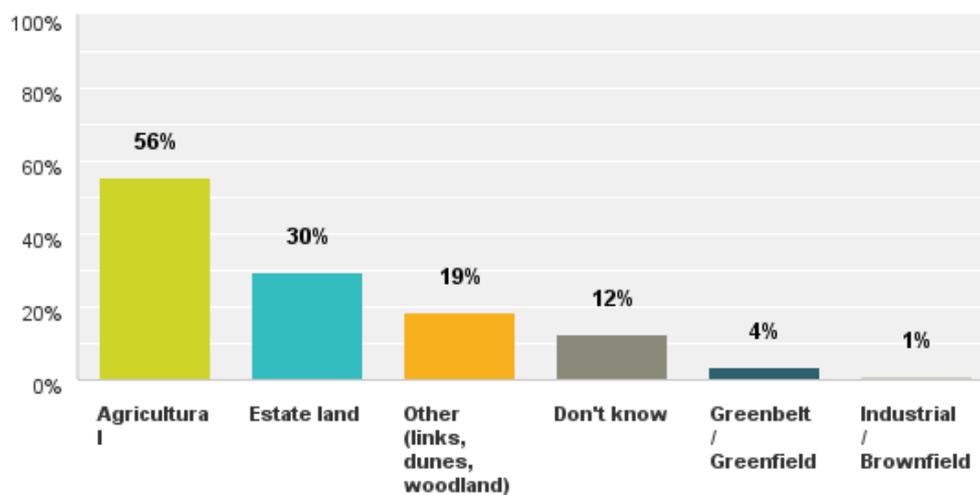


Land Use

Q9 Land use surrounding your course?



Q10: What was the previous land use of your course?





Q11–18: Golf Course Area data

Number of Holes		Total area of land owned (to site boundary) (Ha)	Total area of golf course? (Ha)	How much of this is managed playing surfaces? (Ha)				
				Greens	Tees	Fairways	Practice Ground/Driving Range	Rough (In Play)
9	Range	13-26	12.5 - 23	0.5-0.5	0.5-0.5	12-120	6	3-200
	Average	20	17	0.5	0.5	66	6	101.5
18	Range	28-506	28.3 – 384	0.5-3	0.15-2	1-40	0.2-10	1.2-30
	Average	110	76	1.3	1.1	14.1	2.5	13.2
27	Range	35-130	28-130	1 - 2	0.8-1.5	12.4-15	0.4-1	10-15
	Average	94	72	1.5	1.2	13.7	0.7	12.5
36	Range	80-210	80-129	2.1 - 3	1.3-3	10-54	4-15	15-120
	Average	120	94	2.5	2.1	29	7.8	62.8
45	Range	145-162	140-146	1.4 - 3	1 - 6	15.5-120	4.4 - 6	7-11
	Average	154	143	2.2	3.5	67.8	5.2	9
All respondees	Range	13-506	12.5-384	0.5-3	0.15-6	1-120	0.2-15	1.2-200
	Average	106*	76.5	1.5	1.3	20.1	3	21.3
	Total	5297	3749.7	72.6	63.6	963.7	140	959.9

* This is more than expected due to results being skewed by four large estate clubs that replied to the survey with areas >250 ha. Average total land owned by more traditional clubs is estimated to be 60-80 ha.

Taking The R&A number of 552 golf facilities at an average of 70 ha gives a very rough conservative estimate of 38,640 ha of land managed as golf courses in Scotland.



Number of Holes		How much of the golf course is natural areas? (approx. area in hectares)							What linear features are there on your course? (m)	
		Woodland (mixed broadleaf)	Woodland (mixed conifer, broadleaf)	Woodland (conifer plantation)	Gorse, Broom, Scrub	Heather	Grassland (rough out of play)	Wetland, Ponds	Hedge	Dry Stone Walls
9	Range	0.5-1	0.5-1	2-2	0	0	2-10	0	0-1200	0
	Average	0.8	0.8	2	0	0	6	0	600	0
18	Range	0-10	0-75	0-25	0-60	0-30	0-200	0-5	0-3000	0-5000
	Average	1.5	3.6	1.5	4.9	2.8	27.1	0.74	290.7	419.8
27	Range	0-50	1-20	0-5	0.1-2	0-1	0.1-20	0.1-5	0-600	0-400
	Average	25	10	2	0.9	0.3	11.7	2	200	133.3
36	Range	0-80	0-80	0-40	2-10	0-70	16-100	0-30	0-200	0-4000
	Average	20.3	21.3	10	6	23.5	41.5	8.6	87.5	2375
45	Range	0-2	0-2	0-6	1-25	2-5	1-70	0-2	0-100	0-2100
	Average	1	1	3	13	3.5	35.5	1	50	1050
All respondees	Range	0-80	0-80	0-40	0-60	0-70	0-200	0-30	0-3000	0-5000
	Average	4.8	5.4	2.4	4.8	4	26.8	1.6	268.6	591.5
	Total	206.1	232.2	104.7	208.2	168.5	1151.7	65.6	11550	25433

The survey data showed that an average of 30% of golf land is non playing surfaces. In our experience this is more likely to be 30-45% depending on type and location of course.

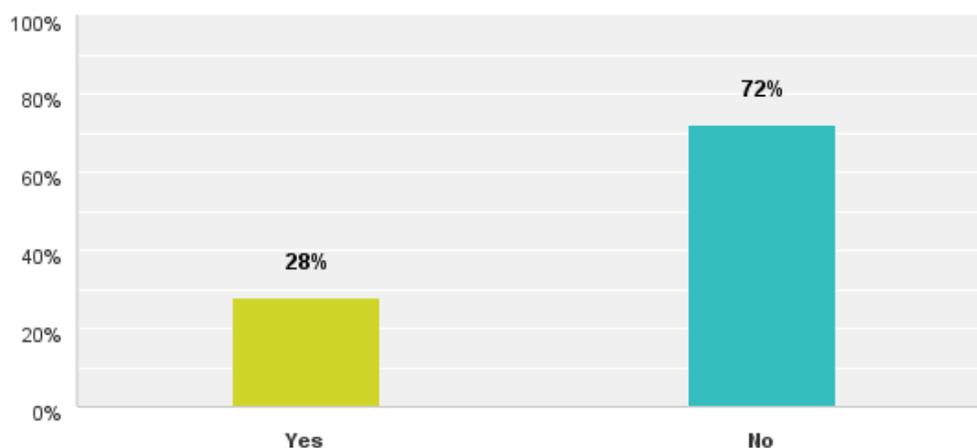


Of the 38,640 ha across Scotland this suggests there is a potential 11,592 to 17388 ha that can be valuable habitat.

The broad range of area data from survey respondees shows the variety of the clubs across Scotland, though there were a relatively low number of survey respondees and not all respondees answered the questions on area data. A larger survey would give more accurate national data.

The future SNH mapping project will improve the national data available for natural areas, but even this small survey set demonstrates that there is a considerable amount and variety of natural areas with in golf courses.

Q19: Has the area of turfgrass been reduced in the last 3 years?



28% of respondees said they have reduced managed turfgrass and all said they converted it to ecological rough grassland or gorse.

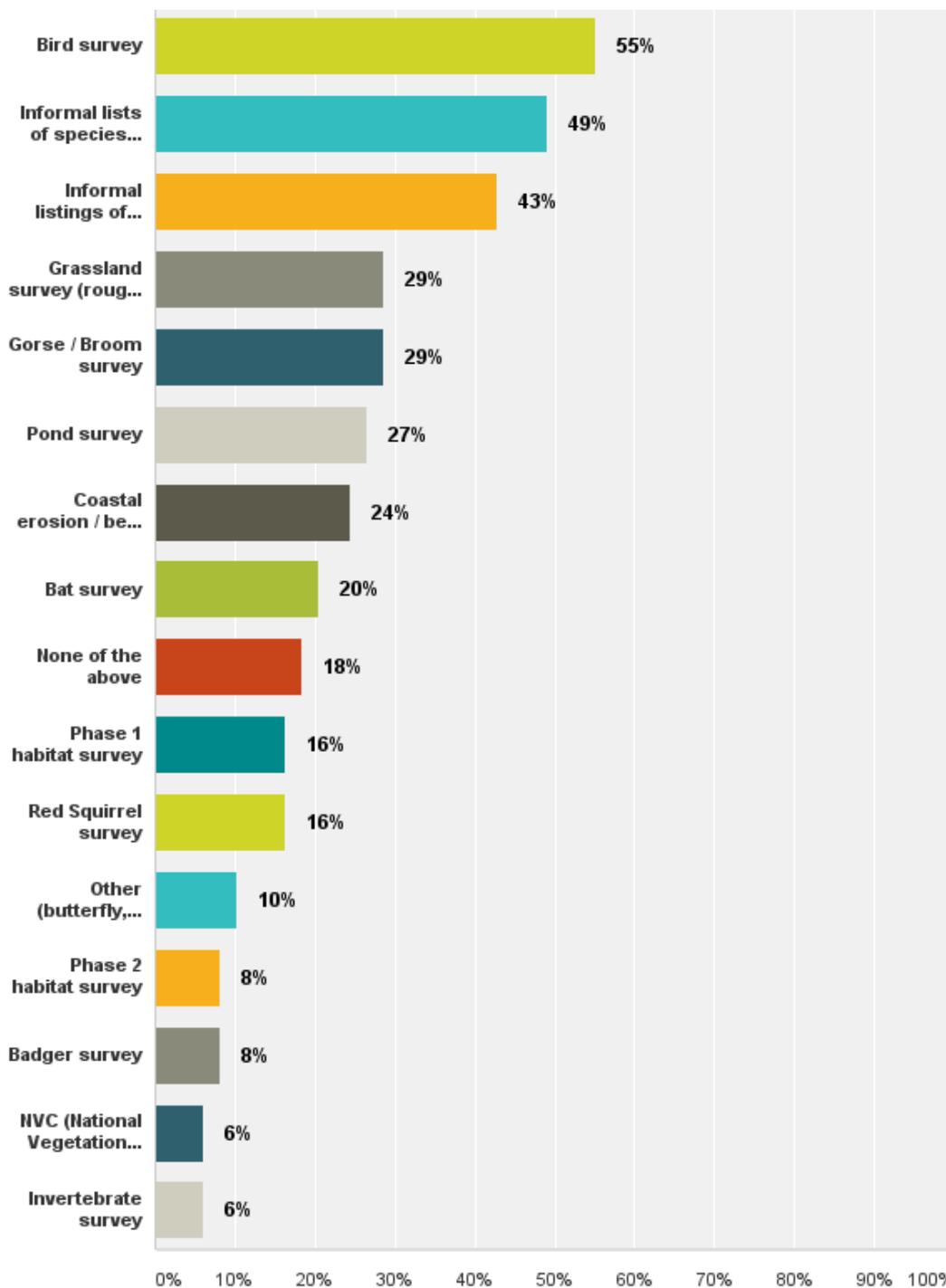
It can be assumed that the other 72% have either considered reduction and dismissed the idea or not considered due to reasons such as playability, level of golfing ability or perception, speed of play issues or lack of rough grassland machinery or funding.

Further promotion of the ecological and economic benefits of rough grassland management would encourage more clubs to seriously consider reducing managed turfgrass.



Environmental Surveys

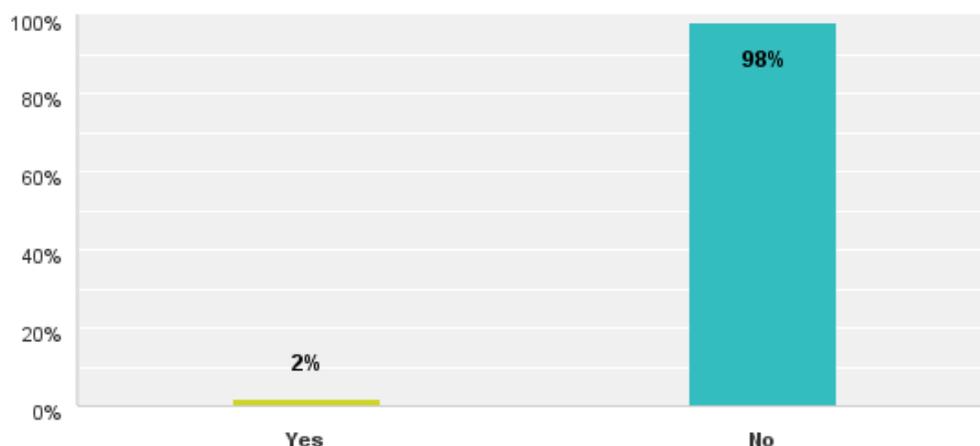
Q20: Which of the following baseline surveys of plants, animals or habitats have you undertaken?



It is encouraging to see a wide variety of different levels of surveys on various types of golf courses. We will continue to make clubs aware of local and national survey opportunities.



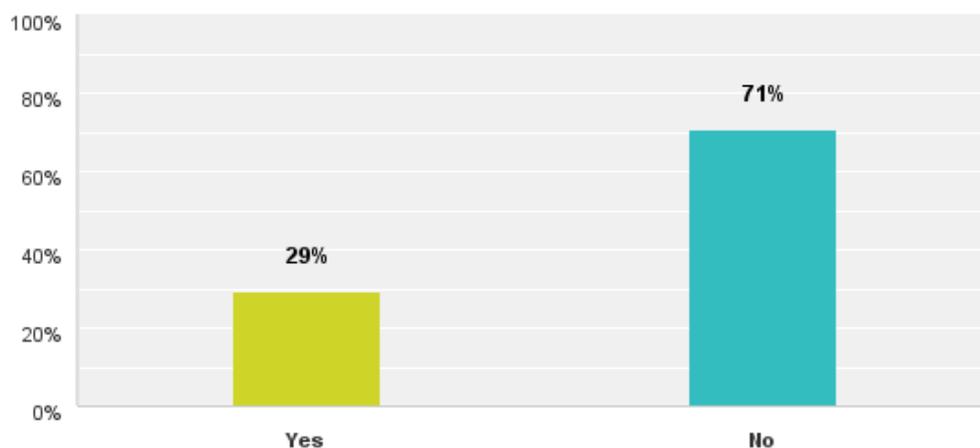
Q21: Do you report any species data to the National Biological records centres?



Despite many clubs having formal surveys as well as keeping informal biological records, only 2% of respondees said they report species data to national biological recording centres.

This is a key step in 2020 Challenge section 6 on monitoring, so an area where considerable improvements can be made. We look forward to helping to promote to golf the 'volunteer expert' programme when it is launched.

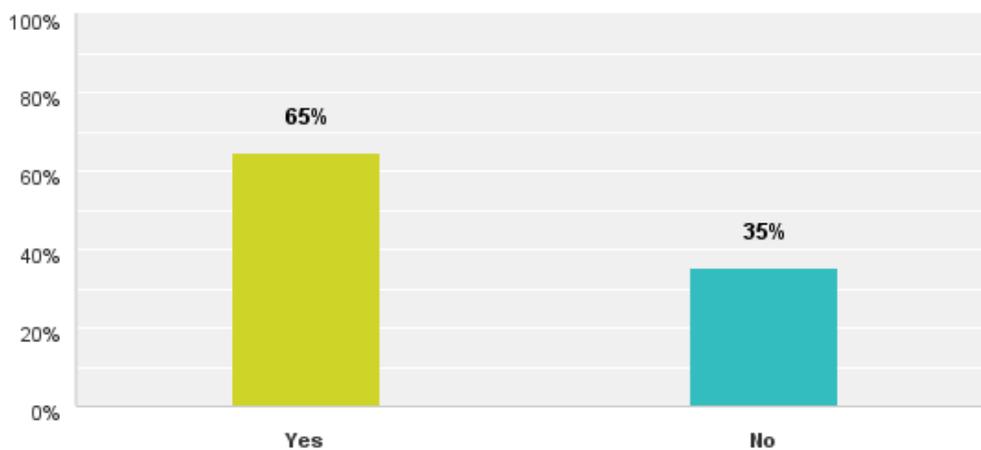
Q22: Have you had a landscape assessment of your course?



Most of the 30% of the respondees that have had a landscape appraisal are courses that were built in recent years when such assessments were required for planning permission. It is less likely for older courses to commission such as piece of work. In traditional golf course design in Scotland, however, landscape design principles were fundamental.



Q23: Is your course digitally/GPS mapped?



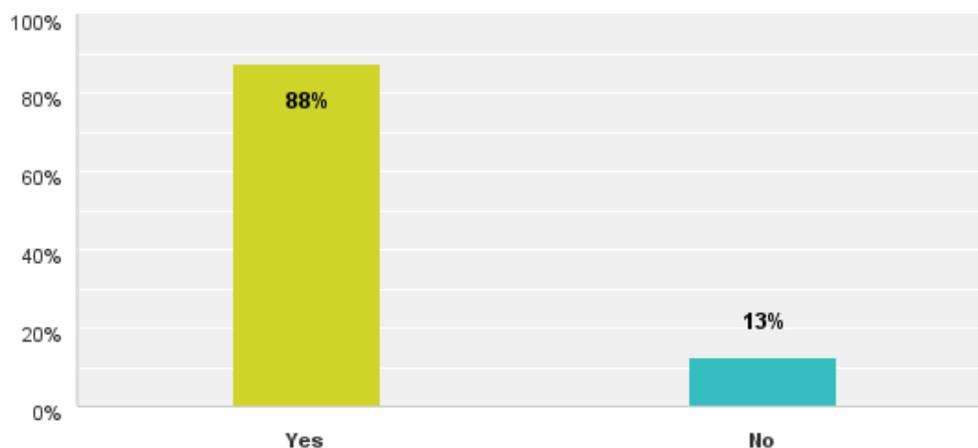
65% of clubs stated they had their course GPS mapped, however only 20% of those have habitats included in this. The others have only scorecard features such as distances, golfing hazards, etc. detailed.

This is an area that can be improved upon in the golf sector, however funding is a barrier as specialist expertise and software is required. We welcome future SNH national habitat mapping which will help with high level understanding of course habitats, but more detailed work would benefit from funding assistance.



Nature Activities

Q24: Do you have trees/shrubs/woodland on your course?



88% of respondents claim to have trees/shrub/woodland on their course. 33% of respondents were links or coastal courses so are not expected to have such habitats, though some have plantation woodland dating back to WW2.

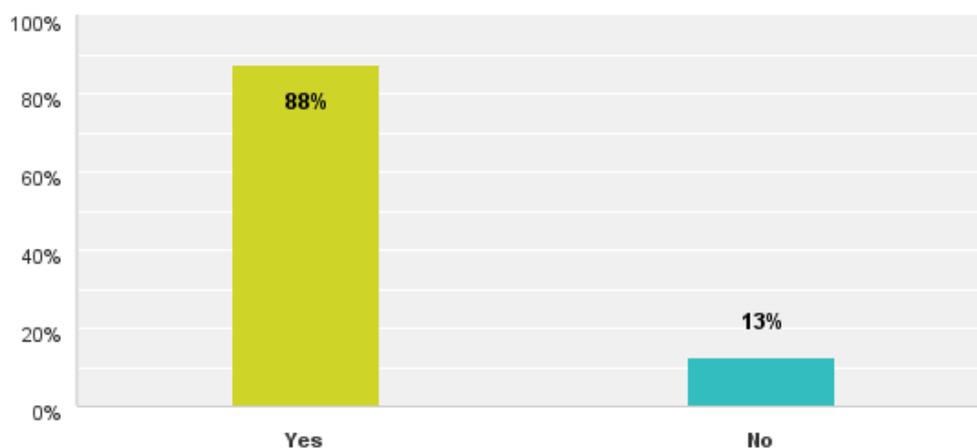
Q25: Tree/shrub/woodland activities

Answer Options	In Play areas %	Out of Play areas %
Thinning	79	62
Coppicing	19	14
Pollarding	12	10
Under planting	26	19
New tree/shrub planting	60	48
Native species used	60	48
Chemical weed control	50	14
Cultural weed control (mulch mats/hand weeding)	40	12
Tree disease inspection	26	17
Tree disease management	14	10
None of the above	5	5



It is encouraging to see a variety of tree/shrub/woodland management and planting both in and out of play. It is also clear that chemical weed control is predominantly on the playing surfaces and cultural weed control prominent. Tree diseases detailed include ash die back, needle blight and bleeding canker.

Q26: Do you have ponds/wetlands and/or watercourses on your course?



88% stated they had ponds, wetlands and/or watercourses on their course which is higher than we expected.

Q27: Pond/wetland activities

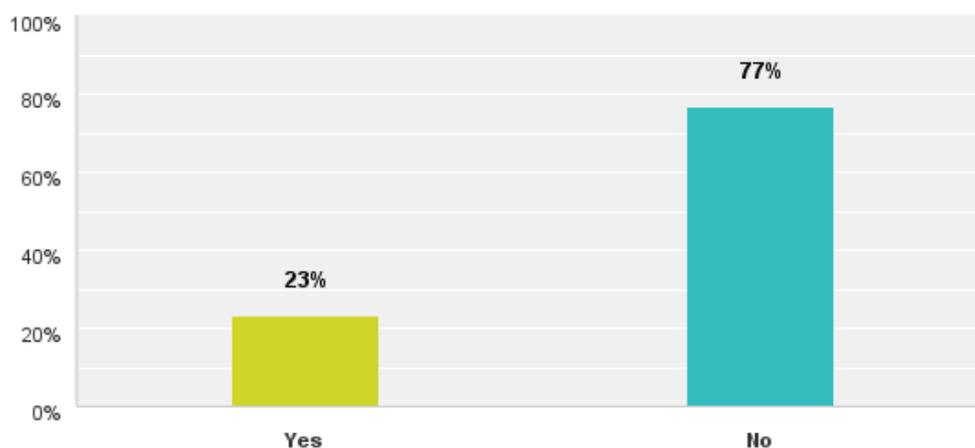
Answer Options	In Play areas %	Out of play areas %
Existing pond/wetland management	55	38
New pond/wetland creation - for drainage?	21	24
New pond/wetland creation - for aesthetics?	10	12
New pond/wetland creation - for a new golfing hazard?	14	7
New pond/wetland creation - for ecological benefits?	12	19
Pond/aquatic planting - for aesthetics?	10	10
Pond/aquatic planting - for ecological benefits?	12	7
Pond/aquatic planting - for aeration?	0	7



Watercourse/ditch management	64	45
Buffer zones around ponds/wetland and watercourses	45	16
None of the above	5	10

Waterbodies are created and planted for a variety of reasons both in and out of play, with the main reason being for drainage, followed by for ecological benefits, golfing hazards and then aesthetics. It is encouraging to see that golf as a land use still retains and increases its wetland habitat in comparison to other land users. Scottish Golf promote SuDS drainage and buffer zones, where possible, in place of traditional piped systems and it is pleasing to see this reflected in the survey results as well as our site based knowledge.

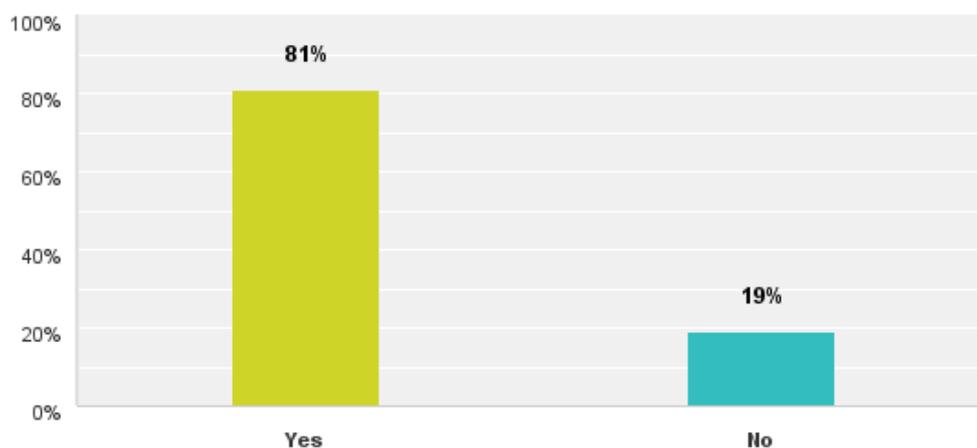
Q28: Does your course suffer from riparian erosion form an adjacent river-/watercourse?



Guidance on Controlled Activities Regulations and best practice is available for clubs that require works to be carried out on rivers or watercourses.



Q29: Do you have heather, gorse, broom or bracken on your course?



Q30: Heathland management/restoration (tree removal with heather and grassland management)

Answer Options	In Play areas %	Out of Play areas %
Heather topping	39	16
Heather planting/expansion	34	21
Gorse/Broom topping	71	45
Gorse/Broom coppicing	45	26
Gorse/Broom planting	42	24
Bracken management	24	16
None of the above	16	18

81% of respondees have heather, gorse, broom or bracken. There is an encouraging amount and variety of management and planting practices in and out of play.

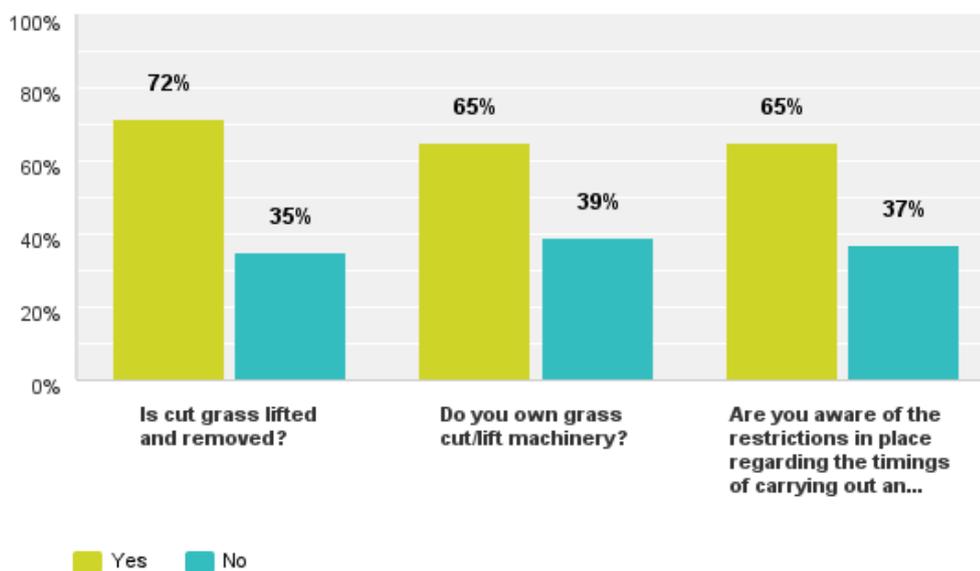
Lack of awareness of the benefits of this management, equipment/labour limitations and recent reductions in active conservation volunteers groups are the assumed reasons for the decrease in this habitat management on golf courses and for the other 16-18% who do not actively manage.



Q31: Grassland management activities

Answer Options	In Play areas %	Out of Play areas %
Rough Grassland Management	78	46
Wildflower grassland establishment	20	35
Creation of appropriate grassland links between habitats for improved connectivity	33	26
Has this increased since the course was built?	48	39
Has this decreased since the course was built?	7	7
None of the above	20	15

Q32: Grassland management activities

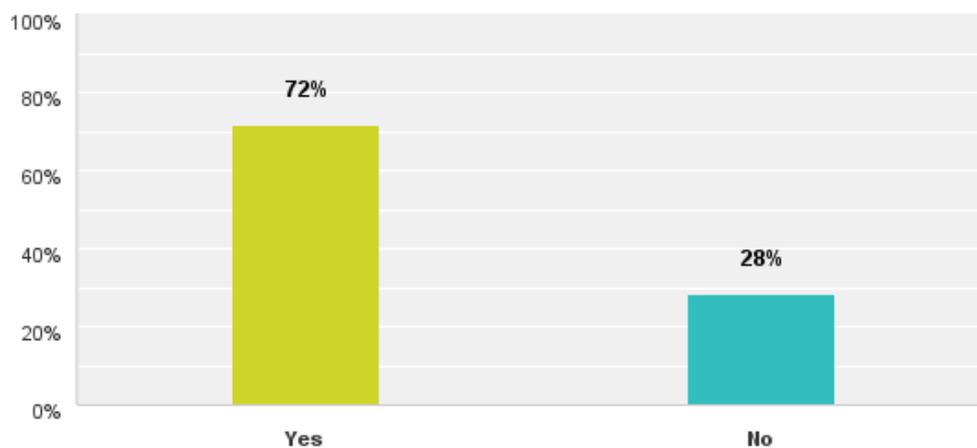


Rough grassland management, wildflower establishment and connectivity are evident amongst the majority of the respondees leading to an increase in ecological grassland.

Further education and awareness raising of both benefits and timing restrictions, along with support with machinery hire/community group liaison, will lead to more grassland management action across the country.



Q33: Do you have hedges and/or stone walls on your course?



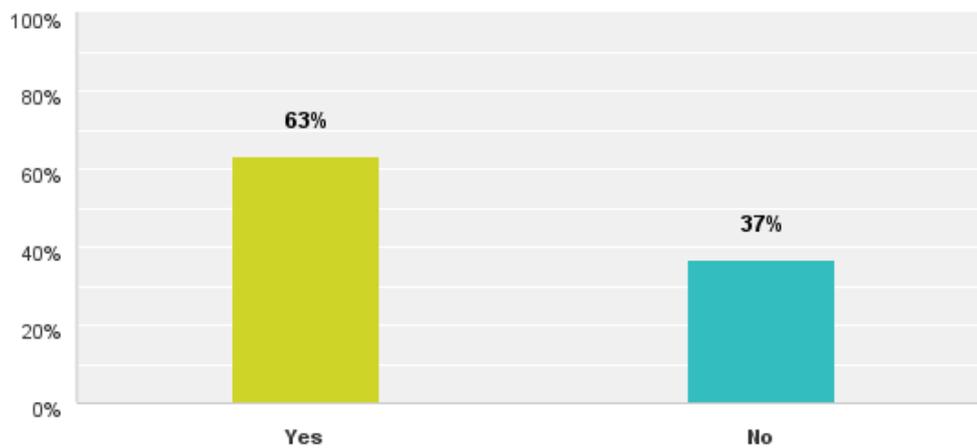
Q34: Management of linear/landscape features

Answer Options	In Play areas %	Out of Play areas %
Hedge Management	36	27
Dry stone wall Management	64	24
No management of linear habitats	15	12
Has the length of these habitats increased since the course was built?	24	12
Has the length of these habitats decreased since the course was built?	3	3

An encouraging amount of linear habitat management has led to a net increase across courses.

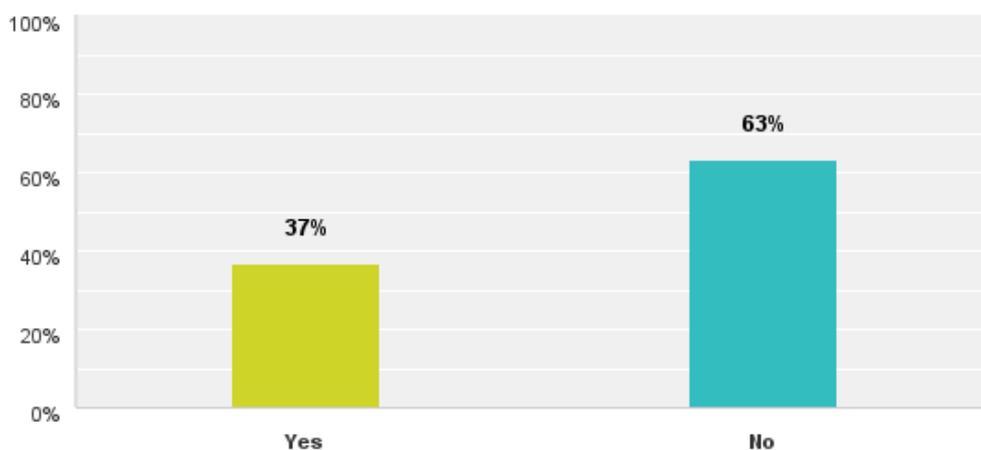


Q35: Have you adapted to local access legislation by providing improved access to the course for local communities? (e.g. footpaths/bridleways etc.)

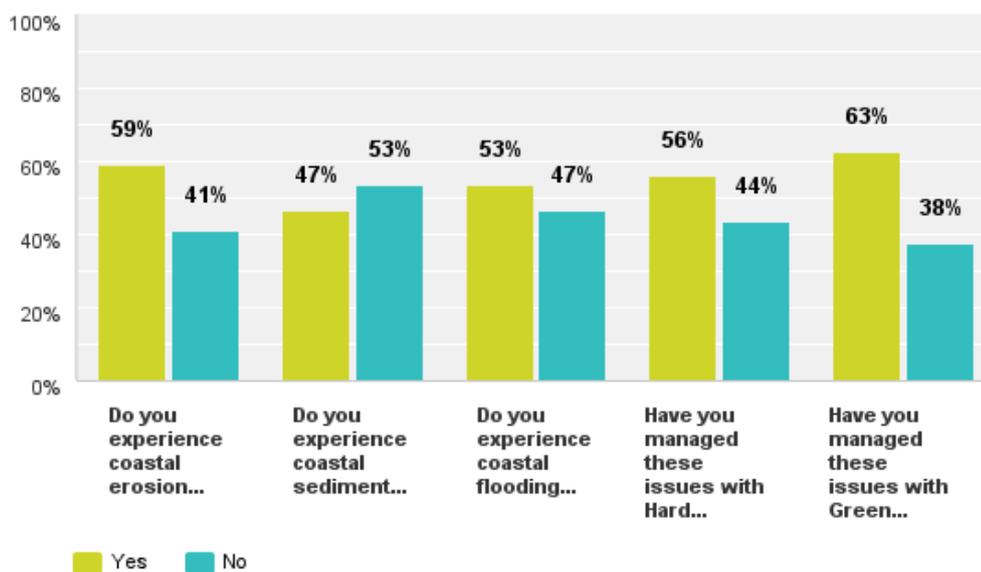




Q36: Is your golf course on the coast?



Q37: Coastal Erosion

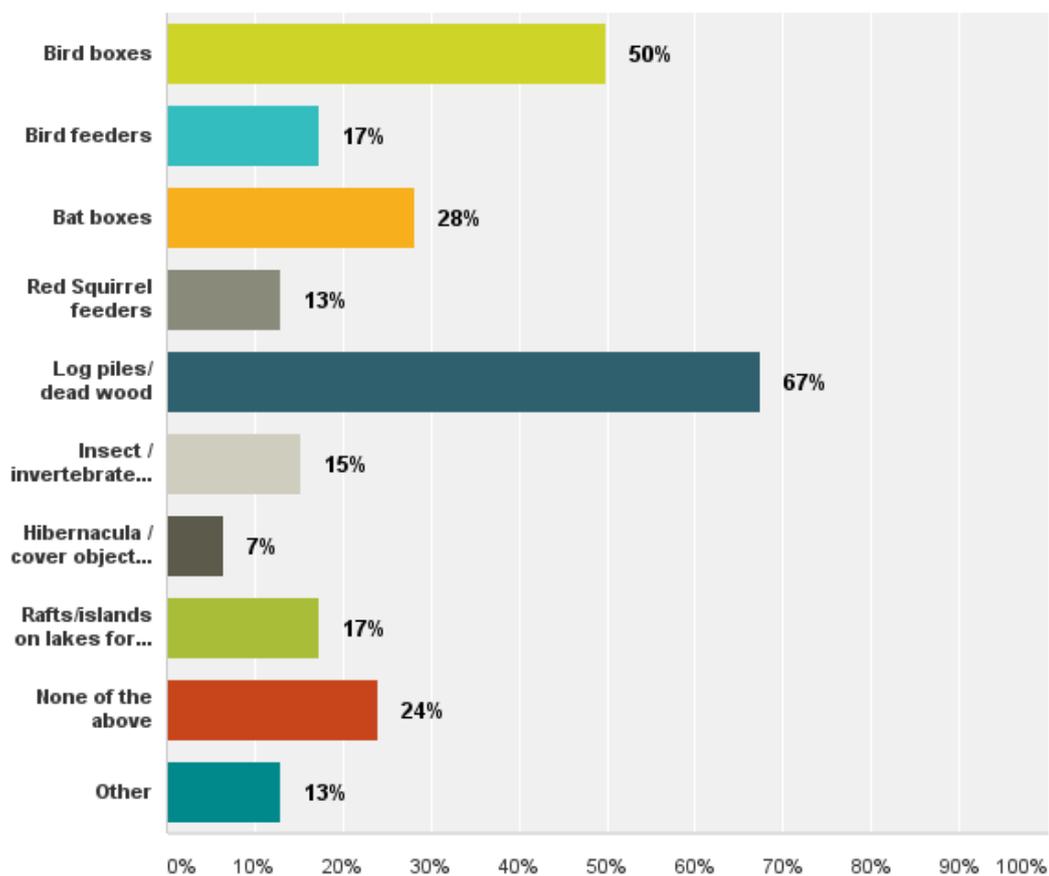


Of the 37% of respondees that are located on the coast, 47-59% of those say they suffer from erosion, sedimentation or coastal flooding issues.

These issues are managed with a mix of hard and green engineering defence techniques. Survey results have been fed into the Scottish Government Coastal Change Assessment project.



Q38: Which of the following Species protection actions have you undertaken?

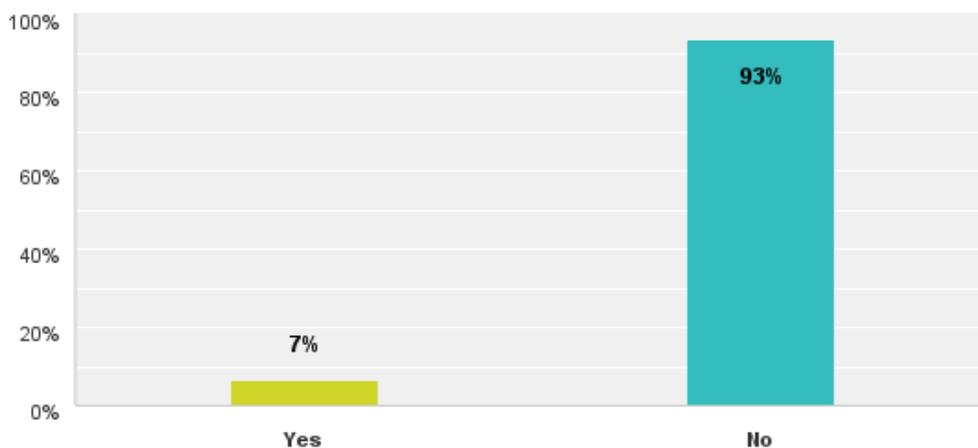


It is very encouraging to see a variety of microhabitat and species protection measures across the survey respondents. 'Other' included sand martin habitat construction, otter protection, and kidney vetch re-introduction for small blue butterflies.

Future focus will be to link these active clubs with their local biological record centre, in addition to continuing national awareness raising.

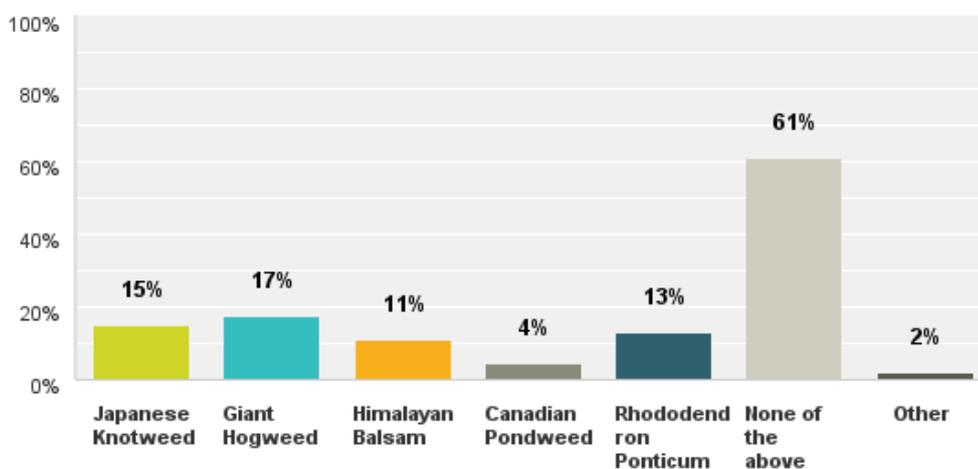


Q39: Out with the playing surfaces, are you managing for plant and animal diseases?



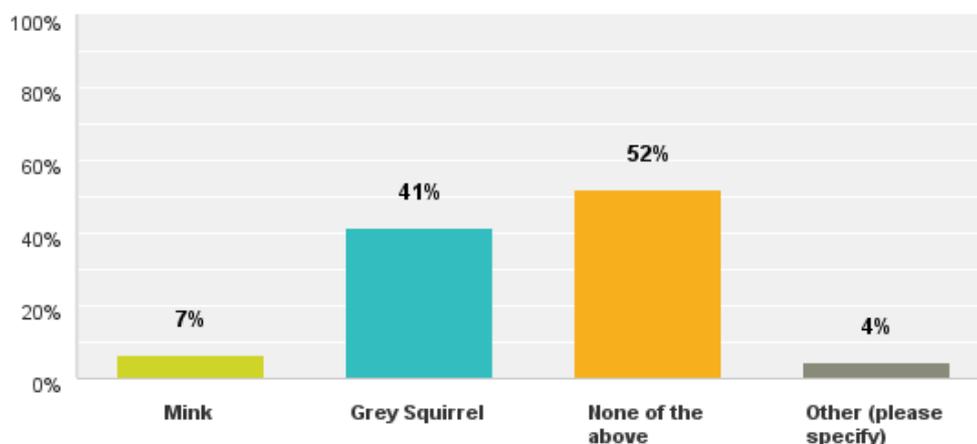
Only 7% of respondees manage non turf plant and animal disease issues but links to identification and best practice is available to all clubs on the website.

Q40: Do you experience any of these invasive, non-native plant species on your course?



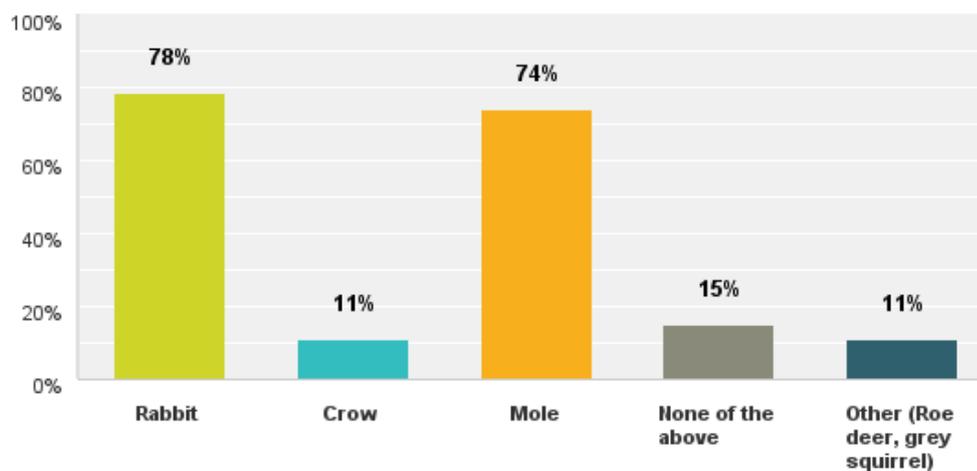


Q41: Do you experience any of these invasive, non-native animal species on your course?



40% of respondents experience a variety of non-native and invasive plant species, and 48% of respondents experience grey squirrel and mink however how many of those that actively manage is unknown from this survey and is an area for future investigation.

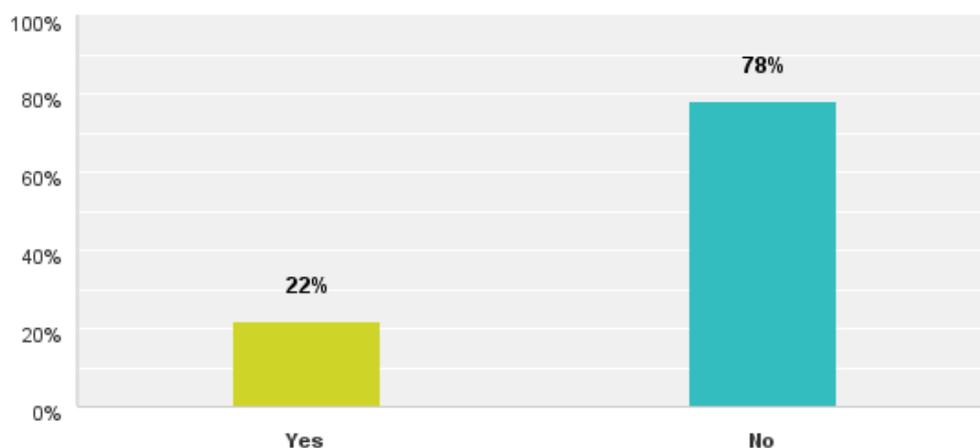
Q42: Do you manage any of these species?



Pest management survey results will be followed up to ensure clubs are adhering to the correct procedures.



Q43: Have you received any funding for your biodiversity/nature activities?



22% of the respondees have received funding for their biodiversity work (SGU/SGEG, The R&A and local council), which we consider this high on a national level from our records and experience. This may be explained by the expected response from the clubs that recently received Ryder Cup funding.

Q44: What nature projects do you have planned for the near future?

Many respondees detailed their future plans for biodiversity enhancing project in our survey.

Future funding for practical projects is always well received and utilised by the golf sector, and all future opportunities from the Scottish Government and other sources will be communicated to our clubs.

Q45: Any other nature projects you would like to tell us about?

Respondees also detailed other interesting projects recently completed which we will investigate further and produce case studies where appropriate to disseminate through our website and club e-bulletins etc.



Consultation and Partnerships

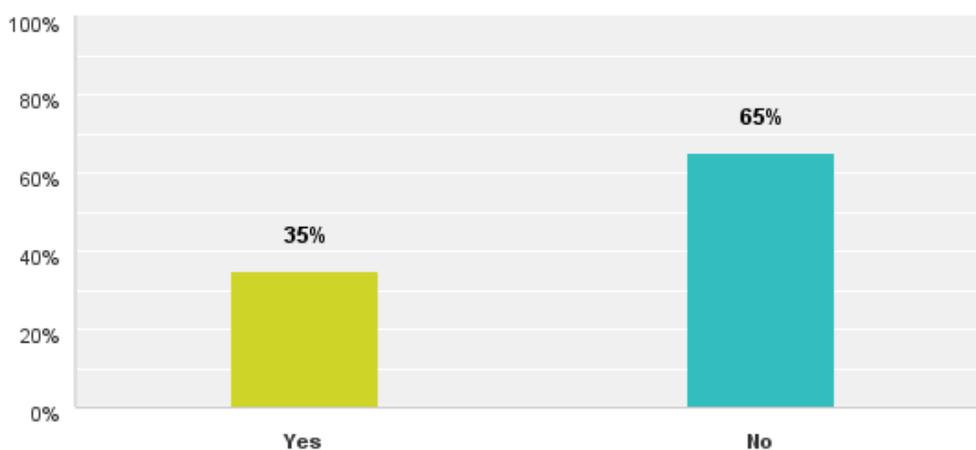
Q46: Which conservation and landscape experts have you consulted to understand the nature and ecology on your course?

Answer Options	Response Percent
Scottish Golf Environment Group (SGEG)/SGU	76.1%
Sports Turf Research Institute (STRI) Ecology team (not agronomists)	43.5%
Scottish Natural Heritage (SNH)	43.5%
Scottish Environment Protection Agency (SEPA)	43.5%
Scottish Wildlife Trust (SWT)	28.3%
Greenspace Scotland	2.2%
Historic Scotland	26.1%
National Trust for Scotland	10.9%
Forestry Commission	30.4%
Scottish Native Woodlands	2.2%
Woodland Trust	15.2%
National Farmers Union	2.2%
Royal Society for the Protection of Birds (RSPB)	17.4%
Butterfly Conservation Trust	6.5%
British Trust for Conservation Volunteers (BTCV)	2.2%
British Association of Shooting and Conservation (BASC)	0.0%
Amphibian and Reptile Conservation (ARC)	4.3%
Froglife	0.0%
Plantlife	2.2%



Scottish Badgers	6.5%
Saving Scottish Red Squirrels	15.2%
Local Council Biodiversity Officer	10.9%
Local Botanic Gardens	4.3%
Academic Institution	4.3%
None of the above	8.7%
Other (please specify)	

Q47: Do you have contact with any other local community groups or organisations?



It was pleasing to hear that a broad variety of local and national conservation and landscape experts and local community organisations have been consulted by our respondents.



Environmental Legislation

Q48: Do you have any statutory conservation designations for protected sites, habitats or species?

Answer Options	On course %	Adjacent to course %
Sites of Special Scientific Interest (SSSI)	13	20
National Nature Reserve (NNR)	0	11
Local Nature Reserve (LNR)	7	13
Ramsar Site	2	7
Special Protection Area (SPA)	7	9
Special Area of Conservation (SAC)	4	4
Area of Special Protection (ASP)	2	2
Local Wildlife Site (LWS)	2	4
Site of Importance for Nature Conservation (SINC)	2	0
Local Nature Reserve (LNR)	7	9
None of the above	59	50

Q49: Do you have any statutory landscape designations for your facility?

Answer Options	On course %	Adjacent to course %
National Scenic Area (NSA)	4	2
National Park (NP)	9	11
Regional/Country Park	7	4
Regionally Important Geological Site (RIGS)	0	0
Environmentally Sensitive Area (ESA)	4	4
Area of Great Landscape Value (AGLV)	0	0
Area of Outstanding Natural Beauty (AONB)	0	0
Green Belt area	4	9
Tree Preservation Order (TPO)	9	11



Right of Way (ROW)	35	33
None of the above	33	30

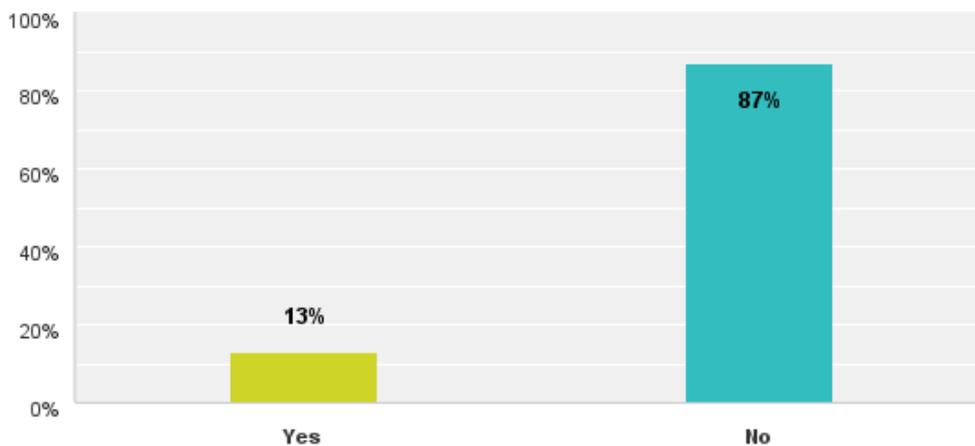
Q50: Do you have any cultural heritage designations at your facility?

Answer Options	On course %	Adjacent to course %
Conservation Area	11	9
Inventory of Gardens and Designated Landscapes	0	4
Inventory of Historic Battlefields	0	0
Scheduled Ancient Monument (SAM)	4	15
Archaeological features	13	11
None of the above	57	48
Other (Listed Buildings, Fort)	7	0

Those clubs with conservation, landscape and cultural heritage designations will have consulted appropriate experts in the understanding and management of these features.

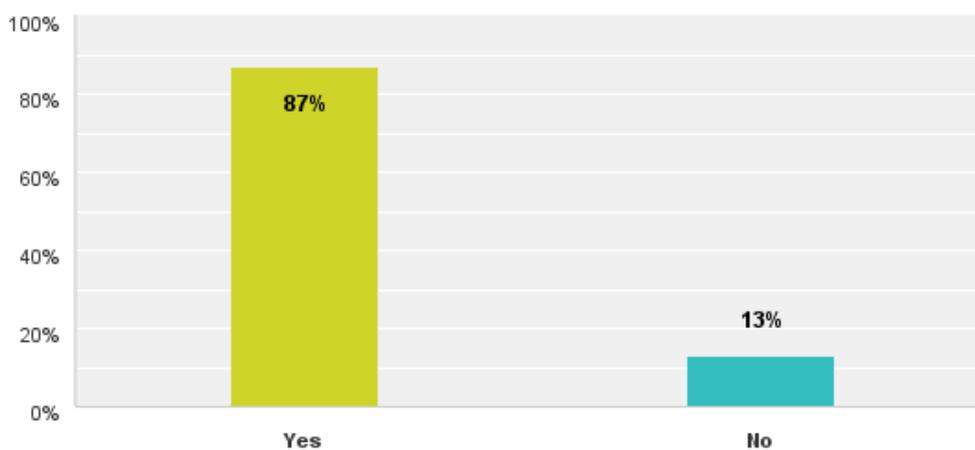


Q51: Have you ever used the national environmental legislation website www.netregs.org.uk?



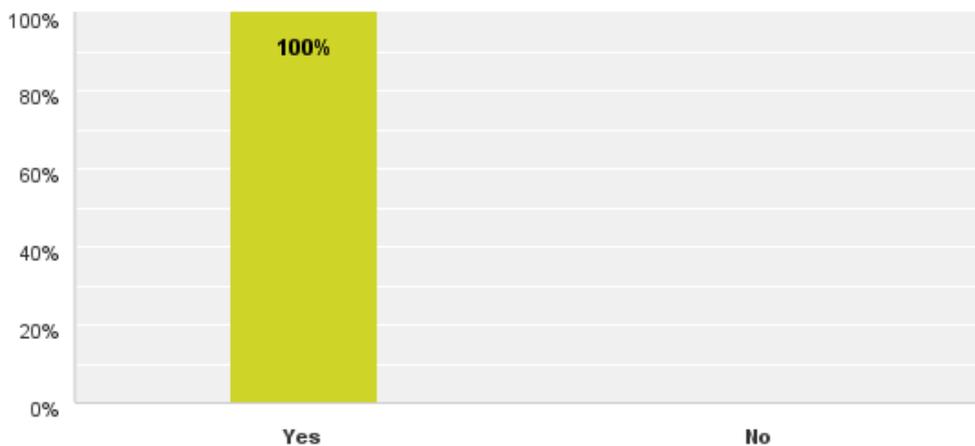
There was a low usage of the Netregs website (13%), however we expect this to rise once the joint Scottish Golf / SEPA Netregs golf section is completed and communicated to clubs.

Q52: Are you aware of the requirements for a tree felling licence?



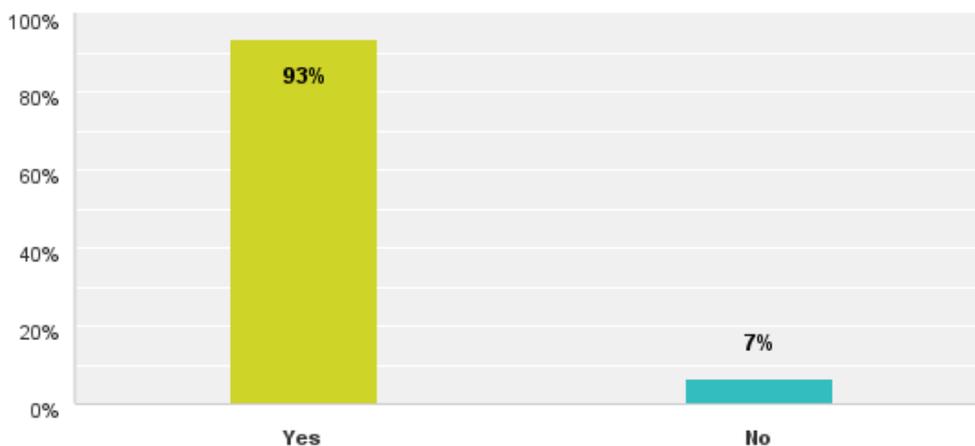


Q53: Are you aware of the need for SEPA permission to work in and around a watercourse?



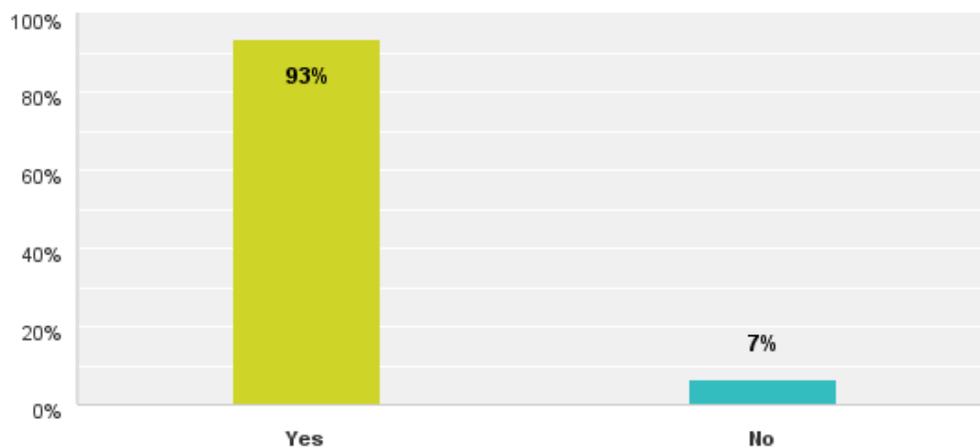
Scottish Golf will continue to work with the DPMAG group to promote Diffuse Pollution legislation.

Q54: Are you aware of the need for using a licenced expert when working with protected species?





Q55: Are you aware of and abide by Public Access legislation affecting your course?

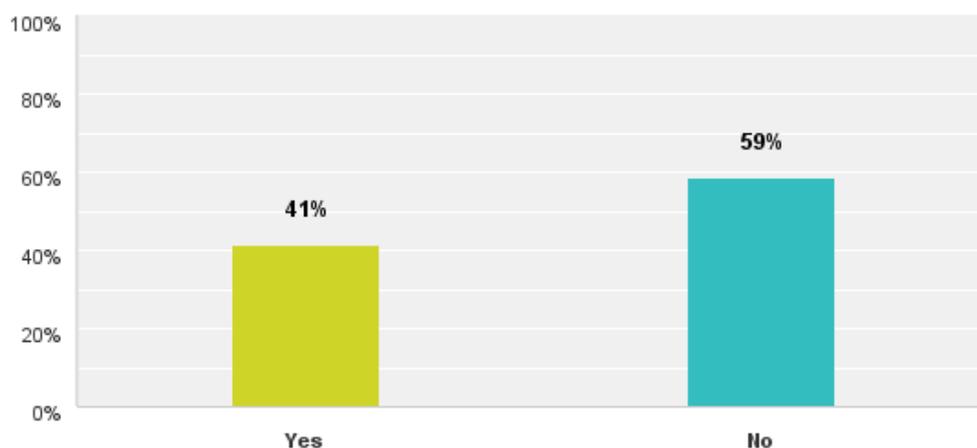


The majority of respondees were aware of the above legislation and this will increase following training for golf club committees planned for 2016.



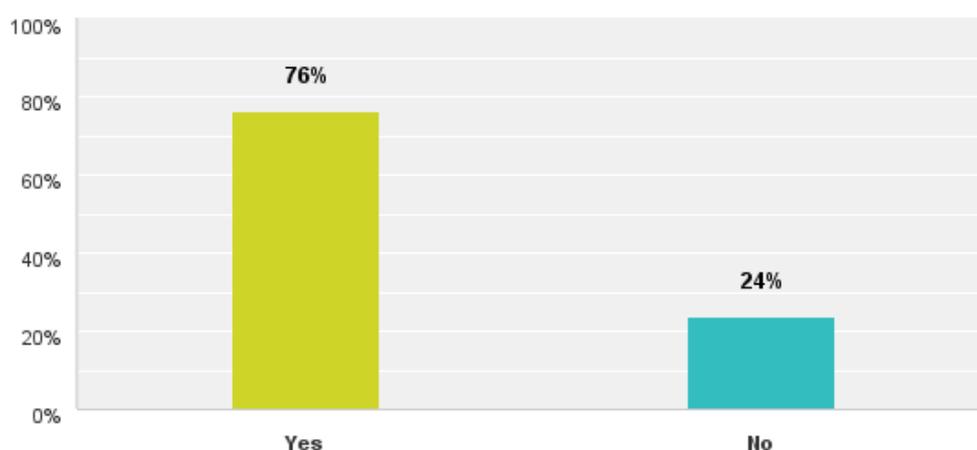
Environmental Education and Training

Q56: Do your staff receive a variety of formal and informal environmental education or training?



Turf management and environmental training for greenkeepers is predominantly through colleges such as SRUC Elmwood, BIGGA, Scottish Golf and STRI. There is an extensive programme in place for the next year which we will encourage more clubs to go to and we hope environmental sector training will be utilised more in the future.

Q57: Do you provide information to all employees and contractors on the potential environmental risks and impacts associated with the activities they perform?

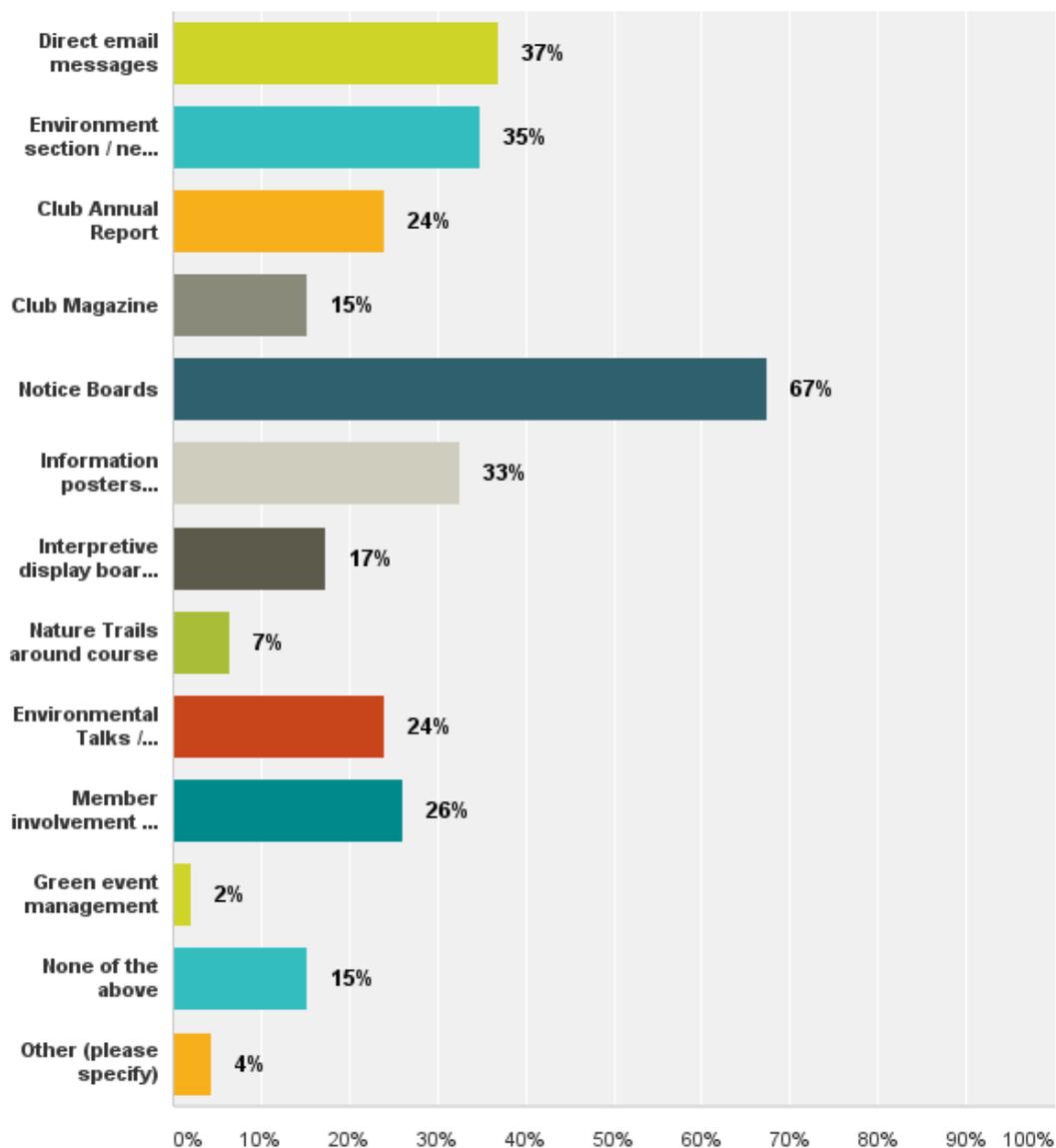


Scottish Golf assists clubs with assessing potential environmental risks and with producing pollution prevention and site protection plans.



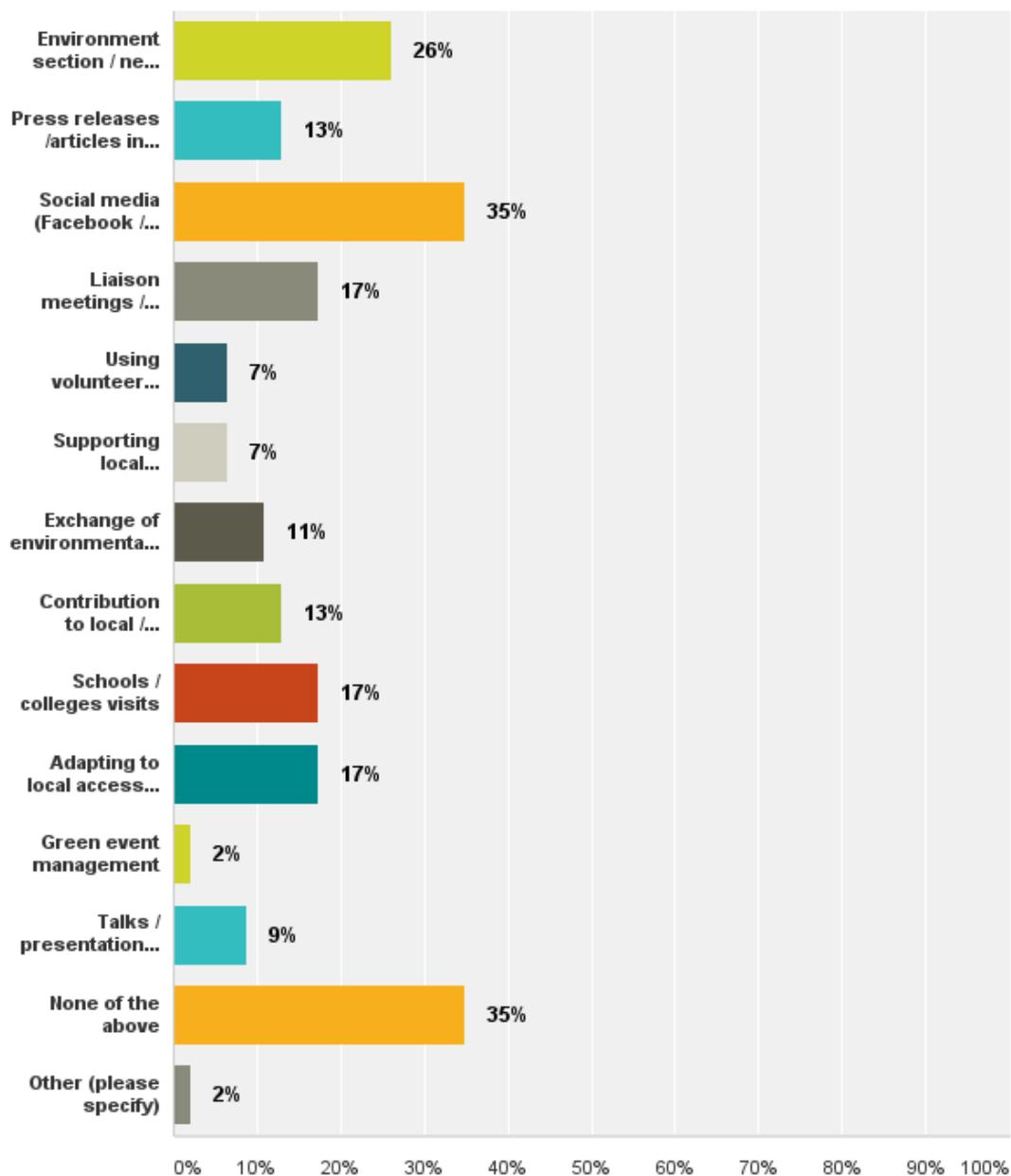
Environmental Communications and awareness raising

Q58 How do you communicate your environmental and course management activities to Staff, Members and visitors?





Q59: How do you communicate your environmental activities to neighbours, local communities and environmental organisations out with your club?

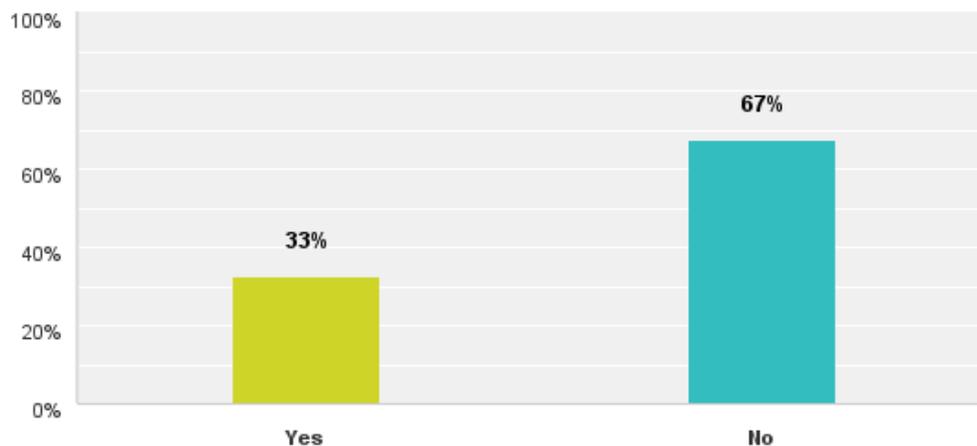


The survey showed there is a good mix across clubs of internal and external communications regarding environmental and course management activities.

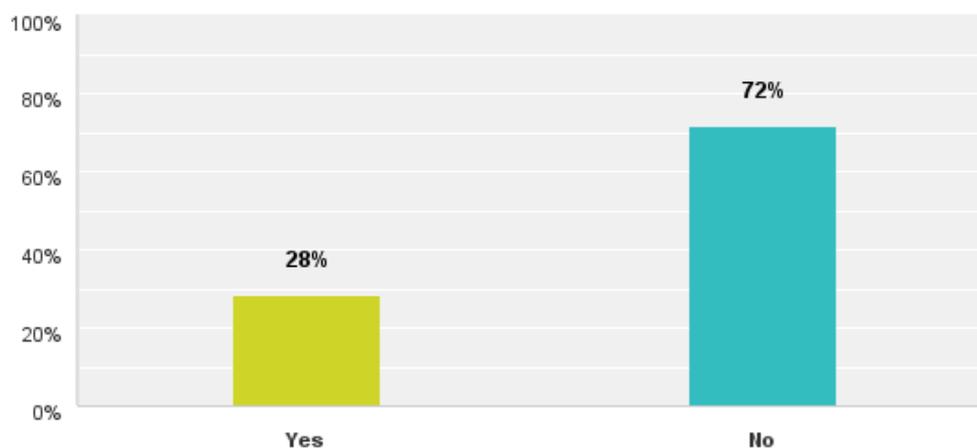


Environmental Action Plans

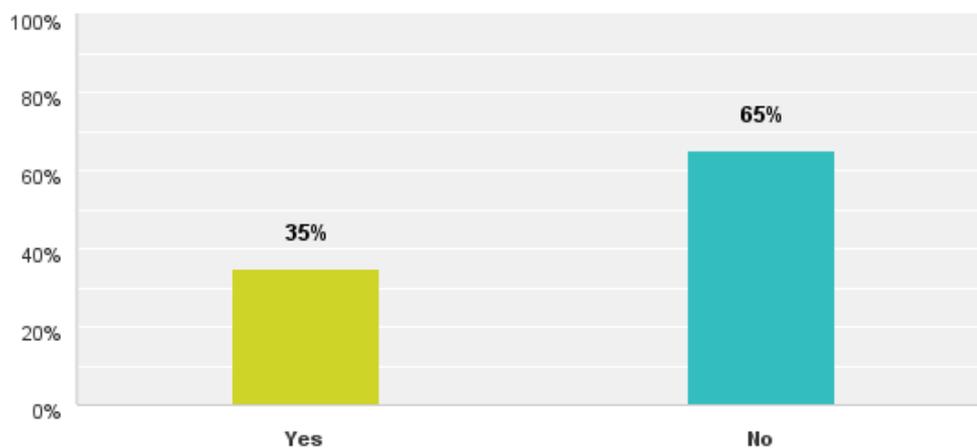
Q60: Do you have an Environmental Policy displayed?



Q61: Do you have an Environmental/Green Team?



Q62: Do you have any Environmental Action Plans?

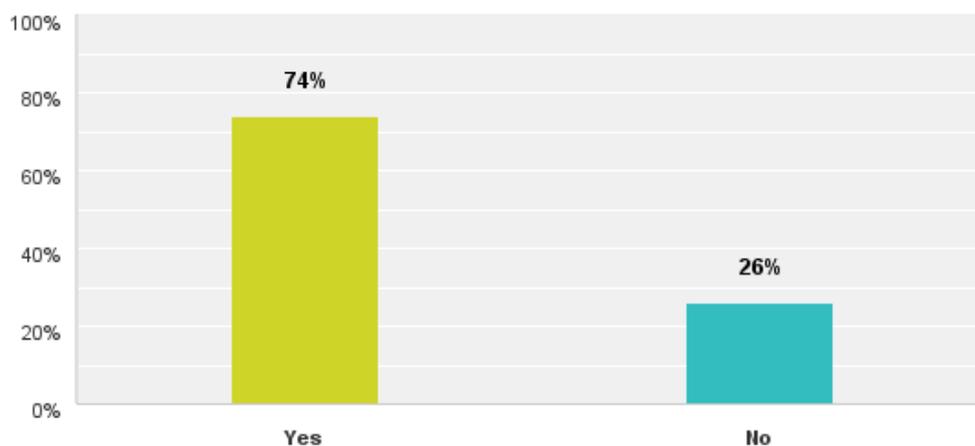




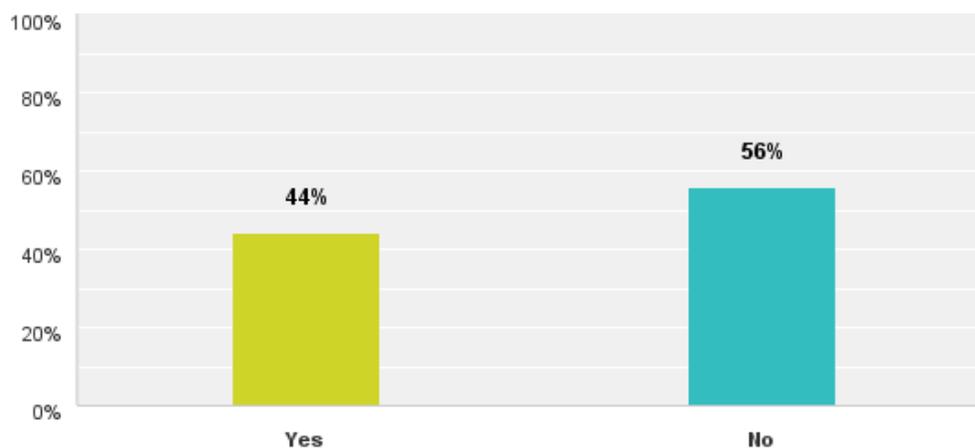
Scottish Golf has noticed an increase in the number of clubs who would like assistance with preparing environmental policies and action plans and creating a green team.

R&A Coursetracker

Q63: Are you aware of the R&A Coursetracker system www.coursetracker.org.uk ?



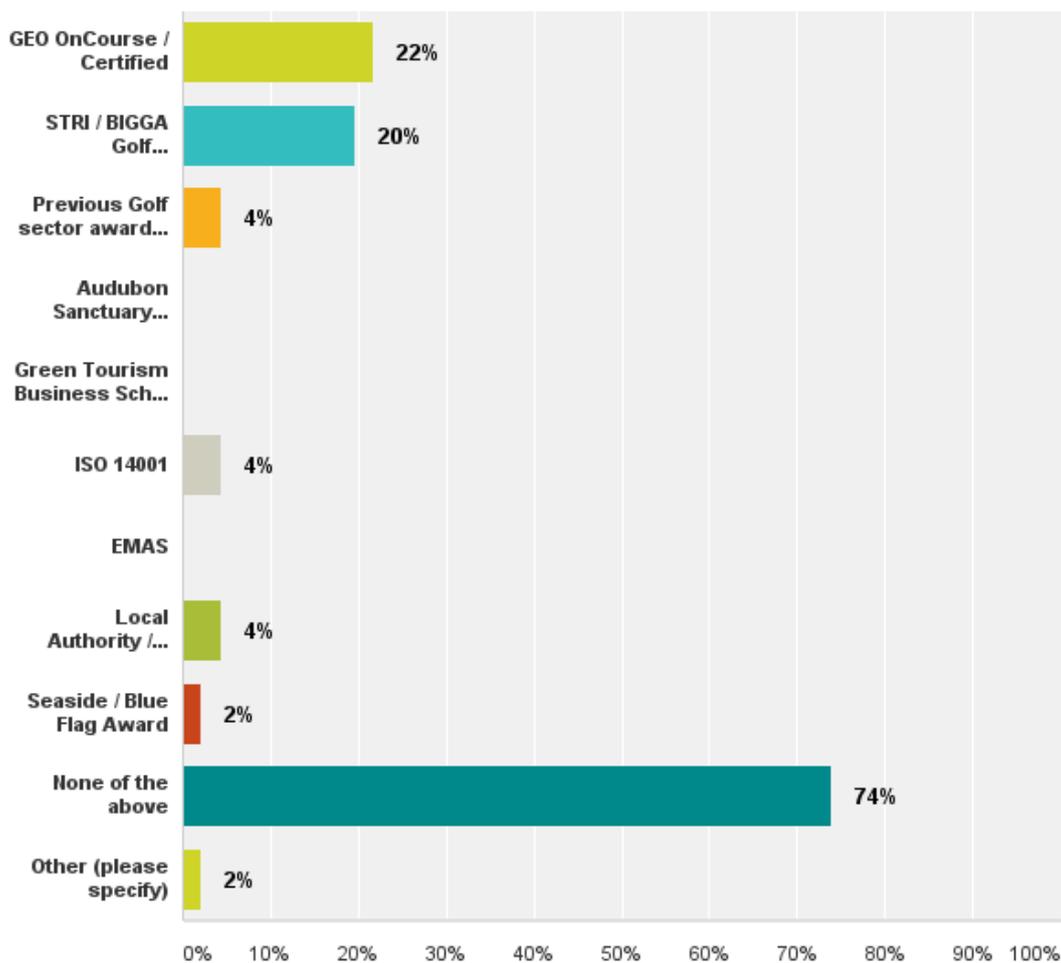
Q64: Have you registered with Coursetracker?





Environmental Recognition

Q65: Have you been recognised by any environmental certification, accreditation or award programme run locally, nationally or internationally?



The survey showed a mix of environmental recognition/golf sector awards and we will encourage more environment sector recognition in future.



Survey Conclusions

Areas of strength, understanding and activity included nature surveys, habitat management, species protection, an understanding of legislation, club communications and external consultation.

Areas of less knowledge or activity included mapping, habitat area data, biological recording and reporting, environmental training, environmental action planning and recognition.

Scottish Golf will study the survey results in more detail both with individual clubs and regionally to focus further awareness raising and targeted advice in the future. This will give an appreciation of how our advice has been implemented (or not).



Summary and next steps

Positive Outcomes of this report

Within the Golf Sector:

- A comprehensive baseline record of ‘where we are now’ with regard to Golf and Biodiversity in Scotland.
- Initial baseline data collection for future monitoring and benchmarking and inclusion in the Scottish Golf Club CRM system.

Out with Golf Sector:

- Demonstration to the Scottish Government that our sector is actively promoting and delivering their Strategy(s) where possible.
- Demonstration to LBAPs of our assistance with their regional targets where possible.
- Data gathered can be fed into National Biological Records where appropriate.
- Will assist to promote Scotland to the rest of the UK and internationally with evidence that we are leading the way on environmental progress within golf.

Next steps for Scottish Golf

- **Continued delivery of our strategy**, with the support of the many partnerships, will ensure the future of sustainability in the Scottish golf sector.
- Understanding of **regional** strengths and weaknesses will assist with future **proactive focus** of advice/training/resource requirements to ensure the whole country is improving.
- Opportunity to promote **new case studies** of good practice (that we may not have heard about prior to the study).
- Opportunity to continue to conduct **further nature surveys** with clubs as we engage with them in the future, resulting in more robust national data in due course.
- Potential to link in with other **national surveys** conducted by partner organisations.
- Will assist with **future funding** applications as evidence based report of current progress made.



Future partnership opportunities

Scottish Golf will continue to work closely with all our partner organisations mentioned in this report, which will ensure:

- We can support our member clubs with best practice environmental advice and encourage positive sustainability action within clubs.
- Positive outcomes from golf are understood out with the golf sector and our reputation amongst environmental organisations in Scotland remains at a high level.
- We can encourage more clubs to work towards GEO certification to gain the recognition they deserve.
- We can continue to show that Golf is making a positive contribution to the 2020 Challenge for Biodiversity.

Future action areas that would benefit greatly from **Scottish Government support and funding** are as follows:

- Support for 'high nature value' golf
 - General biodiversity project funding/grants that clubs can easily access
 - Advisory resource support
- Terrestrial habitat mapping
 - Assistance for clubs to have their own GPS mapping tools for habitat management
- Improving resources for protected area management
- Volunteer 'expert' guidance and promotion
- Improved interaction with Planning
- Academic papers : conservation and golf desk study