Sports Surface Design & Management
SPECIALIST TURF CONSULTANCY SERVICES

Findings from the SSDM New Zealand Golf Course Environmental Management Survey 2011

In April 2011 Sports Surface Design and Management (SSDM) launched The SSDM Golf Course Environmental Management Survey. This was aimed at assessing the current level of environmental awareness, activity and commitment of New Zealand golf courses.

Electronic questionnaires were emailed to more than 250 golf courses from Invercargill to KeriKeri with a total of 60 completed surveys being received.

The majority of the 32 questions were multiple choice, with results being summarised as percentages.

Key questions that were addressed by the survey included:

- What are the environmental attitudes within the golf club?
- What are the key membership demands?
- What resources have been made available specifically for environmental projects?
- What is the level of environmental awareness within the club?
- What kind of environmental work has been carried out by the club?
- What is the willingness of the membership and staff within the club to enhance the biodiversity of the course?

An example of a question taken from the survey:

Q. On a scale of 1-5 (1 = very unimportant and 5 = very important) how do you feel your members would rate the need for New Zealand golf courses to operate in an environmentally responsible manner?

Importance of being environmentally responsible (members opinion) Scale 1-5	% results Response
1 (very unimportant)	7%
2	12%
3	32%
4	**38%**
5 (very important)	11%

How much land to New Zealand golf courses occupy?

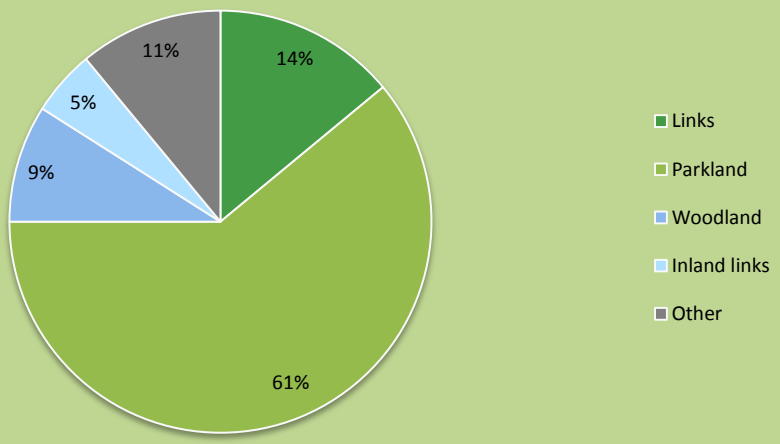
The initial focus of the survey was aimed at answering two questions, firstly what is the approximate land area occupied by golf courses within New Zealand and secondly how is this total area apportioned into areas of *"managed"* turf (defined as actively managed surfaces predominantly between tee and green) and "unmanaged" turf (defined as any area that receives fewer than three mows per year)?

Based upon these definitions, 46% of respondents stated that their course occupied a total land area of between 50-100 ha, with 40% of respondents estimating that areas of *"managed turf"* made up approximately 40-50% of this total.

Fig. 1 "Unmanaged" areas of the golf course can provide an opportunity to enhance the biodiversity of native flora.

From these figures we can approximate that across the 60 clubs that took part in the survey a total of 2,700 ha of *"unmanaged"* turf exists. This equates to just over 7.5% of the total area of Department of Conservation (DOC) managed public reserve for the entire Auckland region (Department Of Conservation). If we apply this approximate percentage to the number of 18-hole golf courses in New Zealand (250) the result would be a total unmanaged land area of 11,250 ha. This is a significant area of land that has the potential to be managed with the enhancement of biodiversity in mind.

Respondent course type, by percentage:



Having established that there is potential for New Zealand golf courses to be of ecological value to the greater biodiversity and species conservation of New Zealand, the survey went on to investigate how many of these "*unmanaged*" areas are currently being maintained in a manner that maximises their ecological potential.

How environmentally aware are New Zealand golf courses?

In order to establish a basic level of awareness within the club with regards to the nature of and specific characteristics of its out-of-play areas, the survey asked respondents to identify the habitat type(s) on their golf course. All respondents were able to identify the habitat type(s) in and around their courses. However, just 36% of respondents currently had an active management plan in place for these habitat areas, with less than a quarter currently documenting that management plan.

In order to gauge a broader understanding of the New Zealand golf sector's attitude to environmental management, respondents were asked how they felt their membership would react to New Zealand golf courses becoming more environmentally active. A surprisingly low number of respondents felt that their members would consider being *"environmentally responsible"* as being *"very important",* with just 11% believing their membership would feel this way. In contrast, 38% of respondents claimed that their members were involved in voluntary work on the course that was linked to enhancing its ecological value. These projects largely involved the planting and establishment of native areas throughout the course.

There is a significant reliance on voluntary based work to carry out ecological enhancements on the golf course. This fact was emphasised by 63% of respondents stating that there was no budgetary allocation available to them to carry out this work on the course. The majority of respondents said that a "*lack of available finance"* was the primary reason for them not to be able to review the sustainability of their golf course operations meaning it was difficult to justify and implement appropriate changes that could enhance the operational sustainability of their course.

Sustainable turfgrass species

The issue of sustainability was investigated further with respondents being asked to nominate what they felt was the most sustainable grass species for their greens. The majority (77%) stated that browntop bent was their preferred choice, with 55% of respondents also saying that the dominant grass species on their greens actually was browntop. In comparison just 28% of respondents were managing *Poa annua* dominated putting surfaces. These results indicate that many superintendents are successfully managing to maintain a dominance of browntop within a range of settings from links course to parkland.

When asked to select what they felt was the best characteristic of a sustainable turfgrass, the majority of respondents agreed with the statement: *"a grass species that has reduced water requirements"*. The next characteristic was a grass species that could be successfully managed with reduced pesticide applications, with a grass species that had a tolerance for low mowing heights ranked third. These results indicated an appreciation amongst respondents that factors such as year-round colour and aggressive growth habits were no longer rated as highly as water, chemical and mowing height tolerances.

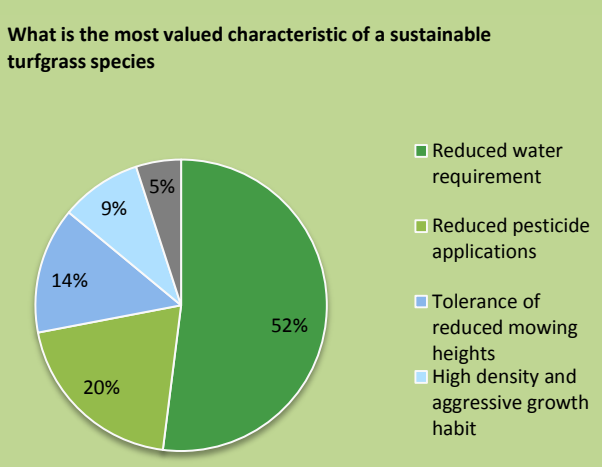


Fig.2 Plugging on a *Poa annua* dominated green

A sustainable green speed

After establishing factors such as dominant grass species and preferred characteristics the survey aimed to build an appreciation of how these surfaces were being managed. Almost 30% of respondents had nominated *Poa annua* as being the dominant grass species on their greens, 92% believed that a stimpmeter reading of between 9–10 ft. was a sustainable speed with the remaining 8% feeling that a reading of 11ft was sustainable (these ranges represented an annual average greenspeed). If we compare these responses with the USGA guidelines that define stimpmeter reading for regular and tournament play the majority of respondents believed it is sustainable to achieve speeds within the "fast" (8.5–10.5) parameter of the guidelines.

TABLE 1

USGA green speed definitions (USGA, 2010)

Speed	Ball roll distance (ft.)	
	Regular play	Tournament play
Slow	4.5	6.5
Medium - slow	5.5	7.5
Medium	6.5	8.5
Medium - fast	7.5	9.5
Fast	8.5	10.5

Whilst many superintendents felt that maintaining (arguably) "fast" putting surfaces year round was sustainable, only 15% of respondents stated that a demand for fast greens was a cause of "significant stress" for them.

The survey asked respondents to select the total annual number of pesticide applications they make to their greens and also what their philosophy was (i.e. preventative or curative) regarding this programme. 91% stated they were applying between 10 to 20 applications of pesticide on their greens per year, with 23% saying that this was based upon a "preventative" pesticide programme.

When asked what area of the golf course caused them most "stress" the majority (50%) said that course drainage issues were the most problematic area. When asked what area or project they would most like to address on the course over the next 12 months, the majority of respondents

(18%) stated that upgrading their greens was their highest priority, whilst 16% wanted to invest in an active tree management programme and re-planting of native species across the course.

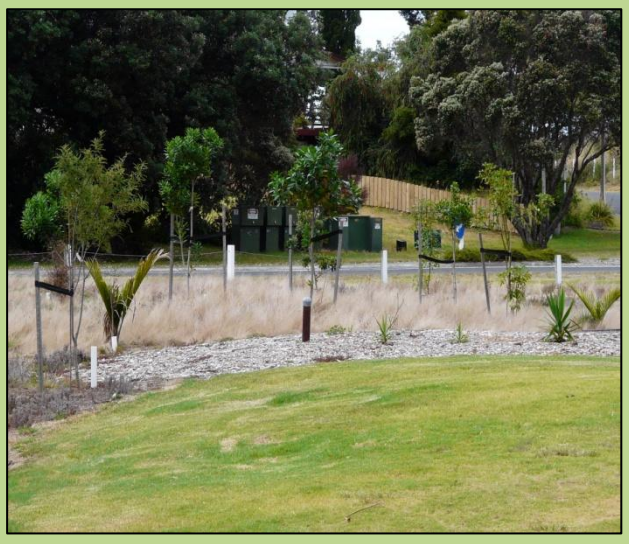


Fig. 3 Replanting of native trees around a golf tee

The final questions focussed on the attitudes and willingness of the respondents to enhance the environmental value of their golf course and develop a more environmentally aware approach to course management. A positive indication of a willingness to invest more resources into environmental management was demonstrated by 60% of respondents claiming to have a "*passion for the environment"*. The survey indicated that whilst there were examples of environmental enhancements being implemented on golf courses at a practical level (be that mostly on a voluntary basis) there was a need for golf clubs to start recording and accurately planning this work. The survey found that just over half the respondents believed they could establish and implement a more sustainable approach to the management of their golf course without the need of having a documented Environmental Management Plan (EMP).

Summing up

The results of the SSDM Golf Course Environmental Management Survey 2011 were taken from a representative sample of approximately 24% of the total number of 18 hole golf courses across New Zealand. The results show many positive areas of environmental awareness and activity throughout the courses that completed this survey and a general appreciation of the potential that the golf sector has in conserving and enhancing the biodiversity of New Zealand's landscape.

What is clear is that although some golf courses are actively implementing ecological enhancements for the main part these are not being documented and subsequently there is a real danger that the emphasis on environmental initiatives within a golf club is susceptible to the political fluctuations of the club and the will of the personalities therein. As with any form of work that is carried out on the golf course there needs to be a formalised plan. As an industry we accept that our greens need an annual nutrient plan from which we can budget. Many courses will also have a machinery replacement plan and a golf course fertiliser plan. Just as with these areas of day-to-day management it is advisable to have an Environmental Management Plan (EMP). Without a documented and endorsed plan there is no way of tracking the success or failure of past projects and no way of being able to justify budgetary allowances for future project work.

An effective EMP need not be expensive or time consuming to establish. It should be simple and specific in its implementation but it MUST be agreed upon by all parties within the club. Even if the likelihood is that this work will be implemented on a largely voluntary basis there still needs to be a plan in place. Without such an agreement goal posts move, focuses get lost and precious finances may be wasted.

Key points:

- There is approximately a total "unmanaged" land area of 11,250 ha within all the 18 hole golf courses in New Zealand.
- 63% of respondents stated that they do not have a budgetary allowance with which to charge environmental projects to.
- Whilst 60% of superintendents questioned said they had a passion for the environment only 11% believed that their membership would like to see New Zealand golf courses be more environmentally aware.
- Browntop was the dominant turfgrass species of respondent's greens, it was also considered the most "sustainable" turfgrass species by respondents.
- 92% of respondents believed that a stimpmeter reading of 9-10ft was sustainable.
- 91% of respondents are applying 10-20 annual applications of pesticide to their greens as part of a preventative programme.
- 50% of respondents stated that issues relating drainage on the golf course caused them most stress.

This research was funded internally by SSDM, who would like to thank all the golf courses who took part in the SSDM Golf Course Environmental management Survey 2011.

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