

Disturbance



Golfers once played the linksland as they found it. The rules and equipment of the game were designed to help golfers cope with the unique characteristics of the links environment. The only maintenance staff present on the links were rabbits and the odd grazing animal. However, as the popularity of the game exploded there was increasing pressure to protect the links from the coastal environment and from the golfers

themselves. Efforts in greenskeeping and coastal defense were largely successful, but now links courses must cope with their newfound stability. Stability which threatens to alter the strategy and character of links golf by changing the nature of the linksland itself. To understand these issues, and their potential solutions, we look to the original relationship between golf and the links.

e by Design

Links courses change, it's a part of the game. Allowing natural processes to play a role in golf can help maintain the courses, and the integrity of the game

Coastal Dunes and the Origins of Golf

In 1842 an observer wrote in Chambers' Edinburgh Journal "Where there is no links there can properly be no golf" (From Scotland's Gift by CB MacDonald) The "links", of course, are the coastal dunes upon which the game of golf developed and the natural attributes of this "peculiar kind of waste ground" made it ideal for the development of a stick and ball game played along the ground. A temperate coastal climate and well draining soils provide the opportunity for year round play. Among the tall beach grasses and fescues there were naturally occurring areas of shorter turf that became the fairways and greens. Small streams and sandy pits found throughout the landscape were the hazards, which defined the strategy of the game. The firm, undulating terrain and ever present wind called for creative shotmaking and encouraged low, running approaches which used the terrain to their best advantage. Although golf is no longer confined to linksland these natural features of the coastal dune landscape continue to influence the game wherever it has spread.

The golfing characteristics of the links, and the links themselves, are products of continuous interplay between sea, wind, animals, and plants. Oceans create and carry sediments and nutrients to and from the dune landscape. They also shape the seaward margins of the dunes, eroding and redistributing sand along the coastline. The wind brings sand and nutrients from the beach to the dunes and then distributes them throughout the landscape. It also determines the physical

The 13th at North Berwick illustrates the connection between golf and the dunes. It also shows that humans have been trying to control that relationship since its earliest days





Rabbit burrows maintain golf friendly turf by bringing sand to the surface

shape of the individual dunes and the overall pattern of the dunefield. This pattern can vary from a series of regular ridges to a random assortment of humps and bumps sculpted by the wind and always in motion. Wind driven erosion expands small bare patches into large pits known as blow-outs. These serve an important function in the landscape by providing fresh sediment throughout the dunefield. Fresh sediment and fluid, sandy conditions are the lifeblood of golfer friendly links. They are a natural maintenance system that ensures well draining soils and tight turf, and because of the lean conditions they create, restricts the growth of shrubs and trees.

The activities of rabbits and livestock are another natural force that helped create and maintain a golfable links environment. The grazing, scraping and burrowing of animals helps to maintain an open dune landscape by keeping plants closely cropped and by bringing fresh sand to the surface. Rabbits have played an especially influential role in the history of golf. They are responsible for the short tight “rabbity” golfing turf. Indeed, when a large number of rabbits

perished in a disease epidemic in the 1950’s the impact on the dunes was quickly evident. Turf heights in some dune areas went from half an inch before the outbreak to nearly eight inches only three years later. Livestock have also played a role in shaping the links. In addition to grazing, the larger domesticated animals create disturbances in the dunes by trampling vegetation, wearing out sheltered areas where they congregate, and by collapsing slopes as they forage. These disturbances help maintain an open grassland by making fresh sediments available.

Humans have also had substantial, and accelerating, impacts on the coastal landscape. While humans have lived near and among dunes for millennia their impact on the dunes was minimal. Limited agricultural value caused most dunes to be used as common land for small scale grazing or recreation, a perfect environment for golfing. However as human ability to alter the landscape increased dunes became increasingly valuable areas for development and targets for stabilization projects. Since the Industrial Revolution nearly every dune system in the world has

been affected either directly or indirectly by human development.

A Changed Field of Play

Early links courses were very different from the modern golf course. The natural features of the landscape made golfing possible and the courses were maintained by the natural processes of the environment. Early courses were also highly variable. The first golfers had to more or less accept the landscape as they found it and every course displayed the eccentricities of the local landscape. Number of holes varied from course to course (Leith had five, Prestwick 12, St Andrews 22) and the playing surface varied from course to course and even hole to hole. The shape and frequency of the dunes varied and so too did the plant materials. Some greens, such as early incarnations of the 6th and 11th at St Andrews were comprised largely of heather, others of turf. Early hazards were highly variable and were constantly migrating and changing character. New bunkers would crop up and old ones would heal. The playing area remained a naturally functioning dynamic dune environment. Soon, changes in the game would bring dramatic change to the links.

The Industrial Revolution, and several key inventions, would forever change the relationship between golf and the dunes. Perhaps most important was the introduction of gutta percha. This malleable Malaysian gum was introduced to the golfing world in 1848 and allowed for the crea-

tion of a new type of golf ball. This new ball was durable, flew farther, and rolled truer than the feather filled balls of the past. Easy production also made it far less expensive than the feather ball which had to be hand crafted by artisans. Reducing the expense of golf balls made golf accessible to far more players. Along with accessibility the gutty also changes the style of play. The added durability made the use of iron clubs more practical and in fact a few scars from an iron seemed to help the gutty fly better (the beginning of dimpling). This allowed for a spin producing downward swing to develop, bringing with it ever increasing numbers of divots.

Increased play and the increasingly abusive style of play quickly became more than the natural environment could tolerate. Because of “increased numbers of golfers and smashing with clicks” the Old Course was widened and the large double greens with two sets of flags were created in 1856. This change set the 18 hole standard. Along with the need to create more space came the need to maintain that space. In 1865 St. Andrews hired Old Tom Morris as a full time greenkeeper. Well known for the design changes he made to the Old Course, he may have had a greater impact through his innovations in greenkeeping. To keep up with more golfers and higher expectations, Tom Morris created a more formal golf course with a far more uniform playing surface, a trend that would soon spread beyond St. Andrews. From Old Tom’s day to the present the major components of formalization have been:

The open turf and animal scrapes of the original links can still be found today at Royal North Devon



Improving Turf Quality. Early greens were comprised of a variety of plant materials including heather and various herbs. As a result every green had very different putting characteristics. One of Tom Morris' first endeavors at St. Andrews was to create a uniform set of putting surfaces. As a result all greens were converted to turf grass. In addition, wells were sunk adjacent to the greens to bring water to trouble spots. Old Tom also applied a heavy roller and specialized mowers to the greens. These innovations became commonplace in the golfing world, leading Lord Balfour to comment in 1887 that the putting at St Andrews was now "smoother and better, and much truer." Uniformity of the putting surface has continued to improve since.

Stabilizing Hazards. At St. Andrews, and elsewhere, natural hazards had their edges defined through sod wall construction. Golfers now knew where the hazards were and what kind of condition they would be in. The floors of bunkers were also raised to avoid seasonal flooding and short lived scrapes and pits were either formalized into bunkers or patched with turf.

Animal Control. Animals, once free to range over links courses, were increasingly controlled. Rabbits came under strict control because their scraping and burrowing now seemed a threat to the uniformity and stability of the turf. Similarly golfers and greenkeepers became less tolerant of the irregularities of sheep and other livestock and they are now also largely absent from the links.

Stabilizing Coastlines. Formalization quickly extended beyond the small scale issues of rabbit scrapes and hoof prints to large scale coastline management. Coastal stabilization began with planting beach grass in disturbed areas or introducing shrub species, such as gorse and sea buckthorn. Soon rock armoring and sea walls became common features along links courses.

Many golfers applauded the changes and the new maintenance standard quickly spread throughout the golfing world. However, this trend towards a more formal and stable golf course altered the nature of the dune environment significantly and had unforeseen implications for links golf. By the 1930's Alister MacKenzie was noting significant changes in the characteristics of links golf courses resulting from stabilization. "The rabbits have been killed off. Alkaline fertilizers fit only for agriculture have been used, with the result that the sparse dwarf velvety turf has disappeared and is now replaced by...luscious agricultural grasses which need an enormous amount of mowing, weeding, and upkeep." (Spirit of St. Andrews) Along with a thicker stand of turf shrubbery became more and more prevalent on links courses. The establishment of shrubbery brings further stability and soon shrubbery gives way to forest. These changes can be clearly seen at highly stable links such as Royal County Down, Muirfield, and Carnoustie. All in all, the products of what MacKenzie called "well intentioned but injudicious efforts... to improve on nature." (Spirit of St Andrews 1933)

Shrubbery giving way to trees on the dunes of North Berwick





A Changed Game

From the margins to the centerlines, stabilizing links courses affects the strategy, playability, sustainability, and overall experience of links golf. So it is important to strike a balance between too little and too much stabilization. Excessive stabilization has led formerly open rough areas to become increasingly clogged by thick turf and shrubbery. Soon many of the exciting recovery shots of links golf are eliminated and replaced by lost balls and unplayable lies. This makes life increasingly difficult for the poorest players, those who don't need any more punishment than what they already inflict on themselves. Simultaneously the enjoyment of all players is diminished by a slower pace of play as golfers search for lost balls in dense rough.

Stabilizing the links also impacts the quality of the game closer to the centerline. Links golf is famous for its ability to challenge all levels of player. A poor player is just hoping to hit the fairway, an average player aiming for a particular side, and the best players are aiming for an advantageous spot perhaps only a few

yards wide. For all of these players failure to reach their objective involves a re-evaluation of their strategy for the next shot. A ball on top of a hump must be played differently from one in a valley, and a ball in a bare patch differently from one sitting on a tuft of turf. On a dynamic links course these subtleties were enhanced by sand hazards that changed location, depth, and character. Over time the reduction in variability has diminished the value of the careful study and creative shotmaking these situations once required. A final advantage of naturally occurring hazards is that they arise without the preconceived notions of a golf course architect. Because of the ever changing links conditions the "perfectly placed hazard" is not nearly as relevant as it appears on paper and in most cases nature has been better able to bring strategy to the links than humans have.

Moreover, managing thicker turf, more shrubbery, and increasingly engineered coastal defenses are all expensive and ongoing enterprises. We promote stability and then fight the products of that stability. Restoring some of the natural processes that

As stability allows shrubs to dominate the margins of golf links recovery shots become less and less of an option



Pacific Dunes and Pacific Grove Municipal (opposite) illustrate the potential for integrating golf with a dynamic landscape.

made the dunes suitable for golf, and combining them with modern management practices, can create a new balance on the links.

A Changed Perspective

There is no returning to the days of golfers playing the links as nature created them. Golf has become too popular, and the demands on the courses too great. However, there are ample opportunities for developers, course architects, and managers to meet the demands of modern play while restoring the best characteristics of the ancient links. Allowing a degree of managed disturbance on the links can create a more playable, interesting, and sustainable golf course. Here are several concrete steps which can be undertaken in this direction:

Managing Vegetation. Re-introducing moving sand into the rough and the out of play areas can greatly enhance a course's strategic interest and maintainability. Added sand movement helps maintain playable turf and helps control scrub and tree growth. Creating bare patches, or removing the organic layer from the surface and replanting an area

with native dune plants, are two ways in which dynamism can be re-introduced. These measures help undo the cumulative effects of stability by removing organic matter and allowing sand to move freely again. This creates an ongoing topdressing operation in the rough which promotes a more open and playable environment.

Reintroducing grazing animals and tolerating rabbits can also help to maintain an open landscape. These methods have the advantage of being relatively self-sustaining. Once turf and shrubbery are thinned to the desired levels the animals will maintain this balance as they feed on young shoots and turf. Courses that tolerate grazing animals, such as Royal North Devon and Pennard, find they require little more management than ribbon fencing around the greens. In addition to managing vegetation these animals create an interesting pattern of disturbances on the links, which add subtle new challenges to every round. Finding your ball in a trampled area of the fairway, or a small scrape in the ground brings a new element of strategy to

the next shot and perhaps the one after. While this does introduce an added element of luck the player best able to cope with a variety of lies through skill or good judgment will eventually prevail. Educating the modern golfer about the strategic and environmental values of a more dynamic links golf course is critical to the success of such a program.

Dynamic Hazards. Allowing bunkers to return to a more natural state offers several important benefits. Restoring a more informal edge to hazards and allowing sand to migrate more freely returns an important source of fresh sediments to inland areas of the course. This helps to promote fine, tight turf, and the unique plant community found only in open dune grasslands. Allowing hazards to behave more naturally will also serve to vary the type of recovery shots required from these hazards. A large smooth bunker will demand a different type of shot than a smaller one with patches of turf in the bottom. These nuances add interest to the game and will encourage a golfer to study the hazards and to develop new escape shots. Allowing hazards to evolve, migrate,

and disappear creates a dynamic strategic element on each hole as well. This situation rewards ongoing careful study of the course and can enhance the golfing experience for players of all abilities. Courses such as Pacific Dunes in Oregon and Pacific Grove Municipal in California provide excellent examples of how more dynamic hazards can be incorporated into a modern, heavily used links golf course.

Links courses make up a small percentage of golf courses worldwide but their value to the game is immeasurable. They carry the history of the game and act as benchmarks for modern design. It is only natural that there is a strong desire to freeze these courses in time so that all future generations of golfers may play the Old Course exactly as it was in the past. However, it is important for architects, managers, and golfers to appreciate that flexibility and dynamism is what has made these courses such an enduring part of the game. A program of managed disturbance can help maintain the links' traditional golfing and environmental values and enhance every golfer's enjoyment.

