INTRODUCTION

The aim of this book is to serve as a reference for all those who are involved in planning, developing, and constructing new golf courses, as well as for those who are involved in the management of golf courses once they are built. It is not intended to be a comprehensive, all-encompassing text that covers in detail every aspect of building new, or managing old, golf courses. It is, however, useful information that can be applied on a case-by-case basis with the ultimate goal of helping meet the economic, ecological, and social issues facing the game of golf and the entire golf course industry.

I have been told that what I want for golf is beyond the means of the golf course industry. I hope those who believe that are wrong. What I want for golf is for it to be the best it can be. That said, golf is many things to many people. To some it is simply a game. To others it is a way of life or a profession. To others it is land development that uses large quantities of natural resources and causes adverse impacts to the quality of the environment. And, truth be told, it is all of that and more.

As a sport, golf is a game that is played at all ages. The playing field is in nature, and the system of creating “handicaps” or “indexes” actually gives golfers of varying levels of talent the chance to “level the playing field” during a friendly contest. It is simply a sport that is enjoyed by all sorts of people from all walks of life.

Golf is not essential to our lives. From an ecological perspective, golf courses do not contribute to the essential elements of human survival—food, cover, water, and space. Unlike agriculture, golf courses do not produce food that we all need to eat. Nor does it provide shelter. Even though many people live around golf courses, residential properties that sometimes surround golf courses are frequently exclusive, sprawling developments that only wealthy people can afford.
While there are plenty of water “features” around many golf courses, a course does not provide water, and, in fact, many people believe that golf is one of the largest users and abusers of both water quality and quantity. And even though there is plenty of space in and around golf courses, it is frequently only available to those who can afford to use it.

Those of us who have been involved with golf courses for many years, however, know that this provides only one side of the golf course story. Golf courses provide jobs, contribute to the tax base, and play a role in communities and economics the same as any type of development. On a global basis, make no mistake, golf is big
business. Additionally, golf courses can provide habitat for wildlife, including threatened and endangered species, and they provide open space and allow for plenty of “green” space in otherwise urban areas. Golf courses can also be built and managed to treat wastewater and act as part of the storm water management systems for entire communities.

My view of golf is that golf courses should be sited, designed, constructed, and managed in a manner that allows them to become an important part of any community’s “green infrastructure.” And, what, you might be asking, is green infrastructure? Every community needs open space and clean water. Every community must provide places for wildlife to live and to raise the next generation of whatever species is supposed to be found in a particular region. Most often we think of these types of places as wildlife refuges, nature reserves, or parks. But the fact is that there simply is not enough money to purchase every piece of property that could become a nature reserve. And, even more importantly, there is a dwindling supply of money to manage the properties even if there were enough dollars to buy them in the first place. This is where golf can play a critical role. Golf courses, *if properly sited, appropriately designed, and effectively managed,* may provide many of the same attributes of a nature reserve, but come with the money necessary to manage not only the places on which the game is played but the natural areas that are included in the golf course budget.

To a great extent, golf needs to return to its roots. That doesn’t mean that we shouldn’t use new technologies when available, but it does mean that we should remember that the true game of golf was played in nature. The modern age of golf course development has brought the “machine age” to nature, with developers depending on the extensive use of heavy equipment and a sense of human domination. Rather than designing golf courses as part of the natural landscape, developers have changed the natural course of watersheds and cut up wildlife habitat into smaller and smaller pieces. This has often been done in the name of aesthetics, but more often, with overinflated budgets that pay for a significant or well-known “brand name” to help ensure its success and cache.

I say all of this not because I’m so “pro-golf,” as some of my environmental peers have claimed. I say this because I am “pro-sustainable development.” I steadfastly believe that it is not a matter of “we” versus “they.” It is not a matter of whether we need development—development is not an inherently bad thing. We just need the right kind of development, in the correct locations, built and managed in effective ways that minimize any negative impact on the environment while optimizing potential benefits. Building golf courses is an economic engine that can drive opportunities for future generations. We need open spaces to walk and listen to the sounds of nature. We need to relax and rejuvenate. At the same time, we need to be vigilant to ensure the safety of land, water, and air. We cannot wish ourselves to this sustainable future; we will have to make some difficult decisions. To achieve the lofty goals associated with sustainability, it will take all of us—every person,
every company, every governmental agency, every educational institution at all levels—working together to form a collection of programs, policies, and practices that will be effective and benefit everyone. Anything less will certainly lead to unsustainable destinations, unsustainable lifestyles, and a widening gap between the “haves” and “have nots.”
I believe that golf can be a catalyst for change. Golf can bridge the gap between what is thought of traditionally as “development” and what is thought of traditionally as “sanctuary.” I believe that golf can be the leader of a new conservation movement within the free enterprise system and a true agent of change in the way we live, work, and recreate.
CHAPTER 1

SUSTAINABLE GOLF AND THE ENVIRONMENT

Sustainable Golf Courses—An Oxymoron?

It is thought by some that the word “sustainable” and the words “golf course” shouldn’t even be in the same sentence. Some believe that golf courses by their very nature are not sustainable. To a degree that is a correct statement—depending on both your personal definition of sustainability and whether you include human beings in the overall concept of sustainability. In general, the elements most often associated with sustainability include ecology, economy, and society. In other words, to an extent, there must be a balance between these three “legs of the stool,” or the stool will fall over. Some, on the other hand, focus mostly, if not entirely, on the ecological leg and then zero in on concerns over water quality and loss of rare species and pristine habitat. Others focus on the economic bottom line and say, “If we can’t make this project work from an economic point of view, then there will be no project!” This tends to be the basis for the old argument of “the environment versus the economy.” Or, “Take your pick. Birds or jobs!” These arguments and various versions of them are reflective of unsustainable attitudes. We can do better than this. We need birds and we need jobs and we need an economy that is built on the use and protection of our environment and natural resources and the social fabric that makes places special. Anything less, in the long term, is unsustainable both in terms of our economy and our environment and to all living things, including people.
The History of Golf

The history of the game of golf is a bit shrouded in mystery, but most golf aficionados believe that the modern-day game traces its roots back to Scotland and the oldest links-style courses. “Links land” is that somewhat barren land that is found between the more productive agricultural lands and the sea. It is land that is sparsely vegetated and wind-blown, and to many, it is not good for much of anything. This links land is where the birth of golf is considered to have taken place. Many of the original golf layouts started with the first hole being found at the city’s edge, with succeeding holes going out into the links land, and then returning on nearly the same piece of land back toward the city. In many cases, greens were large enough to accommodate two separate holes. For example, one might find hole #3 on the front side of the green and #12 on the backside of the same green. Not only did this save on building and maintenance costs, but it also gave golfers a chance to talk to others who were playing along the way. Both the equipment used and the terrain in which the game of golf was played were absolutely nothing like today. In the beginning, golf was certainly a game that was played in nature, and it was truly nature of the wildest sort. Wind, rain, rocks, and bare brown spots between sparsely and somewhat poorly managed turf were all elements of the game when it started. The origin of golf is a long way from the manicured condi-

FIGURE 1-1. ST. ANDREWS, SCOTLAND. The history of the community around the links at St. Andrews is an important part of the golf course. This is a golf course managed with the belief that less is more. Source: Ron Dodson.
tions that we find today on many golf courses and certainly a long way from the steel-headed, titanium-shafted clubs that we find in use in the modern game. It is this transition from a game that was truly played in nature to a game that is played in an artificial form of nature that is the taproot of some of the environmental and economic concerns that are facing the game today. (See Figure 1-1.)

The game of golf has seen periods of slow to no growth, then to significant growth, to explosive growth. Some link the growth of the game to televised golf tournaments, and to the popularity of professional golfers like Arnold Palmer in the early 1960s, and to the explosive growth to the U.S. economic conditions of the mid-1980s and 1990s, coupled with Tiger Woods’ arrival on the professional golf stage (see Figure 1-2). This growth and public fascination with the touring professional and the courses on which they play their game also has changed the way that golf courses are designed and managed. While change can be good, if uncontrolled, these changes can drastically alter the ultimate outcome. In reality, the modern game of golf bears little resemblance to the original game of golf. Other than trying to get a ball (which today is certainly not the same kind of ball as originally used) into a hole in the ground (of course, today’s “hole” is metal sleeved, perfectly placed, and painted white) in the fewest number of strokes, the two games can hardly be compared. In addition, the game that today’s touring professional and the game that the rest of us mortal, everyday golfers play can hardly be compared. That is where the problems associated with the sustainability of the game of golf rests.

By and large, we, the public, are demanding that courses be designed and managed as though we could all play like Tiger Woods. We want fast greens and “perfect” turfgrass (no matter where we might actually hit the golf ball), and we want club manufacturers to create equipment that will guarantee that we can hit as
straight and far as any touring professional can. And, because we are all busy making all the money that we need so that we can afford to join the private golf club or pay the high green fees necessary to fund the artificial maintenance necessary to keep our trumped-up golf courses playable, we want to be able to get on the course and finish our round in less than four hours. I argue that this approach is not even golf at all. It is some form of speeded-up business-dealing opportunity masquerading as golf. It is this masquerade that in the end could be the demise of the game itself.

There are presently more than 17,000 golf courses in the United States, and between the mid-1980s and late 1990s, one new golf course per day was opened in the country. Although the golfing public and golf investors were enthusiastic about this growth, many governmental agencies, environmental organizations, and the public have expressed concern about the environmental impact of golf course development and management. As a result, agencies have increased their regulatory oversight of golf course development, legal actions have been taken against many, and restrictions on course management have been put into place. While some support these actions, others have indicated that this merely increases the cost of doing business for golf courses and is increasingly burdensome to the public and regulators alike.

The game of golf—already thought by many to be expensive and exclusive—may increasingly preclude the general public from enjoying the natural and recreational benefits of the game. In addition, it appears in the early 2000s that what was once considered the golf course boom has now slowed to a crawl or completely stopped in many places. While increased regulatory and citizen pressure can be connected to this slowdown to a degree, much of it can be directly connected to unsustainable economic strategies that many have taken in regard to the game of golf. These strategies include, but are not limited to (1) building courses in places that will not support the necessary rounds of golf and a reasonable green fee to allow the course to be solvent; (2) building courses in a manner in which the associated maintenance costs to keep the courses playable put undue economic stress on the maintenance budgets and course staff; (3) attempting to build courses in the wrong locations from an environmental point of view and therefore causing the expenditure of millions of dollars in attempts to gain governmental permits, which in the end may or may not be granted; and (4) managing existing courses in ways that cause environmental problems such as adverse water quality and public or employee health concerns that can cause both economic and social problems. All of these lead to economically, ecologically, and socially unsustainable golf courses. That means that proposed courses have a more difficult time getting permits and, consequently, getting built.

It also means that existing courses have an increasingly difficult time finding acceptable products with which to manage their courses, find themselves facing financial emergencies, and often face closing down or being purchased by others.
The ramifications are frequently that golf course personnel lose their jobs, course designers can’t find work, irrigation companies don’t get contracts, and the list of bad news goes on and on.

The Case for Sustainability

“The word ‘sustainable’ implies perpetuity, constant rebirth and renewal, and an inexhaustible system. ‘Development’ connotes change, growth, expansion, production, movement. Development, to be sustainable, must somehow incorporate renewal that ensures the continuity of matter, resources, populations, and cultures. Sustainability, to incorporate development, must allow change and adaptation to new conditions. Today, the two ideas together speak of balancing economic and social forces against the environmental imperatives of resource conservation and renewal for the world of tomorrow” (Porter, ULI, The Practice of Sustainable Development).

For those associated with the golf course industry, that means that you should strive for economically viable, ecologically healthy, and socially acceptable golf courses. The primary focus of this book is to offer information that will help those associated with managing existing golf courses, as well as those involved in planning, designing, and permitting new golf courses, the necessary tools to reach those goals. If any one of the three concerns—economically viable, ecologically healthy, or socially acceptable—is rooted in unsustainable positions, the long-term and short-term results for a golf course and those associated with the golf course industry will not be pleasant. You not only have a responsibility to the economic viability of golf, but you have an ecological and social responsibility too.

For those associated with governmental agencies and environmental organizations, that means that you should also support the concepts associated with sustainability and you should reconsider the standard one-size-fits-all approach to regulation. Those courses that voluntarily adopt and document implementation of more sustainable practices should be encouraged and rewarded, not punished. While it is true that golf courses, or anything else for that matter, should not be built on some sites, you need to rethink your positions concerning the manner in which you determine which sites are acceptable to develop and which are not, because all sites are not alike. Finally, you need to rethink the financial implications of the decisions that you make, because those implications are merely being passed on to the public. You have an ecological responsibility to the concepts of sustainability, but you also have economic and social responsibilities.
For those individuals who have personal reasons for opposing new golf course development or who put undue pressure on golf course superintendents to manage courses in ways that have adverse impacts on the sustainability of a course, you need to rethink your actions. While it is a person’s right to express his or her position in regard to any topic, if that personal position leads to adverse impacts on the economic, ecological, or social fabric of a golf course, a neighborhood, or a community, that personal position lacks credibility and should be questioned strongly. While a person has a right to express his or her position, the person also has ecological, economic, and social responsibilities that go beyond personal interests.

There Is No “One Size Fits All”

To a great extent, those associated with golf need to understand and believe that there really is no one set of rules that can be applied to the design and management of all golf courses. The goals associated with the game of golf should be to provide optimum playing conditions, based on scientifically sound management strategies that are based upon the specific site that is being managed. There is a method to accomplishing this, whether you are managing a golf course that has been in

FIGURE 1-3. COUNTRY CLUB OF FLORIDA, VILLAGE OF GOLF, FL. Wetlands are recharge areas for groundwater aquifers, play a role in storm water runoff, and provide home for many species of wildlife. Properly managed, they can also play important roles in regard to visual beauty of a golf course.
existence for years or you are planning the development of a new course. (See Figure 1-3.)

Step one in the process is to take a look at the “region” in which the golf course is located. By region, I mean both terrestrial (land) and aquatic (water) regions. It should be clear that if a course is located in a desert region, as opposed to a southern wetland setting, different management strategies will be required for each to keep the courses playable. It should also be clear then that different design strategies will be necessary, or at least should be necessary, to make various courses more manageable based on the specific site being designed to become a golf course. In addition to the land “types” (desert versus wetland), surrounding land uses are of equal importance (see Figure 1-4). The location of a course in a rural, suburban, or urban setting can greatly affect the manner in which the course should be designed, or needs to be managed, from both an economic and environmental point of view. Finally, the position of the golf course in the overall watershed is an important consideration. A watershed is described as an area of land on which all the water that falls onto it drains to a common point. Watersheds come in all sorts of shapes and sizes. It is important for the golf course designer and manager to know exactly what watershed their property is located within and exactly where
within that watershed the property fits. In other words, is the course at the top or bottom of the watershed? This is important because course management can impact the overall watershed and those associated with golf should want that impact to be a positive one, not a negative one.

**Sound Economics Based on Ecological Facts**

We must all come to grips with the fact that our ultimate economic fate is based on the state of the ecological processes around us. Note that I didn’t say “environmental” conditions. Environmental conditions are results, or reflections, of what has happened to the ecological systems around us. For example, poor water quality is an environmental condition. But that result is an action that was taken to the aquatic ecological system in which the water that we are monitoring is located. That is why there are many ways to adversely impact the quality of water. Water quality can be impacted directly or indirectly. So, the goal of being an “environmentally friendly” golf course, while laudable, is really only a “defensive” position that says, “OK, I’m not as bad as you think I am.” But for the golf course industry to say “We want and we work for clean water from an ecological systems point of view” is a much bolder statement that goes beyond self-interest. And the fact is that we all need clean water! In addition, our economic health is based on a system, and that economic system is directly connected to an ecological system. This is a fact, and until we act like we believe that this is a fact, our path toward a more sustainable culture is doomed. Being sustainable is not a “thing.” Being sustainable is not a “place.” Being sustainable is a way, it is a method, it is a process. Being environmentally friendly is good, but it could be an “ornament on a dead tree.” We should work toward a healthy system that will ensure that the “tree” remains alive and well, and not just celebrate the ornaments that we hang on it.

For those managing existing golf courses, your challenges could be great because of decisions that have been made long before you arrived on the scene (see Figure 1-5). But you can do something positive, and that is why Audubon International created the Audubon Cooperative Sanctuary Program for Golf Courses. There are those who think the golf course Cooperative Sanctuary Program was created just to help golf look good—or at the very least, to help golf not look as bad as some believe golf to be. Nothing could be further from the truth. The program was created to serve as an educational and motivational vehicle to encourage people to merge environmental stewardship into their businesses and personal lives. It is a baby step toward the adoption and use of the principles of sustainability. It forms a common frame of reference for all those who choose to take action. It is a framework to follow, and it is a forum from which public recognition can be given to those that take action. But those actions taken at many existing golf courses are
governed by the decisions that have been made prior to today. For example, if decisions were made in the design of the course that preclude the use of modern-day management practices, that would be a limiting factor to the present golf course management efforts. If the course has an old, out-of-date irrigation system, it will be very difficult to conserve the amounts of water that one may wish, unless the entire irrigation system is replaced. But if the course is presently being managed as a “wall-to-wall” turfgrass system, that most certainly can be changed. Of course, the golfers will have to go along with the change, but it can be done, and in the process, great strides can be made in the areas of water conservation, energy conservation, and wildlife and habitat enhancement. This will result in positive action for both the economic and ecological attributes of a golf course. But to be effective, these actions must be supported by the golfers who utilize the facility.