

LIFE-CYCLE STUDIES

Golf

Introduction

"A good walk ruined" is how Mark Twain described a round of golf, but something about the game nevertheless inspires deep devotion. Fans have been shanking drives since at least the mid-fifteenth century and probably far longer. Today some 60 million golfers hack away on 25,000 courses worldwide. They pay annual club membership fees ranging from several hundred dollars up to US\$650,000, which is what the Sebonack Golf Club in Southampton, New York, demanded when it opened in 2006 (plus \$12,000 in annual dues). A recent poll asked 11,000 golfers if they would rather be a) very intelligent and a bad golfer or b) not very intelligent and a great golfer; worldwide, 29 percent preferred the latter. Among Thai golfers it was 52 percent and among Japanese golfers 77 percent.

Doing It Better

Sensitivity to these issues has prompted golfing organizations such as the U.S. Golfing Association to develop environmental principles for golf course construction and management. Audubon International launched a green certification program for courses in 1991; 2,150 courses are registered with the program, though only 520 have sought certification.

Jim Wark/Peter Arnold, Inc.



Greening the desert in Nevada.

Courses can be built and operated so as to mini-

mimize fertilizer and pesticide loads. In the United States, there are at least 10 organically managed golf courses that use burning or hand-pulling to control weeds and bacterial insecticides to keep bugs down. Labor costs are higher, but are balanced by savings on expensive pesticides.

It's an uphill struggle. The industry is deep in the rough and it won't be easy to get out. "The sport is traditional," says one course marketing director. "It's about trees, grass, and flowers... The magazines don't show pictures of courses with brown spots.

Golf's about being lush....

It takes a lot of water to keep that up."

balls use rubber and various resins. Between 2 and 3 billion golf balls are lost every year—and millions retrieved and resold as "experienced"—but few environmentalists worry about their effects on the landscape.

Golf courses are another matter. Building one generally entails moving huge quantities of soil; as clubs and balls have improved, holes have lengthened and courses enlarged to as much as 60 hectares, and their construction can require shifting up to 750,000 cubic meters of earth. This and the economic development that typically accompanies a course can radically alter the natural landscape, transform rootzones, and destroy or compromise wetlands. Farmland is often lost because its fine topsoil, good drainage, and lack of trees or bushes make it a

prime choice for golf courses. Building a pleasing course usually means introducing vast expanses of nonnative grasses, which absorb staggering quantities of water (an estimated 9.5 billion liters every year worldwide), as well as six times the concentrations of pesticides used on agricultural lands. Heavy fertilizer use can lead to eutrophication of nearby surface waters. The energy costs of running a golf course—from mowing, irrigation, chemical application, and cart use—are substantial.

Environmental Impact

The tools of golf have probably never imposed much of a burden on the environment. Clubs have been wood, steel, various alloys, and/or composites. Early golf balls were elm or beech, later sewn-up leather pouches stuffed with cow's hair or feathers. Balls of gutta percha, the dried sap of sapodilla trees, arrived in 1848, while by the early 1900s natural rubber had become the main material. Modern



Left, a set of antique clubs; above, a modern "wood" and ball.