

Political Economy of Protecting Natural Resources for Recreation

James Mak* and James E.T. Moncur**

The impact of tourism growth on the environment has become an increasingly important public issue in travel destinations. Growing numbers of visitors place serious environmental strain on popular, and often unique recreational sites. Crowding also produces congestion externalities which further diminish quality and the recreational value of the sites to users. How best to ration their current use and to protect these recreational resources for the benefit of future users is a subject of growing public debate. Economists have traditionally advocated levying admission/user fees as an efficient and potentially equitable way to ration the use of these high demand resources (see e.g., Clawson and Knetsch, 1966; Dixon and Sherman, 1990; Anderson and Leal, 1991; Clarke and Ng, 1993; and Knapman and Stoeckl, 1995;)¹ and generate revenues to pay for their maintenance. However, lawmakers are often reluctant to use admission fees as a rationing tool in recreational resource management. Where they are levied, fees tend to be modest in level and generate only token amounts of revenue.² Lawmakers generally choose non-price rationing tools such as first come-first served, permit system, lottery system, re-

We are indebted to Sumner LaCroix for helpful comments and to Alan Hong for generously providing us with parks department data on Hanauma Bay. We take full responsibility for all remaining errors.

* Visiting Professor, Graduate School of International Cooperation Studies, Kobe University. Professor, Department of Economics University of Hawai'i at Mānoa 2424 Maile Way Room 542 Honolulu, HI 96822 Tel: 808 956-8280 Fax: 808 956-4347 E-mail: jmak@hawaii.edu

** Professor, Department of Economics University of Hawai'i at Mānoa 2424 Maile Way Room 542 Honolulu, HI 96822 Tel: 808 956-8730 fax: 808 956-4347 E-mail: jmoncur@hawaii.edu

1 On the other hand, Forsyth, Dwyer and Clarke (1995) suggest situations where user charges may not produce optimal results.

2 For example, in 1985, user fees covered only 19.3 percent of local government expenditures on parks and recreation in U.S. cities with population of 300,000 or more. (ACIR, 1987, p. 9). The percentage of expenditures covered by user fees is much lower in U.S. national parks (see for example Anderson and Leal, 1991, p. 64).

servation system, etc.

In this paper, we review Honolulu Hawaii's recent experience in trying to find management strategies to protect one of its most popular and unique natural recreational resources, Hanauma Bay Nature Park. Honolulu's experience provides an interesting case study because it first adopted non-price rationing techniques and only later added an admission fee to Hanauma Bay. However, the admission fee was rescinded six months later and then reinstated after extensive modification and with a substantial reduction in fees. The experience of Hanauma Bay highlights the difficulties in finding efficient management tools which also maintain political equilibrium.

Background

Hanauma Bay Nature Park is one of Hawaii's most popular natural attractions. Created by an underwater volcanic eruption some 35,000 years ago, today it looks like a partially submerged volcanic crater with one side open to the ocean, creating a bowl-shaped bay. Once the exclusive playground of Hawaiian royalty and chiefs, it was deeded, along with extensive nearby property, by the estate of the Hawaiian princess Bernice Pauahi Bishop (Bishop Estate) to the City and County of Honolulu in 1928 and made into a public beach park. Designated Hawaii's first Marine Life Conservation District (MLCD) in 1967, Hanauma Bay is a sanctuary for many species of marine life. The 10-acre park has two levels. The upper level consists of a parking lot, a scenic lookout and a lawn for picnics, while the lower consists of a grassy area, the beach, and the bay rim trails. The lower level is accessible from the parking level by a single lane road that is open only to pedestrian traffic and shuttle vehicles operated by a concession.

Hanauma Bay is much more than a beach park. In addition to sunning and swimming in a picturesque environment, visitors to Hanauma Bay Nature Park can feed and interact with tropical fish as well as explore the coral reef and other natural attractions along the bay rim trails. It is an excellent place for snorkeling and scuba diving because the bay waters are calmed and protected by the fringing reefs. Its enormous popularity is partly explained by its accessibility. For tourists, Hanauma Bay is located less than 20 km from Waikiki, where most tourists stay. In 1975, about half a million visitors (including residents and tourists) visited the park (Wilson Okamoto and Associates, 1991, p.2). By 1985, park attendance had tripled to nearly 1.6 million visitors. By the late 1980s,

annual visitations at Hanauma Bay had risen to roughly 2.8 million, or over 7,500 persons per day (State of Hawaii *Data Book*, annual). The increase in attendance was entirely attributable to nonresident tourists. While the total number of visitors to the bay increased nearly 6-fold between 1975 and 1990, the resident visitor count remained virtually unchanged. Since the resident population of Honolulu increased by 17% between 1975 and 1990 the average number of visits to Hanauma Bay per person among residents has actually declined. As a result, the proportion of residents visiting Hanauma Bay decreased dramatically. In 1975, 68% of the people randomly interviewed at Hanauma Bay were residents of Honolulu; by 1990 only 13% were local residents. (Wilson Okamoto and Associates, 1992, p. III-4)

The huge increase in visitations threatened both the natural environment and the quality of the visitor experience. A 1977 estimate of "recommended optimal use level" for Hanauma Bay was 1,363 persons per day, with 330 persons allotted for the upper picnic area, 408 for the lower grassy area and 625 on the sandy beach (Wilson Okamoto and Associates, 1977). These estimates were derived using the Bureau of Outdoor Recreation and the U.S. Corp of Engineering Beach Capacity Standards of 50 persons per acre for the upper picnic area and 160 square feet per person for the lower grassy area and the beach. Scientists have yet to determine a numerical carrying capacity standard for the coral reefs and the marine ecosystem; indeed, it may not be possible to determine such a standard until more is known about the natural state of the marine ecosystem. (Wagner, *Hanauma Bay*, 1993, pp.A-1 and A-8).

However, there was plenty of visual evidence that the marine environment at Hanauma Bay had been significantly degraded by over-use and misuse (See e.g. Hastings, 1989, pp.A-1 and A-4). In its final report to the State Legislature (Travers, 1993 pp.7-8), the Hanauma Bay Task Force noted that:

... the nearshore reef was being threatened by thousands of daily visitors stirring up and clouding the water with sediment, and touching, trampling, and breaking the living coral and algae with their feet and flippers. Levels of harmful bacteria in the swimming area were becoming a real concern, as was the level of trash in the water and on the beach. The effects of large quantities of inappropriate food being fed to the fish led to their increased concentrations — especially aggressive varieties —

well beyond normal levels. Finally, at the end of each day the sheen of a suntan oil slick was visible over the waters of the inner reef. The vision of Hanauma Bay as a marine life preserve didn't match the reality of what was happening to the park. Something had to be done.

Efforts to Protect Hanauma Bay

In 1989, the City's Department of Parks and Recreation (DPR) presented to the City Council an 8-point management plan for Hanauma Bay Nature Park. The proposal included (1) establishing park hours for vehicular traffic (7:00 a.m. to 7:00 p.m.); (2) closing the park on Wednesdays to allow regeneration of the bay's ecosystem and to enable crews to perform large maintenance projects; (3) instituting traffic controls and hiring a traffic attendant; (4) restricting all tour vehicles from dropping off visitors at Hanauma Bay (except for brief sightseeing stops in the upper parking lot); (5) building a visitor information center in the upper level of the park; (6) improving park infrastructure — with special concern for sewage and erosion; (7) limiting the type of food used to feed the fish to an approved variety; and (8) implementing other control measures such as hiring a Hanauma Bay park manager, trapping and removing pigeons, monitoring water quality, and developing and implementing new water safety signage. (Travers, 1993, p.8)

Tour operators, however, vigorously opposed the proposed restrictions on tour vehicles. Several tour companies threatened to file a lawsuit against the City, arguing that proposed rules favored residents and those tourists who rented cars. More than half, and perhaps as many as 80 percent, of all tourists visiting Hanauma Bay came by tour bus or vans. (Leong, 1990, p.12). Japanese tourists and tour operators would be particularly hard hit, since most Japanese tourists to Hanauma Bay purchased tours. In early 1990, the Hanauma Bay Users Committee, representing 39 Hawaii and 80 Japanese companies which sold sightseeing and snorkeling/scuba tours to Hanauma Bay proposed industry self-regulation as an alternative to City regulation. Committee members agreed not to use the park and marine reserve on Sundays and major holidays for a six-month period beginning February 18, 1990. While there were noticeably fewer people at the bay when the self-imposed ban first went into effect (Twigg-Smith, 1990, p.A-3), by early summer, the voluntary measures were deemed insufficient to avert further deterioration of

Hanauma Bay (Travers, 1993, p.8). On June 12, 1990, with the support of the Friends of Hanauma Bay — a 250-member grassroots nonprofit support organization formed in 1990 — the City Department of Parks and Recreation implemented the Hanauma Bay-General Plan which included the 8-point Rules and Regulations first proposed in 1989. (Travers, 1993, p.8 and Wilson Okamoto and Associates, 1992, p.2.), except that the Wednesday closure of the park was reduced to half a day.

The 1990 management plan was designed to restrict access to the bay, to educate visitors on the proper use of the bay, and to improve facilities at the bay. Access to the park was restricted by (1) hiring traffic attendants to turn away automobiles at the entrance of the park when the 300 parking stalls were filled and to prevent illegal parking on the shoulders of the highway leading to the park; (2) prohibiting limousines, tour buses and tour vans from discharging passengers at the park except for a 15-minute sightseeing stop at the upper level of the park; and (3) closing the park on Wednesday mornings. The restrictions put in place were designed to favor individual and local resident use of the park over commercial use.

The problems at Hanauma Bay indicated that not only must the use of the park be restricted, it was also important to educate the public on the proper use of the park. As Clawson and Knetsch noted (1966, p.174), "To the extent that people can be taught to behave so that more people can use the same area without loss in quality, the result is the same as if the area had been enlarged." To educate the public on proper behavior at the park, the City Parks Department, the Friends of Hanauma Bay and the University of Hawaii-Manoa Sea Grant Extension Service co-operated to establish the Hanauma Bay Education Program (HBEP) in August 1990. The Sea Grant Extension Service and the City provided the start-up funds while the Friends of Hanauma Bay supplied many of the initial volunteers for the on-site information/education table on the beach. Volunteers gave information, conducted tours, and interacted with visitors to Hanauma Bay. (Travers, 1993, pp.8-9). They also patrolled the beach regularly to pick up trash and offered alternative, appropriate fish food to visitors found feeding inappropriate food (e.g. frozen peas, bread, left-overs from picnics, etc.) to the fish. The City had earlier banned feeding human food to the fish. The staff of HBEP also conducted free outreach presentations to schools and community groups. For FY 1993, the budget for the HBEP totalled nearly \$112,000.

Despite receiving one of 25 national Chevron Conservation Awards (*Honolulu Advertiser*, July 28, 1993, p.A-6), HBEP lacked a permanent funding source. It has had to seek annual appropriations from the State government. Indeed, the City Department of Parks and Recreation was so short of money that it wanted the City to turn over the management of Hanauma Bay and all beach parks on Oahu to the State Government by the year 2000 (Mossman, 1994, p.A-3). The Hanauma Bay Task Force noted that if each visitor to Hanauma Bay contributed just 10 cents toward a fund designated for HBEP, it would generate enough money to run the current program and allow for modest program expansion. (Travers, 1993, p.19).

The Master Plan for Hanauma Bay Nature Park also called for significant facility improvements at Hanauma Bay. (See Wilson Okamoto Associates, 1992) These will require more time to implement. There are plans to build a visitor center on the upper level of the park and to relocate the lower level food concessions to the upper level to reduce the volume of trash on the beach and in the water. Improvements to toilet facilities to prevent sewage and storm runoff and erosion and handle sewage loads have already been initiated.

On October 31, 1994, a smoking ban was put into effect at Hanauma Bay (Wright, 1994, p.A-1). Until then, cigarette butts littered the beach and contaminated the water in the bay. Although violations carry a potential \$25 fine, park manager Alan Hong indicated that park staff and HBEP volunteers have been instructed to advise but not to confront violators. Park attendants have no authority to cite smoking violations and must rely on Honolulu police officers to actually enforce the ban. Honolulu police indicated that they will cite violators "only as a last resort" (Wright, 1994, A-1).

Fish feeding by visitors had significantly increased the stock of fish at Hanauma Bay, particularly the aggressive varieties (Hong, Nov. 1, 1994). As a result, crustaceans and seaweed had disappeared entirely. Given the huge increase in the fish population, it was deemed impractical to ban fish feeding immediately. Instead, the goal was to reduce the incidence of fish feeding eventually to a total ban. Annual underwater surveys of the fish population in the inner reef by divers from the State Department of Land and Natural Resources found that banning the feeding of human food to the fish population has already reduced both the diversity and the volume of fish in the bay (Table 1).

Table 1

Surveys of In-Shore Fish Populations at Hanauma Bay, 1984-1994 (Annual averages)

Dates	No. of Species	No. of Fish/Acre	Pounds of Fish/Acre
Jan 1984-June 1988	66	5,278	2,986
June 1990-June 1994	59	3,373	2,360

Source: State of Hawai'i, Department of Land and Natural Resources, *Statewide Marine Research and Surveys, of Fish and Habitat* (Annual).

Relationship Between Improved Park Management, Visitor Education and Park Protection

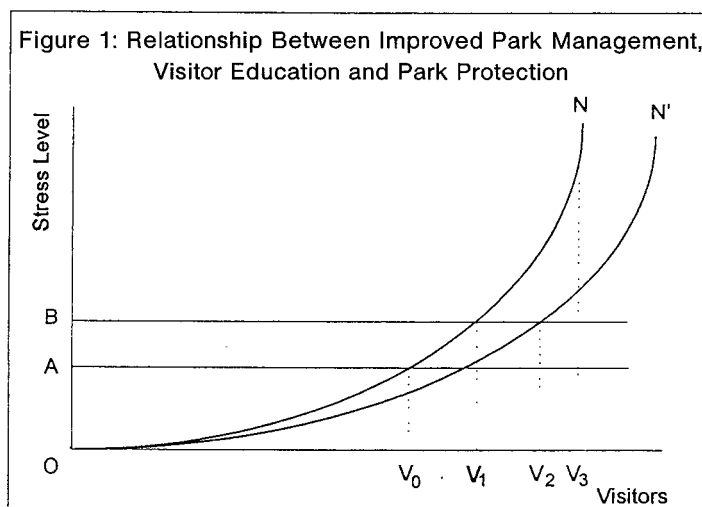


Figure 1, adapted from Dixon, Scura and van't Hof (1993), relates the potential effects of improved park management and visitor education on Hanauma Bay's marine ecosystem. The horizontal axis measures the number of visitors (or visits) at Hanauma Bay, who are the most important determinant of environmental stress on the bay's ecosystem. ON measures the impact of visitors on the bay's ecosystem. "A" is the threshold level at which degradation of the bay's ecosystem becomes readily noticeable in the absence of improved park management practices and visitor education. The number of visitors which the park could accommodate corresponding to A is V_0 . Before the implementation of the 1990 management plan at the bay, the number of visits per year is repre-

sented by V_3 . Access restrictions imposed at the bay were intended to reduce the number of visitors to V_0 or below thereby diminishing the level of environmental stress on the bay's ecosystem.

Implementation of improved management practices such as banning smoking, removing pigeons, improving the sewage system to prevent sewage and washroom runoffs into the bay, and moving the food concession to the upper park level could raise the threshold stress tolerance level to B, thus allowing the park to accommodate more visitors to V_1 . Educating visitors on proper behavior at the park (e.g. don't walk on the reef, put sunscreen lotion on the body at least 20 minutes before entering the water) could further lower the degradation of the bay's ecosystem. Thus, visitor education could shift the line ON to ON'. The combination of improved management practices and visitor education implies that Hanauma Bay could accommodate more visitors — V_2 rather than V_0 — without imposing unacceptable levels of stress on the bay's ecosystem. Consequently, fewer visitors must be denied access to Hanauma Bay — i.e. from V_3 to V_2 instead of V_0 . Figure 1 demonstrates that improved management practices and visitor education are important in increasing the effective carrying capacity of the bay, potentially minimizing economic losses to the tourist industry by allowing more visitors to visit the bay and reducing welfare losses to potential visitors as a result of the access restrictions.

Effectiveness of the 1990 Management Program

The City encountered a number of problems in enforcing the 1990 Hanauma Bay Rules and Regulations. To circumvent the restriction preventing them from dropping off passengers at the park, tour operators bussed their customers to a nearby shopping center and residential neighborhoods and contracted with taxi companies to shuttle passengers to the park. (Wagner, "Taxis, vans..." 1993, p.A-8). To close the loophole, the City implemented a new rule on January 4, 1994 limiting cabs to one passenger drop-off per day and allowing them 15 minutes to wait for a fare out of the park. (Vickers, 1994, p. A-3). The rule was to have been in effect for only one year. Taxis must also abide by the "No Stopping-No Standing" restrictions in force along the highway fronting the park entrance. Honolulu police and taxi-cab investigators from the City Finance Department were expected to help enforce the new taxi restrictions. Restrictions imposed on automobile access meant that during the peak summer months, the entrance to the park is usually

closed to car traffic by 8:25 a.m. when the 300 parking stalls are filled. During the 1994 Veterans Day holiday, which fell during the off-peak tourist season, the park was closed by 11:30 a.m. Additional cars are permitted into the park to replace those leaving the park.

Visitors have responded to the park closings by parking their cars at a scenic lookout a half mile away or in nearby residential neighborhoods and hiking along the steep highway to the park. (Tangonan, 1994, p.A-1 and A-2). This has caused numerous complaints from residents of affected neighborhoods. Park manager Alan Hong estimated that about 500 visitors walk into the park or arrive at the park by moped each day. Many tourists simply switched to the City Bus which was not banned from the park. In response, park officials negotiated with transit officials not to increase the number of buses on the Hanauma Bay route. In sum, while the City had imposed access restrictions making it difficult for potential visitors to visit Hanauma Bay, the restrictions were not seamless. People still found ways to circumvent them.

Nonetheless, the restrictions did significantly reduce the number of visitors at Hanauma Bay Nature Park. Since instituting the management plan, the Hanauma Bay Task Force reported that between 4,000 to 4,500 people visited Hanauma Bay daily — approximately half the former visitor count (Travers, 1993, p.8). Before restrictions went into effect, the comparable daily census at Hanauma Bay was estimated at roughly 8,000.

Shortly after the implementation of the management plan, anecdotal evidence suggested that the park had seen substantial improvement. City Parks Director Walter Ozawa claimed that “The Hanauma Bay Management Plan is a huge success story” (Mariani, 1991, p.A-6). Ozawa noted that more local residents were “revisiting the bay for the first time in a long time,” (Mariani, 1991, p.A-6) although manager Alan Hong conceded (November 1, 1994) that there had been no study done to determine if more local residents were visiting the park. The park appeared to be much cleaner and the water much clearer. (Seto, 1990, p.A-2; and Mariani, 1991, p.A-6). Manager Hong (Status Report, 1994) noted that there appeared to be rejuvenation of coral inside the reef.

The education program was also deemed highly successful. As one HBEP staffer said, “People didn’t realize that walking on the reef caused a problem and that feeding fish leftovers from their picnic could also cause a problem... Once they became aware of

it they wanted to change their behavior.” (Mariani, 1991, p.A-6).

Not everyone agreed that the management plan was a “huge success”. Tour operators were unhappy with the plan because it hurt business. (Mariani, 1991, p.A-6). A survey conducted by Leong (1990, p.36) of 71 tour and dive companies shortly after the implementation of the restrictions found that among the 30 respondents revenue losses ranged from 8 percent to 31 percent. Twenty-two of the businesses indicated that they derived none of their business from Hanauma Bay after the imposition of the restrictions. Tourists, particularly those from Japan, who preferred to purchase Hanauma Bay tour packages were worse off after the implementation of the management plan since those tours were no longer available. Most of the companies responding to Leong’s survey had previously derived more than half of their business from Japanese tourists (Leong, 1990, p.34). Indeed, all the tour operators felt that the restrictions were unfair “for some of the affected parties” (Leong, 1990, p.71).

Admission Fee

The 1990 Management Plan did not include an admission fee at Hanauma Bay. The restrictions imposed at Hanauma Bay to reduce visitations at the park relied strictly on non-price rationing to allocate a scarce resource. Specifically, access was determined on a first-come, first-served basis. This system was socially inefficient because economic rents which otherwise could have been collected via admission fees to fund park programs were instead dissipated by visitors circling East Honolulu in their cars until they can get into the park’s parking lot, or by walking long distances to the park, or by incurring high costs (e.g. hiring a taxi) to circumvent park access restrictions.^{3,4}

Moreover, Honolulu taxpayers were also worse off since the additional expenditures incurred to implement the management plan were not recovered by new revenues. Three commercial concessions had previously provided all the revenues generated at the park. The food concession paid \$32,000 per month to the City. A snorkel equipment rental

3 “Economic rents,” or returns in excess of the total social cost of supplying tourism services, often arise when a travel destination has some market power in tourism. This can arise when the destination has unique natural attractions such as Niagara Falls or Lake Tahoe, market dominance in a tourist activity such as casino gambling in Las Vegas, or advantages conferred by climate or location. Taxes levied on tourist purchases or tourist enterprises are one way to extract rents for the benefit of the general public.

4 Suen (1989), however, demonstrates that when consumers have different time costs and personal valuations, rent dissipation will be reduced. Thus some rents remain to be appropriated at Hanauma Bay.

concession was paying \$43,000 per month in concession fees to the City before the implementation of the management plan; the amount was reduced to \$39,500 per month due to reduced volume of business. The shuttle bus concession brought in an additional \$6,000 monthly to the City. Thus concession revenues summed to nearly \$1 million per year. On the cost side, the lower visitor counts allowed small savings due to less frequent trash collections and lower sewage fees. The additional costs to implement the management plan were approximately \$210,000 a year to cover the park attendants, a park manager, recreation specialist and attendants (Leong, 1994) not including capital expenditures. The total Hanauma Bay annual budget came to about \$750,000 per year excluding capital costs, lifeguards and the Hanauma Bay Education Program (Hong, Nov. 1, 1994). Thus, the new management system produced only costs, not revenues.

A bill proposing both a parking fee and a \$5 admission fee (or \$15 annual pass) to the lower level of Hanauma Bay and ear-marking the money for park improvements was introduced in the City Council in 1993 (Bill 152). With only a single narrow road down to the beach, an admission fee could easily be collected. But the bill was opposed by the City Administration. Director of Parks and Recreation, Walter Ozawa, explained that "tourists would gladly pay the one-time fee to visit the park. However, such a fee would not be fair to our residents, who look forward to regularly visiting the bay for recreation." (Hawaii Kai Sun Press, December 30, 1993-January 5, 1994, p.A-4).

An intercept survey conducted at Hanauma Bay during the Veterans Day holiday weekend (November 11-13, 1994) by students from the University of Hawaii-Manoa undergraduate environmental economics class asked 301 Hanauma Bay visitors if they would be willing to pay the proposed \$5 single entry admission fee. The survey found that a \$5 admission charge would deter some tourists and residents from visiting Hanauma Bay. However, Hawaii residents were less willing to pay the proposed \$5 admission fee than non-residents (Mak and Moncur, 1995).⁵ The survey further revealed that tourists preferred to pay an admission fee to the first-come, first-served sys-

5 When asked how much they would be willing to pay to visit Hanauma Bay, non-residents' responses averaged \$4.19 per person per day; residents, \$2.27. With no admission or parking fees in place at the time of the survey, these numbers imply consumer surplus of at least the same amounts. By comparison, data on the 470,786 non-resident visitors (table 4) imply willingness to pay of at least \$4.39. Prior to the imposition of the admission fee, between 4,000-4,500 people visited Hanauma Bay daily, with a lower bound estimate of 1.5 million per year. Assuming that 13% were residents, the above willingness-to-pay estimates imply aggregate annual consumer surplus (or economic rents) of at least \$6 million per year.

tem while the opposite was true of residents.

Clarke and Ng (1993) have shown that in the presence of congestion externalities residents would be better off even though they also have to pay an admission fee provided that total revenues generated from the fee are assigned to them. Without the fee, residents would be worse off as they would enjoy less consumer surplus with increased tourist use (and less resident use) of Hanauma Bay, but they would receive no compensating revenues. Theoretical proof notwithstanding, the Hanauma Bay survey revealed why politicians are often reluctant to levy efficiency enhancing user fees in publicly owned natural recreation areas – too many of their constituents don't want to pay!

Ordinance No.95-36

Nonetheless, in May of 1995, the Honolulu City Council passed an ordinance (Ordinance No.95-36) by a 6-3 vote “to assess fees and charges for admission to Hanauma Bay Nature Park.” The ordinance levied an admission fee of \$5 on each non-resident tourist 13 years and older to go down to the beach. Local residents who were able to produce local identification were exempt from the fee. Fees were also assessed on commercial vehicles and taxis dropping off passengers for brief (15 minute) sightseeing stops at the upper lookout. Vehicles with seating capacities of 1-7 passengers (category 1) were assessed \$5 per entry; \$15 was levied on vehicles with 8-25 passenger seating capacity (category 2) and \$35 on vehicles with 26 passengers or higher seating capacity (category 3).

Why did the City Administration reverse its previous stance against user fees at Hanauma Bay? First, elections brought in a new mayor in 1995 and thus a new city administration. But more importantly, after four consecutive years of economic stagnation in Hawaii which produced falling property values and property tax revenues, the new administration was pressed to find new revenue sources to meet an expected \$50 million budget shortfall (Harris, 1996, p.A-18). Rather than raising property tax rates, the Administration proposed to raise existing user fees (e.g. parking fees, green fees at municipal golf courses, and entry fees at the zoo and botanical gardens) and to impose new user fees on some City services (e.g. school childrens' summer fun program and Hanauma Bay). Thus, the decision to levy an admission fee at Hanauma Bay was not driven by efficiency considerations but solely by budgetary considerations (Hong, February 27,

1996)

Effects of User Fees at Hanauma Bay

User fees at Hanauma Bay were collected beginning July 1, 1995 and as expected were prolific revenue generators. For the first six months, fees generated over \$2.3 million (Table 2). The \$5 per person entry fee on non-resident adults contributed nearly 90% of the total.

Table 2
Hanauma Bay User Fees: July-December, 1995

Month	Admission Fees	Commercial Vehicle Fees	Total Fees
July	\$400,940	\$59,195	\$460,135
August	436,765	57,405	494,170
September	360,475	42,020	402,495
October	303,865	35,380	339,245
November	237,239	30,305	268,535
December	328,595	38,205	366,800
Total	\$2,068,870	\$262,510	\$2,331,380

Source: City and County of Honolulu, 1995.

Did the admission fee reduce the number of visits to Hanauma Bay? Manager Hong concluded that there was no decrease in the number of visits as a result of the admission fee (Yoshishige, 1995, p.A-2), implying that demand was zero elastic with respect to price. Evidence to test the assertion is sketchy because no regular daily visitor counts were taken before the assessment of the admission fee. The Parks Department did tally the number of visitors on July 4th in 1993 and again on the same day in 1994 between the hours of 8 a.m. to 4 p.m. There were 4,392 visitors in 1993 and 4,592 in 1994 (Hong, July 26, 1994). By contrast, the total number of visitors recorded for the entire day on July 4, 1995 was 4,037 (City and County of Honolulu, July, 1995), or a decrease of about 12% from the previous year. Table 3 shows that the peak traffic came in August, while October had the fewest (except for November when the park was closed five

days for road repair), with an average of 3,177 (=568,673 visitors/179 days). If the average daily count without the admission fee was between 4,000 and 4,500, as reported by the Hanauma Bay Task Force (Travers, 1993, p.8), then the entry fee appears to have helped turn away sizable numbers of visitors. Even so the \$5 per person admission fee was significantly below the revenue maximizing fee, and a large pool of rents remains to be appropriated. The fee structure was reinforced by a continuation of the 1990 Management Plan. Cars were still being turned away when the parking lot was full, and tour bus and taxi companies were still not allowed to bring passengers to the park other than for a brief sightseeing stop at the upper lookout.⁶

Table 3
Hanauma Bay Visitor Arrivals, July-December, 1995

Month	Number of Visitors	Visitors per Day
July	122,122	3,939
August	130,607	4,213
September	90,857	3,029
October	77,036	2,485
November*	61,036	2,441
December	87,015	2,807
Total	568,673	3,177**

* Open only 25 days. ** 568,673/179days

Source: City and County of Honolulu, 1995.

The nonresident admission fee was never designed to encourage more local residents to visit Hanauma Bay even though it was one of the goals of the 1990 Management Plan. If fees on nonresidents reduced the number of tourists at Hanauma Bay, one would expect to see more local residents visiting the bay as a result of eased access. Prior to the imposition of admission fees, residents comprised less than 15% of Hanauma Bay's visitors. Table 4 shows that right after the fee was imposed the share of resident visitors at Hanauma Bay rose sharply but then declined thereafter. The reason for the relative de-

⁶ Although there appears to be extensive violation of the rule by taxi operators (Hong, February 27, 1996).

cline in resident visits remains unclear.

Table 4
Hanauma Bay Visitors by Residence, July-December, 1995

Month	Nonresidents	Percent of Total	Residents	Percent of Total
July	95,986	78.6	26,136	21.4
August	107,532	82.3	23,075	17.7
September	76,611	84.3	14,246	15.7
October	64,646	83.9	12,390	16.1
November*	51,600	84.5	9,436	15.5
December	74,411	85.5	12,604	14.5
Total	470,786	82.8	97,887	17.2

*Open only 25 days

Source: City and County of Honolulu, 1995.

Opposition to Ordinance No. 95-36

When the fee structure was put in place, park management kept a log book at the park to record visitor complaints. During the first three months eight non-residents registered complaints in the log book and only one objected to paying the admission charge. Another suggested that the fee should include a ride in the trolley car (Iida, 1995, p.A-7). Despite the infrequency of visitor complaints, efforts were made to change Ordinance No. 95-36 at the City Council almost immediately after it went into effect. In the same month the City Council introduced Bill 78 which proposed to make several changes to the admission fee structure at Hanauma Bay. One of the changes was to charge residents, 13 years of age and over, \$1 fee per person or an annual pass for \$3. The tourist industry argued for a uniform fee for residents and tourists saying that it was unfair to charge tourists more than residents (Croot, 1995, p. A-5). The Mayor, who strongly opposed a user fee for residents, threatened to veto it, arguing that "Residents have paid and continue to pay their fair share for the care and maintenance of this valuable recreational resource through property taxes," (Harris, July 31, 1995). Four of five committee mem-

bers on the Council's Budget Committee were "adamantly opposed" to forcing residents to pay admission (Yoshishige, 1995a, p. A-1). The proposal failed to pass.

Having failed to change it, freshman Council member Mufi Hannemann led an effort to rescind Ordinance No. 95-36, arguing that the fee structure was "flawed from the start" (Yoshishige, 1995b). Opponents of the ordinance gave several reasons for their action: (Kresnak, 1995a, p. A-1; Hong, February 27, 1996, and Yoshishige, 1996, A-1 and A-2.):

First, Council members did not object to a user fee at Hanauma Bay, nor were they setting a precedent for other beach parks since Hanauma Bay Nature Park is not just another beach park, it is a nature preserve. Hanauma Bay was designated a Marine Life Conservation District so that visitors could interact with marine life, not to sunbathe or swim there. Indeed, an argument in favor of levying a visitor admission fee at Hanauma Bay was to induce swimmers to go Oahu's numerous free beach parks.⁷ Council members were concerned that charging visitors but not residents gives Hawaii a bad image and could hurt the local tourist industry.

Second, some Council members were concerned that revenues from the individual and commercial vehicle user fees were diverted into the General Fund rather than for the exclusive use of Hanauma Bay. As the user fees were expected to generate more than \$4 million per year, while operating expenses for 1995 (excluding capital casts) totalled only \$1.2 million (Hong, February 27, 1996), the user fees were determined to be a new tax and thus illegal, since the County government cannot levy a new tax without first obtaining taxing authority from the State government.⁸ Legality aside, one Council member objected to using Hanauma Bay as a "cash cow" (Yoshishige, 1995c, p. A-1), in effect suggesting that rents generated at the publicly owned nature preserve should not be extracted by the government for public use⁹; rather they should be left to be appropri-

7 An intercept survey of 301 visitors at Hanauma Bay on the Veterans Day holiday in 1994 found that 31.9% of visitors did not participate in snorkeling or diving activities at the bay (Mak and Moncur, 1995).

8 According to Hong (February 27, 1996) Council members were informed in March by the City Budget Director that the money was to be set aside in a special account in the General Fund to maintain Hanauma Bay as well as parks in District 5, which stretches from Waikiki to Sandy Beach. The area includes Ala Moana Park, Kuhio Beach Park (i.e., Waikiki) and Kapiolani Park. These parks, though not adjacent to Hanauma Bay Nature Park, are most heavily used by tourists. Council members still felt that spending the money from Hanauma Bay outside its immediate environs constituted unauthorized taxation. In these discussions, it is curious that no mention was made of the fact that the City was collecting nearly \$1 million annually in concession revenues at Hanauma Bay for the General Fund.

9 Copeland (1989) and Bird (1992) would argue that these rents should be extracted for the public good.

ated by private tour companies, or else be dissipated by tourists in costly efforts to visit the park.

Third, Concil members noted that the Administration failed to obtain a Special Management Area minor permit from the City Department of Land Utilization for the ticket booths set up to collect the admission fee.¹⁰

Fourth, Hanneman revealed that lawyers for Bishop Estate, which had deeded the property to the City, had written a letter to him suggesting that City may be in violation of the original deed agreement which required the land to remain non-commercial, public, and zoned conservation. By collecting more money than was required to maintain Hanauma Bay Nature Park, the Estate suggested that the City was operating the park as a commercial attraction and therefore in violation of the original deed areement (Hong, February 27, 1996).¹¹

On December 8, 1995, by an 8-1 margin, the same County Council which had voted for Ordinance No. 95-36 less than seven months ago voted to rescind it.¹² The mayor vetoed the Council's vote. The Council, in turn, overrode the mayor's veto on January 8, 1996 and the City's authority to collect user fees at Hanauma Bay ended on that date.

Why Did the City Council Reverse Its Decision?

Clearly it was not due to overwhelming opposition from their constituents. Moreover, all the objections to the ordinance raised by Council members in the previous section could have been resolve through negotiation between the council and the mayor, as they were eventually. Columnist Robert Rees (1996, p. 5) observed that the repeal of Ordinance No. 95-36 was the result of "industrial-strength lobbying by Trans Hawaiian and other tour operators. It was Network Media, a company that caters to tourists, that came up with the charade that the fees were racist. It dosen't matter from where we come or

10 The Administration explained that since the booths were not permanent structures but script vending booths on wheels like those used by the local amusement company, no permit was required. Nonetheless a "minor permit" was subsequently obtained in November. (Hong, February 27, 1996.) However, Councilman Hannemann questioned the legality of the "minor permit" issued for two ticket booths, utility poles and wiring at the bay. (Yoshishige, 1996, p. A-2).

11 The Administration offered to redirect excess revenues at Hanauma Bay from the maintenance of parks in District 5 and instead use them in the parks and a shooting range on lands adjacent to Hanauma Bay that were part of the original deed to the City. This alternative was acceptable to the Estate. (Hong, February 27, 1996.)

12 The lone dissenter said the Council should welcome the revenues and allow the city to collect the money while debating the merits of the user fees (Yoshishige, 1995c, p.A-1).

the color of our skin--don't treat people differently, said the company."

That opposition to Ordinance No. 5-36 should come from the tourist industry is hardly surprising. The large pool of rents available at Hanauma Bay provides a strong incentive for rent-seeking. To the extent that user fees at Hanauma Bay substantially reduce the pool of rents available for appropriation, industry officials could be expected to lobby to repeal them. With tourism accounting for nearly 25 percent of Hawaii's gross domestic product (World Travel and Tourism Council, 1996), the well organized industry constitutes a formidable political interest group that cannot be easily ignored by lawmakers.

The strongest opposition to Ordinance No. 95-36 came from tour and taxi companies which wanted to repeal the fees levied on commercial vehicles. They argued that since tour and van bus customers do not go down to the beach to swim or snorkel, they should not be charged a fee. Park officials, on the other hand, noted that tour and taxi companies operating vehicles in and out of the park benefit from recent improvements to the access road and the scenic look-out area and the construction of bathroom facilities in the upper park level specifically for their customers, they should help pay for these improvements. Chairman of the Council Budget Committee remarked that "The transportation folks... made a convincing case." (Yoshishige, 1995, p. A-2.)

If user fees on commercial vehicles were repealed, the biggest gainers would be taxi operators. In the first six months during which user fees were assessed on commercial vehicles, taxis comprised 91.4 percent of the 40,584 commercial vehicles entering Hanauma Bay, and 70.6 percent of the \$262,510 in fees collected from commercial vehicles (City and County of Honolulu, 1995). Compared to the amounts collected from tourists going down to the beach, revenues from commercial vehicles were modest, comprising only 11% of total user fees from both sources.

Unlike taxi trips in town, taxi trips from Waikiki to Hanauma Bay travel longer distances and at higher average speeds and hence operate at lower operating costs per passenger mile. In Honolulu taxi fares are set by the City Council, which sets a single fare structure for all trips in Honolulu. Because in-town trips are costlier per passenger mile, the City Council sets a uniform rate that covers the higher cost of in-town taxi trips (LaCroix, Mak and Miklius, 1986.) As a result taxi trips between Waikiki and Hanauma Bay generate economic rents. Taxi operators, however, cannot pass on the com-

mercial vehicle user fees at Hanauma Bay to taxi passengers. The effect of the \$5 per vehicle fee reassigns rents generated on the Hanauma Bay route—which we estimate at \$370,000 per year—¹³from taxi operators to the government. Repeal of the fee would return these rents to taxi operators.

Voluntary Contribution

Repeal of Ordinance No. 95–36 prompted the mayor to post signs asking visitors for donations of \$5 per person.¹⁴ The solicitation was always regarded as a temporary measure to generate revenues until an agreement could be reached with the City Council to pass a new ordinance with a politically acceptable fee structure. Table 5 shows that contributions were about 27 percent of what would have been collected under the old ordinance. Individual contributions fell from \$1.34 per person in January to \$1.10 in February. The declining trend of contributions is also evident in Figure 2.¹⁵ In addition, the 12,464 commercial vehicles that entered the park between January 13 and February 29 would have paid admission fees of \$118,970 under the old ordinance (City and County of Honolulu, 1996).

Table 5
Actual Contributions Received and Potential Non-Resident Fee Collections Under
Ordinance 95–36, January & February 1996

	Number of Visitors	Contributions Received	Potential Collections under old ordinance*
January 13–31			
Total	57,036	\$57,586	—
Non-resident adults	42,813	—	\$214,065
February 1–29			
Total	80,685	\$88,657	—
Non-resident adults	62,547	—	\$312,735

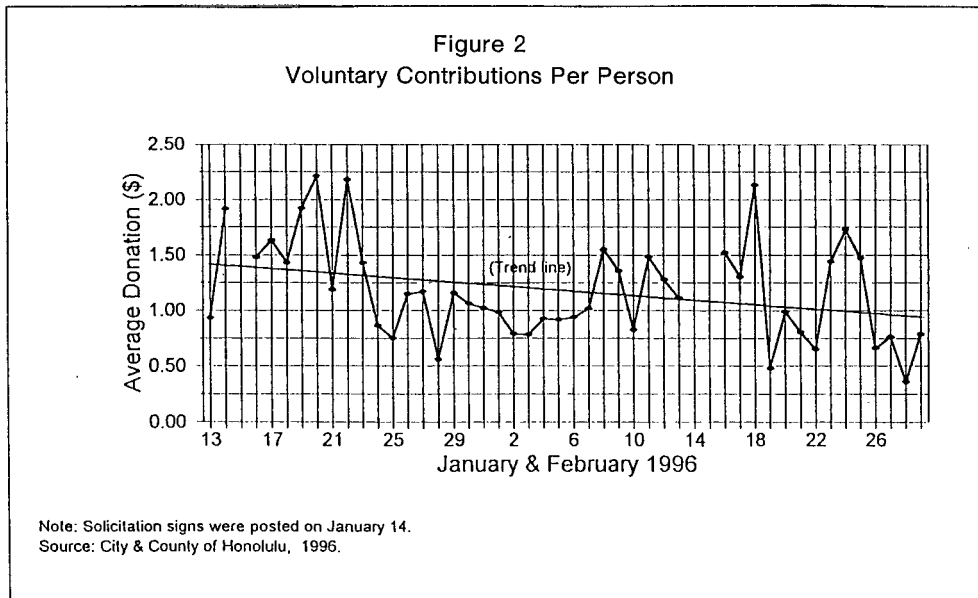
13 The figure is computed at twice the amount actually collected from category 1 commercial vehicles between July 1 and December 31, 1995.

14 The signs simply state: "Suggested donation \$5 per person. Your gift will help support Hanauma Bay Nature Preserve."

15 Regressing daily contributions per person against time and a dummy variable for days closed yields the trend line $CONTRIB = 0.237 - 0.010t + 1.192D$. Thus the average contribution appears to have declined by about a penny per day over the January/February period.

* Estimated number of non-resident adult visitors multiplied by \$5 per person under ordinance 95-36. For the period of voluntary contributions, visitor counts were not separately recorded by adults and minors. Our estimates of adult visits are 12.1% (the average under ordinance 95-36) of total non-resident visitors. Contributions were accepted for 18 days in January and 27 days in February.

Source: City and County of Honolulu, 1996



Bill No. 1 (1996)

After the repeal of Ordinance 95-36, Council member Hannemann promised to introduce a new bill with a fee structure that would be "fair, equitable, and able to withstand the scrutiny of a legal challenge." (Hannemann, 1996, p.A-7). In January 1996, he introduced Bill No.1 (1996) containing the following features. The bill eliminates the fee on commercial vehicles and lowers the admission fee from \$5 to \$3 per person for nonresidents 13 years of age and older to enter the lower preserve. Although Hannemann had earlier reported that 5 of the 9 Council members favored charging local residents as well as tourists a fee to visit the bay (Kresnak, 1995, p. A-1), Bill No. 1 does not include a user fee on residents.¹⁶ Instead, it proposes a flat \$1 parking fee on all vehicles

¹⁶ Overturning the expected mayoral veto would have required six votes.

(including those owned by residents) staying 30 minutes or longer. Native Hawaiians entering the park are also exempted under Bill No. 1. Revenues collected from the user fees are to be allocated to a special fund known as the Hanauma Bay Preserve fund to be used first, for the operation, maintenance and improvement of Hanauma Bay; second, for educational and orientation programs for visitors to the preserve; third, for a carrying capacity study of the preserve and for other studies relating to the environmental condition of the preserve; and fourth for the operation, maintenance and improvement of the Koko Head district park, Maunalua Bay beach park, Koko Head rifle range, Sandy Beach Park, and the Koko Crater botanical garden—i. e, lands which were included in the original Bishop Estate deed to the City. The bill passed in April, 1996.

Revenue Implications

The impact of Bill No. 1 on City revenues can be estimated by applying the new fee structure to the visitor traffic between July 1 and December 31, 1995 when the old ordinance was in effect. The repeal of fees on commercial vehicles would have meant a revenue loss of \$262,510. The reduction in the admission fee from \$5 to \$3 per nonresident adult would have reduced revenues by an additional \$827,548, assuming no change in the number of tourists. But there would be a revenue gain from the new \$1 per vehicle parking fee. During this six month period there were 568,673 visitors to Hanauma Bay; at 3.1 passengers per vehicle (Hong, November 1, 1994), parking fees would have totaled \$183,443. When the three items are summed, the new fee structure translates into an aggregate revenue loss of \$906,615 or roughly \$1. 8 million for an entire year. Under the old fee structure, total revenues would have been nearly \$4. 7 compared to 29 million million under the new fee structure. The difference in net revenues generated between the two would be even larger because the City would incur additional labor and capital costs to collect the parking fee under the new ordinance.

Political Equilibrium

Table 6 summarizes the differences between the two ordinances:

Table 6
Comparison of Ordinance 95-36 and Bill No. 1 (1996)

Feature	Ordinance 95-36	Bill No. 1 (1996)
Admission Fee	\$5 per nonresident adult over 12; none on residents	\$3 per nonresident over 12; none on residents
Commercial vehicle fees	\$5-\$35 per vehicle	none
Parking Fee	none	\$1 per car
Estimated Annual Revenue	\$4. 6+ million	\$2. 9 million minus cost of parking fee collection
Spending restrictions	Revenues go into General Fund but spent on District 5 park maintenance	Revenues go into special fund, spent for Hanauma Bay research, education and on other Bishop Estate deeded lands

Who are the winners and the losers as a result of the change? The lower admission fee clearly benefits tourists and the tourist industry as the reduction in the fee leaves a larger pool of rents with them. While the tourist industry and five of the nine Council members also wanted an admission fee on local residents to increase fairness, there was not sufficient political support to include it in the final bill. But the introduction of a new parking fee to be paid by both tourists and residents restores a token improvement in equity. We estimate the parking fee works out to 43 cents per resident over the age of 12 had it been imposed between July 1 and December 31, 1995. While residents might have vigorously opposed a \$1 per person admission fee to Hanauma Bay, (Tangonan, 1993, p. A-9 and Mak and Moncur, 1995, p. 55) they might have fewer objections to a nominal parking fee. It would have been difficult for lawmakers to explain to their constituents that on one hand the fee structure already raised too much money and on the other hand that residents should pay more. Residents appear to be losers but were able to fend off efforts to impose a user fee on them in Bill No. 1. The parking fee translates

into an additional 38 cents (on average) per nonresident adult visiting Hanauma Bay, bringing the total charge to \$3.38 (= \$3 admission fee + \$.38 parking fee), but still less than the \$5 fee under the old ordinance. Native Hawaiian (whether residing in Hawaii or abroad) receive special treatment under Bill No. 1 as they are exempt from paying admission and parking fees as long as they enter Hanauma Bay to "exercise their traditional and customary rights for subsistence, cultural and religious purposes". Tour and taxi companies emerge as winners because the commercial vehicle fee has been eliminated under the new ordinance. Environmentalists and Friends of Hanauma Bay also are winners since Bill No. 1 provides money for educational and orientation programs and mandates carrying (and other) studies of the preserve's ecosystem. The Hanauma Bay Education Program may finally find a permanent source of funding.

The fee structure under the new ordinance will continue to generate more revenues than are likely to be spent on maintenance at Hanauma Bay under existing expenditure policies, a fact which brought charges of illegal taxation and potential lawsuits against the Administration. The mayor and Honolulu taxpayers appear to be winners here, although revenues collected will now go into a special fund rather than into the General Fund. The expenditure restrictions imposed by the new ordinance are sufficiently flexible to allow the County's budget director to shuffle bookkeeping entries rather than to substantially redirect the county's expenditure priorities. Bill No. 1, by directing excess revenues to be spent on its land grants adjacent to Hanauma Bay, also satisfies the concerns of Bishop Estate and removes another potential lawsuit.

The passage of Bill No. 1 demonstrates the powerful influence of a well organized tourist industry in Hawaii. Tourists and the tourist industry are the biggest gainers, because it reassigns to them the economic rents previously collected via user fees for the public treasury. We estimate the aggregate value of rents returned at nearly \$1.9 million per year.¹⁷ To the extent that some of the firms in the tourist industry are also nonresident owned, the welfare of residents is further reduced (see Gray, 1974). Hanauma Bay illustrates what can happen when political interest groups compete for property rights (Libecap, 1989, pp.16-17.) Because property rights are determined

17 It is equal to twice the sum of the values of reduced admissions fees (\$827,548) and the elimination of commercial vehicle fees (\$262,510) minus the additional parking fees paid by nonresident tourists (\$151,866), July-December, 1995.

through the political process, politicians are forced to balance competing interest group demands. In the end, no group gets all it wants. Nonetheless Bill No. 1 achieves political equilibrium (i. e. it is politically acceptable) while Ordinance 95-36 did not.

In the long run, lower admission fees could mean more visitors and greater environmental degradation and congestion at Hanauma Bay so that both residents and non-residents are ultimate losers. Given the highly inelastic demand for Hanauma Bay visits, however, the number of additional visitors will be small.

Conclusion

Lawmakers can choose among numerous management tools to protect endangered natural recreational resources. Their actual choices depend on their evaluations of trade-offs among competing objectives. Lawmakers (a) desire a quality environment (b) collect rents for the benefit of the general public, and (c) achieve political equilibrium. Protecting the environment and extracting rents for the benefit of the general public (i.e. achieving efficiency) often come in sharp conflict with achieving political equilibrium. The final outcome is often a second best world. Hanauma Bay provides an excellent example of why it can be so difficult for lawmakers to legislate efficient levels of user fees in congested and endangered public parks and recreational areas; efficiency can be attained only if it is also consistent with attaining political equilibrium.

In the case of unique recreational resources like Hanauma Bay, where demand for visits is highly inelastic, it seems unlikely that the political process would allow fees to be raised to levels where they effectively control the number of visitors. Still, entry fees can be an efficient means of raising revenue to park services.¹⁸ Clawson and Knetsch (1996, pp. 284-285) observed that establishing and administering user fees may be difficult but not impossible. They offer the following guiding principles for the levying of recreational user charges which we believe remain as sound today as when they were first proposed 30 years ago.

1. Avoid user charges that are administratively unworkable or unsound.
2. Define carefully the purpose to be achieved by the collection of user fees; is it to raise revenue or to increase economic efficiency?

18 See Knapman and Stoeckl (1995) for an Australian example.

3. Choose a method of levying charges which is appropriate to the goal.
4. Tell the recreational users why a charge is being imposed and what will be done with the money collected.
5. Consider the equity effects carefully; try to anticipate the side effects and eliminate the most undesirable ones.

Had these principles been followed in Hawaii, resources expended in costly rent seeking to repeal Ordinance No. 95-36 might have been allocated to more socially productive uses.

References

- Anderson, Terry L. and Donald R. Leal. *Free Market Environmentalism* (Boulder: Westview Press, 1991).
- Bird, Richard. "Taxing Tourism in Developing Countries," *World Development*, vol.20, no.8 (1992), pp. 1145-58.
- City and County of Honolulu. *Daily Attendance Summary for the Months of July, 1995-February, 1996* (Honolulu: Department: of Parks and Recreation, 1995&1996).
- "City does not support bill to charge bay fees," *Hawaii Kai Sun Press*, Dec 30, 1993-Jan 5, 1994, p.A-4.
- Clarke, Harry R. and Yew-Kwang Ng. "Tourism, Economic Welfare and Efficient Pricing," *Annals of Tourism Research*, vol.20, no.4 (1993), pp.613-632.
- Clawson, Marion and Jack L. Knetsch, *Economics of Outdoor Recreation* (Baltimore: The Johns Hopkins Press, 1966).
- Copeland, Brian. *Taxing Tourists: Optimal Commodity Taxation and Public Goods Provision in the Presence of International Tourism*, unpublished paper (Vancouver, B.C.: University of British Columbia, November, 1989).
- Croot, D. "Council panel backs \$1 Hanauma Bay fee," *Honolulu Star Bulletin*, July 19, 1995, p.A-5.
- Dixon, John A., Louise F. Scura and Tom van't Hof. "Meeting Ecological and Economic Goals: Marine Parks in the Caribbean," *Ambio*, XXII, No.2-3, (May, 1993), pp.117-125.
- Dixon, John A. and Paul B. Sherman. *Economics of Protected Areas* (Washington, D. C.: Island Press, 1990).

- Forsyth, Peter, Larry Dwyer and Harry Clarke, "Problems in use of economic instruments to reduce adverse environmental impacts of tourism," *Tourism Economics*, 1(3) (September 1995), pp.265-282.
- Gray, H. Peter. "Toward an Economic Analysis of Tourism Policy," *Social and Economic Studies*, XXIII (1974), pp. 386-397.
- Hannemann, M. "New bill pending on Hanauma Bay," *Honolulu Advertiser*, Jan. 8, 1996, p.A-7.
- Harris, Jeremy. Letter to James E.T. Moncur, July 31, 1995.
- Harris, Jeremy. "Harris: City faces smaller budget, more cops, special-needs housing," *Honolulu Advertiser*, January 12, 1996, p.A-18.
- Hasting, Barbara. "The spoiling of Hanauma Bay," *Honolulu Star Bulletin*, September 3, 1989, pp.A-1 and A-4.
- Hong, Alan. "Status Report on Hanauma Bay," Presented to the Honolulu City Council, July 26, 1994.
- Hong, Alan. Presentation to the Environmental Economics class, University of Hawaii-Manoa, November 1, 1994.
- Hong, Alan. Personal Interview with James Mak, February 27, 1996.
- Iida, Shirley. "Hanauma: Tourists have paid \$1.2 million in fees to visit popular bay," *Hawaii Kai Sun Press*, Week of October 5-11, 1995, pp.A-1 and A-7.
- King, Liysa and Don King. *Hanauma Bay, An Island Treasure* (Honolulu: Island Heritage Publishing, 1993).
- Knapman, Bruce and Natalie Stoeckl, "Recreational user fees: an Australian empirical investigation," *Tourism Economics*, vol.1, no.1 (March 1995), pp.5-15.
- Kresnak, William. "Mayor vows Hanauma veto," *Honolulu Advertiser*, December 12, 1995, p.A-1.
- Kresnak, William. "City may raise fees if it loses Hanauma's," *Honolulu Advertiser*, Dec. 13, 1995a, P.A-1.
- LaCroix, Summer, James Mak and Walter Miklius, "Airport taxi service regulation: An analysis of an exclusive contract," *Transportation*, 13(1986), pp.145-161.
- Leong, Karen. *Interaction Between Public Sector and Private Sector Groups in the Implementation of Recreational Management Policies, Hanauma Bay: A Case Study* (Honolulu: University of Hawaii-Manoa, M. A. thesis, December, 1990).

- Leong, Paul. Office of the Chief Budget Officer, City and County of Honolulu, personal communication. December 7, 1994.
- Libecap, Gary D. , *Contracting for Property Rights*, (Cambridge: Cambridge University Press, 1989)
- Mak, James and James E.T. Moncur, "Sustainable Tourism Development: Managing Hawaii's 'Unique' Tourisric Resource-Hanauma Bay, " *Journal of Travel Research*, (Spring, 1995), pp.51-57.
- Mariani, Jeanne. "City has a winner at Hanauma Bay," *Honolulu Advertiser*, October 11, 1991, pp.A-3 and A-6.
- Mossman, Bill. "Parks department wants city to give up control of beaches," *Hawaii Kai Sun Press*, September 1-7, 1994, p.A-3.
- Rees, Robert M. "Punchout on Punchbowl," *Honolulu Weekly*, vol.6, no.1, January 3, 1996, p.5.
- Seto, Benjamin. "New rules help Hanauma Bay," *Honolulu Star Bulletin*, September 24, 1990, p.A-2.
- State of Hawaii. *Data Book* (Honolulu: Department of Business, Economic Development and Tourism, annual.)
- State of Hawaii, *Statewide Marine Research and Surveys, Survey of Fish and Habitat*, Project No.F-17-R-18 (Honolulu: Department of Land and Natural Resources, annual.)
- Suen, Wing, "Rationing and Rent Dissipation in the Presence of Heterogeneous Individuals," *Journal of Political Economy*, 97(6) (December, 1989), pp. 1384-1398.
- Tangonan, Shannon. "Folks keep on truckin' to Hanauma even when lot full," *Honolulu Advertiser*, January 6, 1994, p.A-1.
- Tangonan, Shannon. "Some residents say no way to Hanauma Bay fee plan," *Honolulu Advertiser*, October 1, 1993, p.A-9.
- Travers, Dorian. *Hanauma Bay Task Force, Final Report Submitted to the Eighteenth Legislature, State of Hawaii* (Honolulu: University of Hawaii at Manoa, Sea Grant Extension Service, December, 1993).
- Twigg-Smith, Desmond. "More sand seen at bay," *Honolulu Advertiser*, February 19, 1990, p.A-3.
- U. S. Advisory Commission on Intergovernmental Relations (ACIR) *Local Revenue Diversification, User Charges*, SR6 (Washington D. C.: ACIR, October, 1987).

- Vickers, Melissa. "Only one cab drop-off per day to Hanauma," *Honolulu Star Bulletin*, Jan. 5, 1994, p.A-3.
- Wagner, Peter. "Hanauma Bay, Visitors threaten the bay's fragile treasure," *Honolulu Star Bulletin*, July 30, 1993, pp.A-1 and A-8.
- Wagner, Peter. "Taxis, vans bypass bay's drop-off law," *Honolulu Star Bulletin*, July 30, 1993, pp.A-1 and A-8.
- Wilson Okamoto and Associates, Inc. *Hanauma Bay Beach Park Site Development Plan*. (Honolulu: City and Country of Honolulu, November, 1977).
- Wilson Okamoto and Associates, Inc. *Hanauma Bay Natvre Park Master Plan*, (Honolulu: City and County of Honolulu, May, 1992).
- World Travel and Tourism Council (WTTC), *State of Hawaii Travel & Tourism, A New Economic Perspective*, (New York: WTTC, 1996).
- Wright, Walter, "Hanauma puffers outlawed, unless you're a blowfish," *Honolulu Advertiser*, November 2, 1994, p.A-1.
- Yoshishige, Jon, "Hanauma Bay fee real moneymaker; visitors not put off", *Honolulu Advertiser*, September 28, 1995, p.A-2.
- Yoshishige, Jon. "Hanauma bill: residents in free", *Honolulu Advertiser*, September 28, 1995a, p.A-1.
- Yoshishige, Jon. "Council bill would end bills at Hanauma, " *Honolulu Advertiser*, October 12, 1995b, p.A-1.
- Yoshishige, Jon. "City Council repeals Hanauma Bay fees, " *Honolulu Advertiser*, December 7, 1995c, p.A-1.
- Yoshishige, Jon. "New Hanauma fee structure to be offered," *Honolulu Advertiser*, January 9, 1996, pp.A-1 and A-2.