

Linking Community Programs in Environment to Programs in Population: Towards Sustainable Communities that Sustain Sanctuaries

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Introduction

THROUGHOUT THE WORLD, GROWING HUMAN POPULATIONS live at the edges, and often within the borders, of ecosystem reserves and wildlife sanctuaries. The futures of humans and sanctuaries are inseparable—only when these populations live as environmentally sustainable communities will ecosystems, habitats, and species within nearby reserves be ensured their survival.

In developing countries, these communities have traditionally depended for their sustenance and livelihood on the natural resources that exist within sanctuary borders, and which those communities often regarded as their common property resources (CPRs). In many cases, as these communities have grown, their increasing needs for fuel, fodder, and cultivable land, often augmented by urban commercial demand, have unalterably modified habitats and wildlife populations (Harrison 1992, 1993, 1994). Sanctuary ecosystems within developing countries have suffered from a combination of factors, among them: insufficient financial support provided by national governments to protect park resources. Few successful initiatives that encourage managed use and protection by local people have thus far emerged (Hannah 1992, Wells and Brandon 1992).

In the developed world, a century of confrontation and litigation with potential users of sanctuary resources has institutionalized norms of preservation and appropriate use within park boundaries. Today protected ecosystems in developed countries face their greatest threats

from changes in the quality and quantity of regional CPRs upon which they depend, but that circulate outside their boundaries (Strom 1992, 1993): namely, depletion of water supplies and degradation of the quality of both water and air. Much of the impact upon these CPRs is driven by an increase in regional human settlement (principally immigration) in the form of urban growth and suburban sprawl.

Population matters. In fact, local environmental conservation efforts have no long-term significance unless both the growth of human population and their unsustainable patterns of resource use eventually cease. The discordant relationship between high population density and environmental sustainability arises from two major sources: population effects on the scale of the economy and on the institutions needed to sustainably manage CPRs. "Economic scale" is the rate at which resources are fed through the economy (Daly 1991)—the throughput level, the rate of consumption of resources. If a community desires to sustain itself, it must ultimately arrive at a scale sufficiently large to provide an "adequate" standard of living to all, yet sufficiently small to

permit environmentally sustainable management (zero net consumption of its natural capital). The larger the population size, the less each person can consume before reaching a non-sustainable scale. Second, the environment must be managed sustainably, i.e., harvest and waste generation must occur at rates that do not exceed those at which the productive and absorptive capacities of the environment are regenerated (Daly 1991). Strong institutionalized authority is often needed to sustainably regulate CPR harvest and waste—a difficult task under high population density because the presence of many users can increase protection costs beyond both the immediate value of natural resources and the capacity of institutional response.

Consequently, environmental non-governmental organizations (NGOs) have begun addressing the 'population component' in their environmental projects. Yet, many issues remain unclear. Where are the programmatic connections? What are the development implications? In fact, in a review of linked population and environment efforts, IUCN-The World Conservation Union was unable to find conclusive proof that combining environmental protection with programs to reduce population pressure was always feasible, or that conservation goals were more quickly achieved by this linkage (IUCN 1990).

The Population and Environment Nexus

During the 1970s, the environmental movement grew beyond its conservationist roots to tackle community issues. Over 20 years later, an agenda for the "sustainable community" is emerging from the programs of environmental NGOs that promotes: (a) environmental education and community awareness of local environmental quality; (b) the assumption of ethical and legal responsibilities of local commu-

nities for the long-term conservation of their resources; (c) equitable community participation in planning the use of those resources and obtaining the benefits; and (d) support of national and international agencies and organizations in the protection of environmental components important to national and global biodiversity.

In contrast to the environmental movement, the family planning movement, founded by Margaret Sanger prior to World War I, originated over a set of women's health issues. (Sanger was moved to organize and advocate for family planning as a nurse in New York City where she witnessed death and disabilities resulting from self-induced abortions.) Correspondingly, family planning organizations continue to provide services geared toward the development of families and individuals (Aramburú 1994), rather than locations and regions. Development, as it is envisioned by the environmental and family planning movements, seem, at first reading, divergent. Environmental NGOs appear fixed on environmental sustainability, a long-term community-level goal. Family planning NGOs are focused on interventions that have almost immediate implications for individual and family welfare. Nonetheless, these visions apparently can find some commonality—for in the field, family planning and environmental NGOs have begun to work side by side.

Objectives

In this paper, I briefly describe several programs among collaborating NGOs that have addressed both the population and environmental components of development; provide a conceptualization of how linked programs in population and environment are intended to work; and speculate on what such community-based efforts contribute to the ascending notion of a *sustainable community*. Representations of pop-

ulation-environment linkages should be considered my own conclusions based upon reports, field visits and interviews with fieldworkers, managers, and reviewers of these projects.

Advance knowledge of a few broad conclusions are useful in reading this review:

1. In *developing countries*, sanctuaries have little chance for survival unless surrounding human populations stabilize, and the economic and ecological relationships between people and sanctuary ecosystems can be modified to sustain them both (cf. Wells and Brandon 1993, Hannah 1992). I found that the population component of NGO projects entails the provision of family planning services—and “women’s participation” creates the link to environmental remediation. This conclusion is not surprising given the multiplicity of women’s roles in the developing world, often as principals in childrearing, agriculture, and harvesting CPRs (cf. Jacobson 1992).
2. In *developed countries*, sanctuaries have little chance for survival unless their resource needs are represented within regional planning. Chances for survival may be improved by creating a new set of relationships between community and the reserve. Because protection of wildlife populations has often been a source of conflict between sanctuary and productive interests beyond its boundaries (especially agriculture), community links may, in fact, be difficult to forge. I found that NGOs can create a new role for the sanctuary: as a facilitator for community participation in environmental debate, planning, and action. In the USA, the challenge for sanctuary managers lies in finding a place for reserved ecosystems and their biotic con-

stituents within the idea of a sustainable community.

The Developing-Country Context

The project experience: Family planning and environmental NGO collaboration. Near Chiapas, Mexico, a Mexican conservation NGO, *Pronatura*, which owns a nearby nature reserve, provides land-management assistance and farming equipment to Indians who have been displaced from their own farmlands to settle nearby. Taking advantage of the cooperative relationship established between *Pronatura* and this new community, *Pathfinder International*, an international family planning NGO, has provided basic public health and family planning awareness training to both conservation professionals and Indian farmers (Aramburú 1994). Women in this community have been vocal in requesting that family planning become an integral part of the community’s public health services.

On the other side of the world, The *Ranthambhore Foundation*, a local NGO working in 16 villages along the border of Ranthambhore National Park in Rajasthan, India (Ranthambhore Foundation, 1993), works with local farmers to create and manage alternative fuel and grazing resources outside the boundary of this world-famous tiger reserve. *Marie Stopes*, a public health and family planning NGO, has joined with the Ranthambhore Foundation to provide a mobile clinic for preventative health care focused on immunization, along with family planning counseling, referral, and some family planning services. Initial cooperation with villages was developed through agricultural, educational, dairying, and veterinary programs, spreading later to health and family planning. During the first four years since its start in 1989, this mobile health service treated upwards of 25,000 cases, and expects to work with between 8,000 to 10,000 cases per year. Presently,

a permanent village clinic is under construction. *Ranthambhore Foundation* efforts are part of a larger integrated conservation and development program within *Project Tiger* that includes resource management and educational projects conducted by two other Indian NGOs, the *Centre for Environment Education* and *World Wide Fund for Nature/India*.

Near Chautara in Nepal, potable water pours from a village spigot. Pipes have been laid down to the stream by a crew of farmers who received financial and technical assistance from international NGOs, *World Neighbors* and *Oxfam*, under the Baudha-Bahunipati Family Welfare Project (Hinrichsen 1994). Now that the need for walking long distances to fetch water has been eliminated, women find time to apply their energies to environmental projects and gardening. Families compost human and pig waste in underground digesters, generating both bio-gas for home fuel and fertilizer for their rice crops. In fact, the introduction of bio-gas technology has significantly reduced firewood consumption per capita in some villages. Effective contraception is also a component of the local development equation: a reduction in the need for infant care now frees women for greater participation in the village economy. About 33% of all families in the Chautara area participate in family planning services (a figure double the national average) provided by the *Family Planning Association of Nepal*, an NGO which initiated development work in the locality. Acceptance rates for family planning services are up to 50% in individual villages.

Family planning and environmentally sustainable technologies are brought together in Bla, Mali, where *CARE* and *Save the Children* worked together to construct and operate a solar-powered health facility, providing the means to support a high-quality clinical setting (Mojidi 1994) within which the *Center for De-*

velopment and Population Activities (CEDPA) supplies family planning services. Adding family planning has allowed more women to be involved in income-generating activities, including reclamation of land, waste management, and textiles. Many of the environmental activities in Bla also depend on the existence of this sustainable power source.

Family planning: Influencing women's lives. Fieldworkers and reviewers of these projects generally see family planning linked to environmental activities through women's time, labor and opportunity costs. The idea is not novel: social scientists have examined these as familial costs for children (cf. Lee and Bulatao 1983). The notion is also empirical—every parent experiences it. Children require of women both their time and their labor. When children are young they are generally most demanding of care, requiring less when they are older. Children cannot work when young, but may gradually assume tasks and earn as they mature. Because women accept opportunity costs (by definition) when they sacrifice a wage to perform child care, women's access to time-efficient technologies and productive occupations, as well as improvements to their education and status, can have important impacts on their desired fertility. More complexly, women's time diverted from childrearing can permit grown children to attend school, and additional earnings can support a child's education.

A three-loop decision model represents the basics of this simple notion (Figure 1): one loop considers the cost and benefits of infants and young children who generally are a *net drain* on women's time and labor; a second deals with children and adolescents, who can often make net contributions to family labor and ultimately to the security of parents (Cain 1983). Together, the two contribute to a perception of ideal family size. The third loop

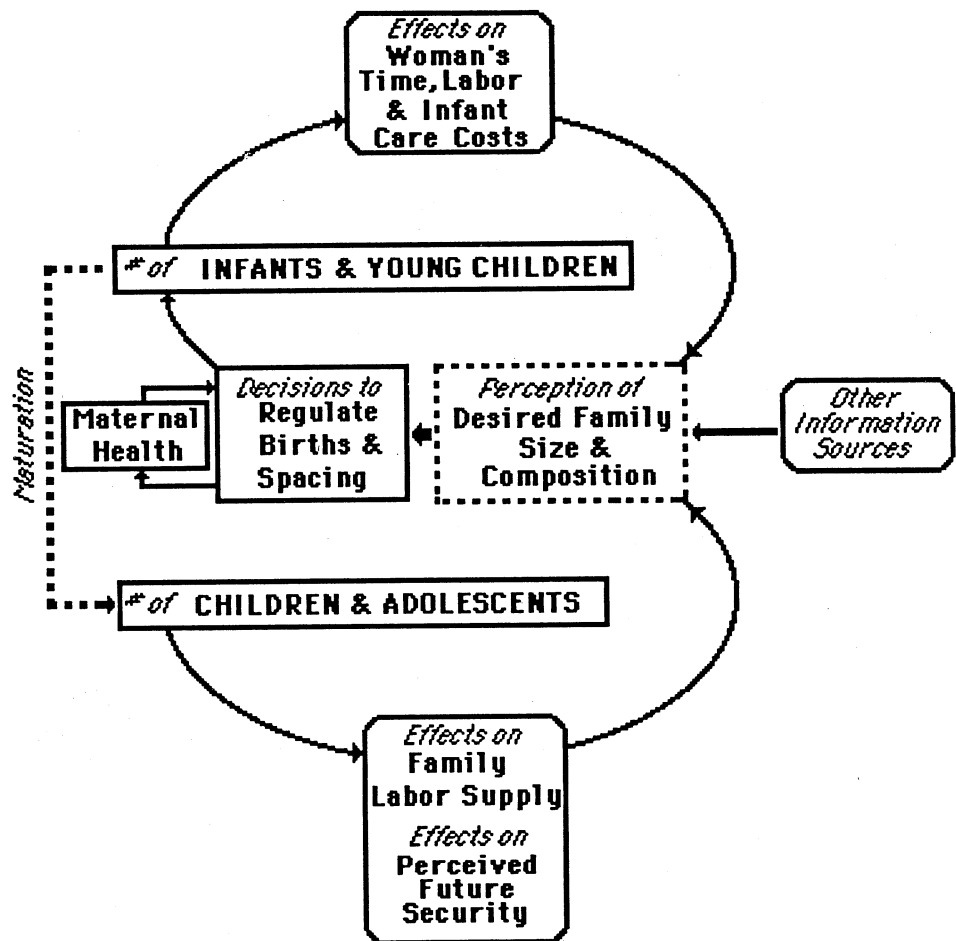


Figure 1. Conceptual model of decision-making, showing feedback processes recognized by fieldworkers: an *infant care loop* principally affecting and responding to women's time and labor, a *child and adolescent loop* concerned with labor and remittances from employable children; and a loop between *maternal health* and reproductive decision-making.

represents the interaction between maternal health and reproductive decision-making.

Decisions in childbearing and spacing lead to consequences that affect the time spent on infant care (note, in the figure, the top loop that pertains to infant care). Those same decisions, in later years, shape the composition of household labor supply (the second loop, pertaining to adolescents) and ultimately build parental security (Lindert 1978, 1980). The consequences of both loops, interacting with culture, observation, and information, continuously reshape people's perception of ideal family size, which influences their decisions on fertility. Additionally, maternal age at childbirth, birth spacing, and number of births are important factors in maternal and child health (cf. Population Reference Bureau 1991), and influence reproductive decision-making, especially when women have control over these decisions and have access to health information.

In general, fieldworkers suggest that when family planning NGOs work in parallel with environmental NGOs, there is a confluence of opportunities (Figure 2). Full access to family planning services (sex education, contraceptive information, and services) helps parents space and time childbirth, and achieve their desired family size, which, in developing countries, is significantly smaller than the family size they are likely to have with only limited access to modern contraceptive technologies (Sinding et al. 1994). Some technologies and programs offered by environmental NGOs appear to increase the demand for family planning by reducing household labor requirements for women, and increasing their spare time. These include water projects, wind-powered electricity generation, bio-gas generation, managed fuelwood plantations, and fodder banks. In addition, NGO programs often establish income-generating schemes (e.g.,

producer cooperatives, credit unions) in which women can participate in environmentally sustainable activities.

It is clear that there are several ways, locally, to enter into this development loop. If time- and labor-saving technologies and income-generating schemes are promoted for women, family planning is often requested soon after. Similarly, establishment of family planning services within a community has increasingly served as an entry point for NGO cooperation, as in the case of the Baudha-Bahunipati Family Welfare Project. However, it is just as clear that, whereas increases in available time and involvement in income-generating opportunities (as well as other socioeconomic improvements; see Bongaarts 1994) augment the demand for family planning services, they do not substitute for the service itself.

Conceptually, the model presented has narrow bounds: it does not provide for gender, i.e., differences in perspectives between male and female partners, the dominance of one partner in fertility decisions, and the perceived differences in value by decision-makers between girl and boy children. These are important considerations in understanding desired family size and fertility outcomes, but complex and beyond the scope of both my interviews and this discussion.

Population lessons learned by environmental NGOs. In each case, community development that links population and environmental concerns appears as a coupling of separate, disciplinary projects. Linkages are created by conscious efforts to refer households to other projects, and capitalize on each other's accomplishments. Family planning/health NGOs typically provide professionals, training, equipment, and commodities to a community in which trust and cooperation may already have been

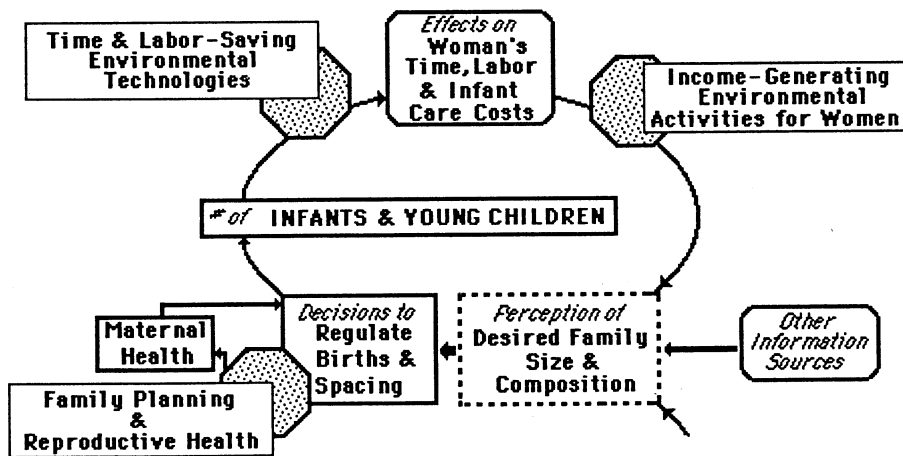
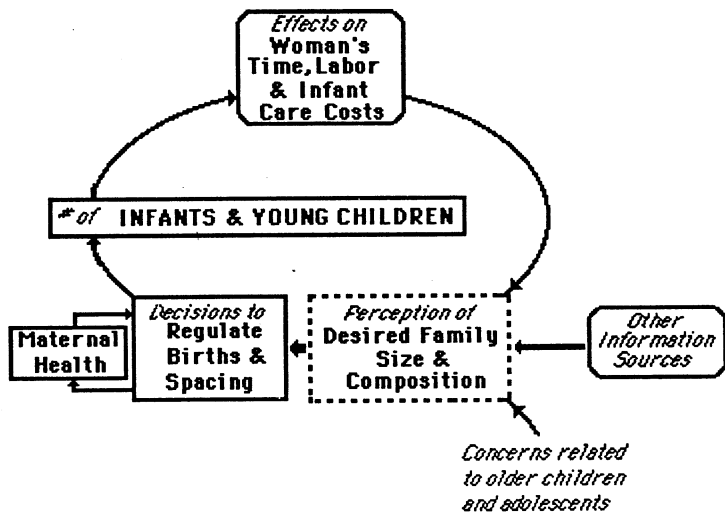


Figure 2. Family decision-making showing (above) the basic pattern of feedback concerned with infant care, and (below) feedback with environmentally sustainable development programs and family planning services added. Environmental NGOs often initiate sustainable energy and resource projects that save women's time and labor, and create opportunity costs among those women for additional childbearing and childcare. Thus, these environmental interventions often augment the demand for family planning services.

secured by other NGOs. Typically, environmental and agricultural NGOs establish an inter-community organizational infrastructure, such as producer cooperatives (e.g., dairy cooperatives in Bihar, India; Kak et al. 1994), which can be used to promote and introduce family planning education, training, and counseling.

From being closely connected to health NGOs that offer family planning programs, environmental NGOs are becoming tuned to a new set of complex realities that surround population as a field issue:

1. *The long-term environmental implications of demographics are critical at the national policy level, but they have little effect on households whose behavior responds to a short time horizon* (Aramburú 1994). The benefits of family planning services are embraced by individuals, especially women, and extend to family welfare in ways that will ultimately affect the community.
2. *Public health is an environmental issue.* Global society has entered a series of transitions toward a set of living conditions characterized by high human population density, mass technology, and high concentrations of waste (Drake 1993). Access to public health facilitates has become a human right of the 21st century, and access to voluntary family planning services is part of that right. Regardless of NGO commitment, it remains the responsibility of the state to provide adequate public health services for its citizens.
3. *While family planning addresses intrinsic population growth, it is only one of several important population-related processes that must be ameliorated if environmental sustainability is to be achieved.* Other population processes include migration,

consumption of resources, efficiency and waste, population density and distribution, resource tenure, distribution and exposure to waste, and human-to-resource ratio. Most of these "sustainability issues" can only be addressed through progressive local governance and strong policy support at the national level.

Funding. NGOs have faced three major problems in funding initiatives that combine family planning and environmental remediation: (1) donor opposition to spending prioritized funds outside the disciplinary and sectorial scope of their priorities; (2) reluctance among family planning donors to spending funds in low-density rural locations as long as there remains unmet need for family planning services among dense urban populations; and (3) reluctance of environmental donors, who are interested in biodiversity conservation, to promote *attractive* public health services near sanctuaries. Opposition to integration occurs because program managers in donor agencies are disinclined to support mixed interventions unless that mixture is documented to produce synergies enhancing program efficiency. The second problem, where distant rural areas receive low family planning priority, occurs when rural costs per user are high, less costly urban family planning needs are still unmet, and program funds are limited—a situation that exists in most (if not all) developing countries. Finally, there are many advocates for biodiversity conservation who believe that the most successful conservation policies will ultimately be those that keep humans away from intact ecosystems. Thus, they are unwilling to promote services near those areas. In a world that is unlikely to stop growing before there are 11 billion inhabitants, trying to hide natural resources is a strategy that falls somewhere be-

the the quixotic and the absurd.

Realistically, large donor agencies are most likely to maintain the "sectorial boundaries" that define their programs and associate them with a professional constituency. In general, sectorial programming provides a measure of cohesiveness to large programs that make them professionally, politically, and financially accountable. The pressures that make sectorial programming useful to managers and administrators are not about to dissolve. Whereas this may appear to be a bleak prophesy to some, there is, in fact, considerable movement toward broader programs among some development donors. For example, a broader expansion into select reproductive health interventions has been underway within USAID's family planning program (USAID 1994). In this case, few conceptual and programmatic barriers to integration exist: family planning and reproductive health are related concerns that can often be handled in a single visit to a clinic. Specific reproductive health interventions, such as those addressing the prevention and treatment of sexually transmitted diseases (e.g., HIV/AIDS), are known to augment the efficacy, quality of care, and acceptance of family planning programs.

However, it is this author's opinion that community development programs proposing both environmental and population components will continue to rely on (the often difficult task of) obtaining funding from several sources, then linking and coordinating those components in the field. Foundation funding may provide an exception: although they generally distribute less funds than government agencies, foundations tend to be less sectorial, and may be the most appropriate source for integrating small programs that cut across sectorial boundaries.

The Developed-Country Context

Developed-country projects in

population and environment focus on the regional aspects of human population growth, generally the product of land development and in-migration, and its environmental impact. NGO projects stress the need for participatory environmental planning that sets limits on growth, and builds public concern over environmental quality, resource consumption, waste generation, and the need for an adequate public health infrastructure. In these projects, sanctuaries and reserved ecosystems are a focal point for community action and an indicator to the public of the extent to which regional growth has altered the capacity of ecosystems to sustain a diversity of life.

In the Rio Grande Valley near Brownsville, Texas, on the border between the USA and Mexico, *Sharing the Earth*, a project of the *National Audubon Society*, maps the spread of colonias: small shanty towns on both the US and Mexican sides of the river lacking adequate water, sewage, and access to public health services. Meanwhile, small factories, waste dumps, and incinerators continue to proliferate among slums on the Mexican side (Selcraig 1994). Local surveys show that the amount and quality of the valley's drinking water are declining rapidly to dangerous levels—the result of unplanned growth and exploitive environmental standards that have served land speculators and industrialists at the expense of poorer residents.

In addition to its effects on local people, unsustainable growth and development in the Rio Grande have negative impacts on nearby sanctuary ecosystems. For the Sabal Palm Grove Sanctuary, a 172-acre National Audubon Society reserve near Brownsville, Texas, future water volume and quality are, as well, critical issues. How these issues are resolved will ultimately decide the fate of the 32 acres of palm forest protected within the sanctuary—a

remnant of the 40,000 acres of dense palm groves that once bordered the Rio Grande (Farmer 1992). Staff members from the Sabal Palm Grove Sanctuary sponsor citizen-led soil- and water-monitoring projects. The project arms local people with the capacity to determine their community's environmental quality, and then helps them present the results of their investigations to the press. In addition, the project sponsors an active environmental youth group, and facilitates seminars conducted by public health and conservation organizations, including a Mexican Planned Parenthood affiliate.

Another *Sharing the Earth* program near Kearney, in the Platte River Valley of Nebraska, USA, involves local citizens in monitoring resource quality and drawing media attention to wildlife and supporting wetlands as indicators of the health of the river ecosystem. Aspects of this project are conducted in collaboration with newly established crane reserves in Pakistan and in Russia that experience comparatively light, but escalating human impacts upon their own river ecosystems and native crane populations. Press exposure (e.g., Kenworth 1994), comparative documentation, and exchange visits have attracted local and international attention to the problems of human population and economic growth, and the need to move quickly to eliminate present and future negative environmental impacts to the remnants of our natural capital.

Sierra Club, a US environmental advocacy group, has begun a "Local Carrying Capacity Initiative" which promotes community planning among North American cities—places of enormous sources of growth and resource consumption that threaten distant rural areas. The program extends a model represented in initiatives proposed or underway in several locations, including Lake Tahoe (*Tahoe Regional*

Planning Agency), and proposals in Seattle (*Sustainable Seattle*) and Pittsburgh (*Pittsburgh Benchmarks*). Basically, these plans promote the establishment of measurable indicators of community well-being, whether social or environmental. Their objective is to arrive at indicators that are: (1) tests of sustainability, (2) easily understood and accepted by the community, (3) of interest and appeal to local media, and (4) statistically measurable (Sierra Club 1994). Indicators include considerations for regional natural resources, nearby wildlife habitat and wildlife populations. *Sierra Club* will be holding conferences in more than seven U.S. cities, mobilizing support for sustainable community programs in urban areas, promoting and developing planning and monitoring models, and raising awareness among local decision-makers.

Towards Sustainable Communities

What is a sustainable community? These projects do not provide a definition, but they certainly indicate that population size, environmental management, women's status, poverty alleviation, and access to public health facilities must be strong, interrelated components in any consideration of the fundamental parameters of a sustainable community. Most interesting, while there is a pervasive feeling that the transition to environmental sustainability will rely heavily upon technology and legal restrictions, these field projects, instead, rely on "rights of access," combining thinking from both public health and environmentalism. These include rights of access to environmental and public health information and decision-making, publicly owned environmental resources, and public health services.

When established, what relationship will exist between sustainable communities and nearby sanctuaries? In an environmentally sustain-

able community, rights of human access must be balanced with rights established to protect native species and their habitats, such as those rights implied by endangered species laws and international trade accords. Thus, sustainable communities would guarantee the protection of species and their habitats from extinction, and embrace accounting methods that recognize the long-term contribution of other species to quality of human life and culture, and to the stability, diversity, and productivity of the environment.

For the present in developing countries, the relationship between people and reserved ecosystems is strained but clear: these ecosystems provide vital environmental services such as water catchment, nutrient storage, energy, wildlife, and plant-material products to nearby communities. The challenge to sanctuary managers in the developing world is to move rapidly to create sustainable communities around reserves by encouraging good land-

management practices, good governance, poverty eradication, stabilization of human population size, and a link between those populations and the sanctuary's future. In developed countries, reserved ecosystems are both physically and conceptually threatened: their ecosystem products are often insignificant when compared with the sheer size, mobility, and consumptive potential of regional human populations. The ability of industrial economies to import nutrients, energy, materials, and (to a lesser extent) water into human-dominated systems, and their massive reliance on non-renewable sources of these natural products, has opened an information gap separating people from an awareness of their environmental impact (see Postel 1994). In the industrial world, sanctuary managers can play an important role in filling that information gap, and thereby actively informing surrounding communities of their need to plan for a sustainable future.

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For more information on:

- *Pathfinder's* projects, contact Snr Carlos Aramburú, Pathfinder Latin American Regional Office, Fuente del Amor #31, Frac. Fuentes del Padreagal, Tlalpan, 14140 Mexico, DF, Mexico.
- The *Ranthambhore Foundation* and *Project Tiger*, contact Dr. Valmik Thapar, 19 Kautilya Marg, Chanakyapuri, New Delhi 110 021, India.
- The *Baudha-Bahunipati Family Welfare Project*, contact Mr. Gregg Biggs, World Neighbors, 4127 NW 122nd St., Oklahoma City, OK 73120-8869 USA.
- *Sharing the Earth*, contact Ms. Patricia Waak-Strom, Population and Resources Program, National Audubon Society Rocky Mountain Regional Office, 4150 Darley Ave., Suite 5, Boulder, CO 80303 USA.
- The *Local Carrying Capacity Campaign*, contact Mr. Brian R. Hinman, Sierra Club D.C., 408 C St., NE, Washington, DC 20002 USA.

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