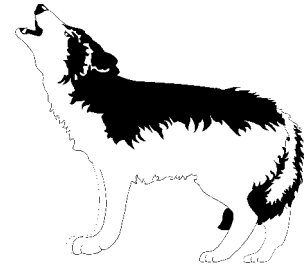


In My Opinion: The steady state economy—what it is, entails, and connotes



Brian Czech and Herman E. Daly

In its technical review on economic growth, The Wildlife Society (TWS) described a “fundamental conflict between economic growth and wildlife conservation” (Trauger et al. 2003:2). This conflict exists because, as the economy grows, natural capital (such as timber, soil, and water) is reallocated from wildlife to the human economy (Figure 1). Many believe technological progress may reconcile this conflict, but technological progress expands the breadth of the human niche and, in the service of economic growth, exacerbates the conflict (Czech 2003).

Generally speaking, it is not possible to reconcile values subject to a fundamental conflict, although compromise sometimes is portrayed as reconciliation. Plenty of wildlife conservation has been compromised for the sake of economic growth, sometimes under the banner of “smart growth,” and the compromising continues. Therefore, TWS is considering taking a position on economic growth (Table 1).

The position on economic growth was proposed by TWS’s Working Group for the Steady State Economy on September 6, 2003 at the TWS annual conference in Burlington, Vermont. It is similar to a position adopted by the United States Society for Ecological Economics on August 3, 2003 but is more specific to wildlife conservation. The technical concepts are well established and largely incontrovertible, as evidenced by the TWS technical review on economic growth. However, some of the clauses in the position may be politically controversial. Perhaps the biggest controversy will stem from clause 5 in the “Therefore” list (Table 1.B), which states, “A steady state economy (that is, an economy with a relatively stable, mildly fluctuating product of population and per capita consumption) is a viable alternative to a growing

economy and has become a more appropriate goal in the United States and other large, wealthy economies.”

Several questions and concerns already have arisen about what this statement means and what it might imply or connote. The most prominent questions are:

1. What is a steady state economy in more detailed terms than “an economy with a relatively stable, mildly fluctuating product of population and per capita consumption”?
2. How is the quality of life affected by a steady state economy?
3. What happens to jobs in a steady state economy?
4. Will we lose our retirement accounts in a steady state economy?
5. Won’t the stock market crash in a steady state economy?
6. Does a steady state economy require a socialist government?
7. How big should a steady state economy be?
8. Why is a steady state economy “a more appropriate goal in the United States and other large, wealthy economies”?

In this article we provide answers to these and related questions.

What is a steady state economy?

The most distinctive trait of a steady state economy is stable size (Daly 1997). A steady state economy undergoes neither growth nor recession. To be more specific, it has constant populations of people (and therefore “stocks” of labor) and constant stocks of capital. It also has a constant rate of

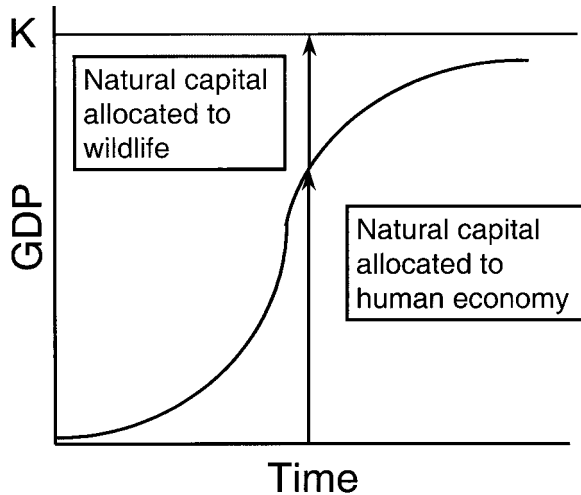


Figure 1. Natural capital (such as soil, water, and timber) reallocated from wildlife to humans in the process of economic growth (modified from Czech 2000a). As the economy grows, the natural capital comprising wildlife habitat (represented above the sigmoid curve) is liquidated and converted to goods and services in the human economy (represented below the sigmoid curve).

“throughput”—i.e., the energy and materials used to produce goods and services.

Within a given technological framework these constant stocks will yield constant flows of goods and services. Technological progress may yield a more efficient “digestion” of throughput, resulting in the production of more (or more highly valued) goods and services. However, there are limits to productive efficiency imposed by the laws of thermodynamics and therefore limits to the amount and value of goods and services that may be produced in a given ecosystem. In other words, consistent with the ecological principle of carrying capacity, often denoted as “K,” there is a maximum size at which a steady state economy may exist. Conflicts with wildlife conservation occur long before a steady state economy is maximized (Figure 1).

By “constant” we do not mean absolutely unchanging at the finest level of measurement. We mean mildly fluctuating in the short run (which in political and economic terms may be defined as approximately a decade or less) but tending toward a stable equilibrium in the long run. Any long-run changes would reflect evolutionary, geological, or astronomical processes that alter the carrying capacity of the earth for the human economy. These processes generally operate too slowly to merit practical consideration by managers or politicians, though dramatic exceptions such as atmos-

Table 1. Draft of The Wildlife Society (TWS) position on economic growth proposed by Working Group for the Steady State Economy at TWS conference, 6 September 2003.

A. Whereas

- 1) Economic growth, as defined in standard economics textbooks, is an increase in the production and consumption of goods and services, and;
- 2) Economic growth occurs when there is an increase in the multiplied product of population and per capita consumption, and;
- 3) The American economy grows as an integrated whole consisting of agricultural, extractive, manufacturing, and services sectors that require physical inputs and produce wastes, and;
- 4) Economic growth is often and generally indicated by increasing real gross domestic product (GDP) or real gross national product (GNP), and;
- 5) Economic growth has been a primary, perennial goal of American society and government, and;
- 6) Based upon established principles of physics and ecology, there is a limit to economic growth, and;
- 7) There is increasing evidence that American economic growth is having negative effects on the long-term ecological and economic welfare of the United States and the world.

B. Therefore

- 1) There is a fundamental conflict between economic growth and wildlife conservation, and;
- 2) There is a fundamental conflict between economic growth and the ecological services underpinning the human economy (for example, pollination, decomposition, climate regulation), and;
- 3) Technological progress has had many positive and negative ecological and economic effects and may not be depended on to reconcile the conflict between economic growth and wildlife conservation in the United States and the world, and;
- 4) Economic growth, as gauged by increasing GDP, is an increasingly dangerous and anachronistic American goal, and;
- 5) A steady state economy (that is, an economy with a relatively stable, mildly fluctuating product of population and per capita consumption) is a viable alternative to a growing economy and has become a more appropriate goal in the United States and other large, wealthy economies, and;
- 6) The long-run sustainability of a steady state economy requires its establishment at a size small enough to avoid the breaching of reduced ecological and economic capacity during expected or unexpected supply shocks such as droughts and energy shortages, and;
- 7) A steady state economy does not preclude economic development, a qualitative process in which different technologies may be employed and the relative prominence of economic sectors may evolve, and;
- 8) Upon establishing a steady state economy, it would be advisable for the United States to assist other nations in moving from the goal of economic growth to the goal of a steady state economy, beginning with those nations currently enjoying adequate per capita consumption, and;
- 9) For many nations with widespread poverty, increasing per capita consumption (in some cases via economic growth and in other cases via more equitable distributions of wealth) remains an appropriate goal.

phere-altering volcanoes and massive meteorite collisions may occur.

The rationale for touting the steady state economy is that it (and wildlife populations) would be sustainable for a long time. In contrast, neither a growing economy nor a shrinking economy is sustainable in the long run. Because sustainability is the *raison d'être* for a steady state economy, at least one more criterion must be introduced. Namely, in a steady state economy pollutants are generated at a rate that does not exceed the assimilative capacity of the environment (Daly 1997). Pollutants that accumulate are a threat to ecological integrity and tend to reduce long-run economic carrying capacity.

How is the quality of life affected by a steady state economy?

A steady state economy is similar to a population of a K-selected animal species; it stabilizes at or slightly below carrying capacity (K). It avoids the fate of the r-selected species that exceeds K and crashes, damaging its environment in the process and compromising the prospects of its progeny. However, wildlife biologists know that a wide variety of social structures may produce stable populations. The same holds true for a steady state economy. For example, a steady state economy with long human life spans entails low birth and death rates. In our opinion this is preferable, within reason, to a steady state economy with short life spans, high birth rates, and high death rates. The same concept applies to capital and durable goods such as automobiles. We opine that a relatively slow flow of high-quality, long-lasting goods is preferable to a fast flow of low-quality, short-lived goods.

Nothing about a steady state economy precludes economic development, where development is defined as a qualitative process. Various sectors may come and go in a steady state economy. For example, organic farms may supplant factory farms, the proportion of bicycles to Humvees may increase, and professional soccer may attract more fans while NASCAR attracts fewer. As long as the physical size of the economy remains constant in the long run, a developing economy is a steady state economy.

Nor would any type of cultural stagnation result from a steady state economy. John Stuart Mill (1806–1873), one of the greatest economists and political philosophers in history, emphasized that an economy in which physical growth was no

longer the goal would be more conducive to political, ethical, and spiritual improvements (Mill 1900). Quality-of-life characteristics are a matter of preference, however, and have not been proposed for adoption by TWS (Table 1).

What happens to jobs in a steady state economy?

In economic discussions, a common qualifier is *ceteris paribus*, which means all else equal. *Ceteris paribus*, a steady state economy means a constant rate of employment. The “all else” remaining equal includes such factors as mean throughput per worker, salary, and retirement age. For example, a steady state economy may have higher rates of employment when throughput per worker, salary, and retirement ages are lower.

Ceteris paribus does not mean, however, that each particular job is retained in perpetuity. Economic development continues in a steady state economy so that in the extractive sector, oilfield roughnecks may decrease in number while wind-power facility attendants may increase. In the arts, guitar playing may wax while flute playing wanes. In the sciences, industrial chemists may be replaced by wildlife ecologists.

Ceteris paribus, there is an optimum size of the economy for society as a whole. There is also an optimal size, perhaps smaller, from the perspective of the wildlife profession. Wildlife biologists are not in demand in primitive economies emerging from the wilderness. As an economy grows, however, natural capital is liquidated, wildlife habitats are lost, and wildlife becomes scarce (Figure 1). Society begins devoting fiscal resources to conserving and managing wildlife, and the wildlife profession thrives. As vast areas become devoid of desirable wildlife, however, there are fewer reasons to hire biologists.

Has the optimum size of the economy for the wildlife profession (and those many citizens who value wildlife highly) been exceeded in the United States? Several trends suggest it has or is close to doing so. For example, as the American economy has grown more service-oriented and its population more urbanized, urban areas have usurped manageable wildlife habitats and the relative prominence of hunters (a major constituency for the wildlife profession) has declined. In the federal natural resources agencies, the wildlife profession has not kept pace with the engineering, forestry, and

recreational professions (Clarke and McCool 1996). And, of special interest to us, TWS membership has been declining while other professional societies have grown with the economy. A steady state economy would help stabilize the wildlife profession because it would fix the ratio of natural capital allocated to wildlife and humans (Figure 1).

Will we lose our retirement accounts in a steady state economy?

For that matter, what happens to bank accounts in general? Answering this question in the context of ecological economics requires us to briefly consider the origins of monetary income. Income reflects the use of natural resources and therefore the loss or conversion of wildlife habitats. This relationship of income to natural resource use is most readily observed in agricultural and extractive industries. However, as pointed out by the physiocrats (predecessors of the classical economists), the origins of all monetary income are in agricultural surplus (Heilbroner 1992). Without agricultural surplus, everyone is too busy acquiring food (hunting, gathering, or subsistence farming) to specialize in the production of other goods (much less “higher” services such as entertainment) for wages. In other words, everyone’s income and expenditure, no matter the sector they work in, depend upon the use of natural resources and therefore wildlife habitat loss. Wildlife biologists tend to recognize this process readily because of their training in trophic theory, which describes the consumers in the economy of nature as dependent upon the producers (plants) for their livelihood (Czech 2000b).

In ecological economics, we often elaborate upon this discussion of natural resources and income by introducing the term “natural capital” (Daly and Farley 2003:17) and adopting the definition of “income” developed by the Nobel Prize-winning economist Sir John Hicks (1904–1989) (Hicks 1948:172). Natural capital is the stock of natural resources (e.g., a forest) that yields a renewable flow of goods (e.g., perches for birds, timber for humans). Income, in the Hicksian sense, is the maximum one may consume over some time period and still leave productive capacity, or natural capital, intact. If the amount consumed during that time is equal to the growth of the capital stock, then the productive stock remains constant and can produce the same increment over the next

time period. If the amount consumed is greater than the growth of capital stock, capital is liquidated and future productive capacity is lowered. The cardinal sin of accounting is to count the liquidation of capital as income, yet our national income accounting (i.e., the process of calculating GDP and GNP) routinely adds the money derived from the liquidation of natural capital.

In a steady state economy, the average amount of money in real dollars earned by workers from the current generation to the next remains constant. “Real dollars” means that inflation has been accounted for. Because income reflects the use of natural resources, stabilized income reflects a stabilized “ecological footprint,” which is the area of land required to support a human being (Wackernagel and Rees 1996). In other words, stabilized income is Hicksian income.

If the steady state economy is established at a relatively low population level, the potential exists for each worker, and his replacement in the next generation, to earn a high income. This scenario is similar to that of a low-density deer (*Odocoileus* spp.) population with plenty of forage per deer. If, on the other hand, the steady state economy is established at a high population level, less income is available for the average worker, as in a high-density deer population with little forage per deer.

We think it important that a steady state economy be established at a relatively low population level. This scenario is conducive to incomes high enough to allow retirement savings and social security (in the generic sense), making the economy more politically acceptable and therefore more stable. If the steady state economy is established within ecological carrying capacity, each new generation may expect its workers to accumulate retirement savings of the same magnitude as the previous generation. So we think it important to establish a steady state economy as soon as possible. As the population grows, it becomes less likely the steady state economy may be established whereby incomes are high enough to support reasonable periods of retirement.

Won't the stock market crash if a steady state economy is established?

This question follows naturally from the preceding section because Americans have grown accustomed to investing in stocks for retirement purposes. Many people view the stock market as predi-

cated on economic growth, so they wonder if a stock market could even exist in a steady state economy. It certainly could and probably would. In a steady state economy, firms still need to invest in capital—namely, at the same rate at which capital depreciates. Publicly traded stocks provide the social benefit of liquidity to investors and offer an efficient mechanism for the acquisition of investment capital.

Stock markets tend to expand and contract in concert (though often with lags) with gross domestic product (GDP), the dollar value of newly produced, final goods and services. There are winners and losers in bullish and bearish markets, though the winners tend to be more prominent in the former. The stock market in a steady state economy of stable GDP would be neither bullish nor bearish for extended periods. It, too, would have winners and losers, with perennial losers becoming insolvent and being replaced by more competent firms. But in a steady state economy the stock market would be less of a casino than in the growth economy.

Economic growth, on the other hand, is bound to cause an extensive and extended stock market crash because demands for capital eventually will exceed the productive capacity of the earth. Therefore, advocating a steady state economy is appropriate not only for purposes of wildlife conservation but also because it would reduce the volatility of the stock market.

There are, of course, alternatives to the stock market for purposes of financing capital investment. For example, capital may be financed by private banks, cooperatives, and governments. In fact, all of these institutions are active financiers throughout the world. The relative prominence of each in a given nation helps to describe that nation's history, ideology, and "political economy," which brings us to our next question—a very big one.

Doesn't a steady state economy require a socialist government?

More generally put, what kind of government is most conducive to a steady state economy? Might it be, for example, a capitalist democracy, a communist state, or a dictatorship? In theory, each is capable of producing or coexisting with a steady state economy, but we do not think any of these is particularly conducive. Each has exhibited far more concern with GDP growth than with other impor-

tant endeavors, such as poverty alleviation and, of course, wildlife conservation.

We think the form of government most conducive to a steady state economy, in the context of twenty-first-century nation states, is a constitutional democracy somewhat more socialized than the current American version. "Socialist democracies," as the term is used in political science (Brown 1995), already exist in many nations, most notably such European nations as Sweden, Switzerland, and England. Economists more frequently call them "mixed economies." These are democratically operated governments in which the state plays a more prominent role in the economy than the American government plays in its economy. Although the phrase "socialist democracy" often is fondly employed by Marxists, few socialist democracies have communist governments.

In a typical socialist democracy, most of the factors of production (land, labor, and capital) are owned by private parties, not by the state. However, subsets of these factors are more efficiently or equitably managed in the public interest and are owned by the state. For example, people may own the land on which they live and various smaller parcels, but the larger forests, grasslands, mineral deposits, oil fields, and fisheries are owned by the state. The state also tends to own and operate facilities requiring enormous investments in manufactured capital, such as power plants, railroads, and airlines. Socialist democracies also tend to provide services deemed too important to be relegated to the private sector and its profit-maximizing motive, such as health care, education, and environment protection.

Some Americans recoil at the mere mention of "socialist" or "socialism." Their reactions demonstrate, in part, the lasting success of Cold War, anti-socialist teachings. As the preceding paragraph suggests, however, the "socialist" democracies differ from American "capitalist" democracy in degree more than substance. The United States has not had anything resembling a truly free-market, laissez-faire economy since the days of "Manifest Destiny" early in the nineteenth century. The American government, designed to represent and serve American society, owns some land, operates some power plants, and provides some health care. Meanwhile, the world has not had anything resembling a truly communist state, in which virtually nothing outside the household is held as private property, since the fall of the Soviet Union in 1991.

A closely related issue is central planning. For some, a national goal of a steady state economy connotes central planning and invokes the oncedreaded Soviet Politburo. However, the issue of central planning is also raised if we tout GDP growth in the range of 3–4%, which the American government typically does (via the Council of Economic Advisors, Federal Reserve, and Department of Commerce). In fact, setting goals for GDP growth more closely resembles the outdated Soviet model, which was perennially tooled to maximize growth (Collins 2000). No matter what the goal is (e.g., 0%, 3%, or 6%), certain macroeconomic policies of the federal government follow. These policies typically entail tax structures, subsidies, and banking regulations. To the extent that we call this “central planning,” we should at least acknowledge that it already exists in the American system.

At the 2003 TWS conference, wildlife biologists were exhorted by a plenary speaker, Shane Mahoney, to uphold the “North American model” of wildlife conservation. The North American model is characterized by public lands; a mixture of federal, tribal, and state (or provincial) jurisdiction; and financing of wildlife management programs through public taxation and user fees (such as hunting licenses). These characteristics come hand in hand and have been adamantly touted by other leaders in the wildlife profession such as Jack Ward Thomas, Valerius Geist, and James Teer.

Nowhere is the North American model more prominent than in the United States. American federal, state, tribal, and county forests, rangelands, and refuges constitute some of the biggest and best wildlife conservation areas in the world. In other words, when it comes to wildlife, American citizens own most of the primary factor of production: the land. Various government agencies have the authority to manage this land for us and to manage wildlife directly. Through these agencies we also hire the labor and own much of the capital to manage that land. We as citizens, including our elected officials and civil servants, constitute American society. Frankly, the “socialist” components of the American domestic economy are epitomized by the wildlife profession.

We do not think it desirable that the United States socialize the factors of production in each and every sector. But even the most orthodox economists recognize the existence of public goods that cannot be allocated efficiently by markets because they are nonrival and nonexcludable

(Jones 1998). Examples include national defense, the ozone layer, and wildlife conservation. For goods that are rival and excludable, the market is relatively efficient at allocating resources and reasonably fair at distributing goods and services. Guns, butter, and entertainment should not be provided by the government. When it comes to wildlife, however, let us continue to champion the North American model of wildlife conservation, “socialist” aspect and all. The wildlife profession cannot afford to melt at the feet of Cold War propaganda ghosts.

How big should a steady state economy be?

Wherever this question is asked, it generates discussion about the ultimate economic carrying capacity of the global ecosystem. Global capacity indeed is an important question and one of the foci of the ecological economics movement. However, for TWS purposes, we suggest a different question: How much wildlife should be conserved? Presumably many members of TWS would answer, “As much as possible of what is left.” This gives us the answer to the original question because conserving as much as possible of the remaining wildlife requires the establishment of a steady state economy as soon as possible and as close to the current size as possible. In GDP terms this is an economy of approximately \$10.6 trillion for the United States and \$32 trillion for the world.

Some may assume that public lands will be sufficient for wildlife conservation and that the ongoing protection of these lands will result in the establishment of a steady state economy of the appropriate size. This is an unlikely outcome, however, as long as economic growth is a primary, perennial, and bipartisan goal. In the context of a public and polity that prioritize economic growth, the political boundaries and protective mandates of our public lands are continually contested (Czech 2002). For example, the drive for economic growth has resulted in an ongoing effort to open more portions of Arctic National Wildlife Refuge to oil exploration and extraction.

Another potential answer to the question of how big the steady state economy should be is, “However big society wants it to be.” Once the economy reached that size, whatever wildlife was left would be available for the wildlife profession to manage. Even if this apathetic philosophy were

adopted, however, TWS would have a responsibility to educate society about the fundamental conflict between economic growth and wildlife conservation. Only with such education could society make an informed decision about how big it wanted the economy to be. In the absence of such leadership, the American public is perennially pelted with win-win rhetoric claiming that there is no conflict between economic growth and wildlife conservation (Czech et al. 2003).

Why is a steady state economy “a more appropriate goal in the United States and other large, wealthy economies”?

Conversely, why is a steady state economy not just as appropriate in small, poor economies such as Haiti, Uganda, or Nepal? What about small, wealthy economies such as Switzerland, or large, poor economies such as India? The answers are practical and ethical. Only a wealthier nation can afford, fiscally and politically, to settle into a steady state economy with a reasonable standard of living. Small, wealthy nations should be encouraged to establish steady state economies, too, but only a large nation has the self-sufficiency and defensibility to establish and maintain a steady state economy in the face of global economic forces and international political pressure. Large, wealthy steady state economies may eventually assist other nations in their own steady state transitions.

Exhortation

In the truest spirit of American patriotism, let us continue to espouse the North American model of wildlife conservation. In that model, men and women of all races and classes, not just the royalty of old or the corporate executives of today, are free to share in the bounty of the nation's wildlife. Let us realize and act upon the fact, however, that the political and administrative boundaries of the public's conservation estate will erode and collapse under the pressures of economic growth (Czech 2002). This is inevitable, given the fundamental conflict between economic growth and wildlife conservation (Trauger et al. 2003). There is no reconciling this conflict, though plenty of compromising may yet be done. If wildlife conservation is our goal, however, we have a problem (economic growth) and there is a solution (a steady state econ-

omy). Our North American model, our wildlife, and our profession depend on us to advocate the solution, as proposed by the Working Group for the Steady State Economy (Table 1).

This column represents an opinion of the authors and not necessarily of their employers.

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