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## Sarasota County Ecological Footprint Assessment

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### The Ecological Footprint of Sarasota County

#### What is the Ecological Footprint?

The Ecological Footprint measures humanity's use of nature. A population's Footprint is the biologically productive area required to produce the resources and to absorb the waste of that population. Since people use resources from all over the world, Footprints add up the extent of these areas--wherever they may be located on the planet.

Footprints can be compared to the biological capacity of a region or the planet. If we are taking more from nature than nature can renew, we erode the very natural capital that current and future generations depend on. This liquidation of our ecological assets is called "overshoot".

Sustainability means achieving satisfying lives for all within the limited capacity of the planet. Tools like the Ecological Footprint track our use of nature, helping us reduce human pressure on the planet and move out of our overshoot situation.

#### Sarasota County's Ecological Footprint

The results of Sarasota County's Footprint assessment are shown in the table below. The columns represent land-use categories, and the rows indicate consumption categories. The results are expressed in "global acres," or acres that have been adjusted according to global average biomass productivity so that they can be compared meaningfully across regions.

#### Sarasota County Average Footprint, in global acres per person

(numbers may not add due to rounding)

	Energy land	Crop land	Pasture	Forest	Built area	Fishing Grounds	Total
<b>ENERGY</b>	2.91	0.00	0.00	0.00	0.00	0.00	<b>2.91</b>
<b>HOUSING</b>	0.30	0.00	0.00	1.03	0.73	0.00	<b>2.06</b>
<b>FOOD</b>	1.71	3.38	0.44	0.00	0.00	0.63	<b>6.16</b>
<b>GOODS&amp;SERVICES</b>	5.07	0.40	0.06	1.99	0.41	0.00	<b>7.93</b>
<b>TRANSPORTATION</b>	3.99	0.00	0.00	0.00	0.01	0.00	<b>3.99</b>
<b>RECYCLING</b>	-0.82	0.00	0.00	0.00	0.00	0.00	<b>-0.82</b>
<b>Total</b>	<b>13.16</b>	<b>3.78</b>	<b>0.50</b>	<b>3.02</b>	<b>1.14</b>	<b>0.63</b>	<b>22.23</b>

At 22.2 acres per person, the average Sarasota County resident has an Ecological Footprint very similar to that of an average US resident. The US has a per-capita Footprint of 23.6 acres

per person.<sup>1</sup> The total Footprint for Sarasota County, multiplying the per capita Footprint by the population, covers an area of approximately 7,336,000 acres. Using land type data on Sarasota County land use and ecosystems, we compared the Sarasota County Footprint with the available biological capacity of Sarasota County, which measures 701,800 global acres, or approximately 2.1 acres per person. This means that it would take about ten and a half Sarasota Counties (in equivalent productive land area) to support its population. World-wide available biocapacity is 4.7 acres per person. Therefore, if every person in the world lived like the average Sarasota County resident, we would need about five planets, even leaving nothing aside for other species.

While the county's Footprint is sizeable, the good news is that it points out some clear policy directions that will lower it. Those segments of the Footprint that contribute the most, such as **Energy, Transportation, and Goods & Services**, can be reduced through creative programs developed by county government. Knowing Sarasota's Footprint is just the beginning, and should be viewed primarily as the starting point of an evaluation to improve sustainability in the county.

### Sarasota's Ecological Deficit: Demand Versus Supply

<b>DEMAND</b> Footprint per Sarasotan		<b>SUPPLY</b> Biocapacity per Sarasotan	
	[global acres / capita]		[global acres / capita]
<b>Absorbing CO<sub>2</sub> From Fuel Use</b>	<b>13.2</b>	<b>Land reserved for CO<sub>2</sub></b>	<b>0.2</b>
Growing Crops	3.8	Cropland	0.1
<b>Grazing Animals</b>	<b>0.5</b>	<b>Grazing Land</b>	<b>0.2</b>
<b>Harvesting Timber</b>	<b>3.0</b>	<b>Forest Area</b>	<b>0.5</b>
<b>Accommodating Roads, Houses and Infrastructure</b>	<b>1.1</b>	<b>Built-up Area</b>	<b>1.1</b>
<b>Fisheries</b>	<b>0.6</b>	<b>Fishing Area</b>	<b>0.1</b>
<b>TOTAL biocapacity used</b> (not including space for biodiversity)	<b>22.2</b>	<b>TOTAL existing biocapacity</b>	<b>2.1</b>

The most comparable study of other county Footprints that Redefining Progress has completed is for the nine counties in the San Francisco Bay Area. Because the methodology was the same, the Footprint results can be compared meaningfully across categories.

<sup>1</sup> The national Ecological Footprint calculations are conducted using a somewhat different methodology, so the numbers are not strictly comparable. However, they are similar enough to provide an idea of the relative Footprint of Sarasota County versus the rest of the country.

## Average Ecological Footprint Results—San Francisco Bay Area

	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara
<b>ENERGY</b>	2.51	4.78	2.37	2.49	2.59	2.46	2.80
<b>HOUSING</b>	1.01	1.18	1.38	1.40	0.86	1.09	1.05
<b>FOOD</b>	6.16	6.16	6.16	6.16	6.16	6.16	6.16
<b>GOOD&amp;SERVICES</b>	7.19	7.33	7.19	7.31	7.29	7.11	7.13
<b>TRANSPORTATION</b>	4.01	3.64	4.79	4.30	2.16	4.41	3.86
<b>RECYCLING</b>	-0.32	-0.27	-0.39	-0.40	-0.50	-0.37	-0.39
<b>Total</b>	<b>20.57</b>	<b>22.83</b>	<b>21.51</b>	<b>21.26</b>	<b>18.57</b>	<b>20.86</b>	<b>20.62</b>

The County's **Housing** Footprint is larger than the counties that have been studied in the San Francisco Bay Area, which range from 0.86 acres at the low end to 1.4 acres, still more than 32% lower than Sarasota's. The reason for this appears to be Sarasota's very small household size<sup>2</sup> of 1.86 persons per household, in comparison to Bay Area household sizes between 2.3 and 2.9 persons per household. Sarasota's demographics readily explain this difference in household size. It has a relatively large percentage of persons of retirement age (31.5% versus a national average of 12.4% in 2000, according to the US Census). Such households are much more likely to consist of one or two people. In addition, there are relatively few school-age children (16.2% versus 25.7%).

The County's **Transportation** Footprint is in line with the average transportation Footprint for counties studied in the San Francisco Bay Area. Sarasota's **Energy** Footprint is larger than those in the Bay Area, most likely attributed to a climate with many more days calling for air conditioning than in the more temperate Bay Area.

Sarasota's **Food** and **Goods & Services** Footprints are also similar to those found in the San Francisco Bay Area. These measures are standardized because they use national figures. Sarasota's **Recycling** record, on the other hand, reduces its overall Footprint more than even the Bay Area's most dedicated recyclers in San Francisco.

## Calculating Local and Regional Ecological Footprints

Redefining Progress has been refining the process used for calculating regional Ecological Footprints. The method takes advantage of local data where they are available and reliable. Where local data are missing or limited, national data are scaled to the local level. In the case of Sarasota County, local data included:

- Population
- Acreage
- Electricity use by source
- Natural gas use
- Gasoline use
- Number of vehicles
- Road miles
- Type, age, and number of housing units
- Recycling
- Biocapacity (area of different types of land)

These figures provided the information for the Energy, Housing, Transportation, and Recycling Footprints.

<sup>2</sup> Actual household size (calculated by dividing the number of people by the number of housing units, is lower than the reported household size for the County). However, the actual size is a more useful comparison in this case because the housing Footprint was based on the number of households, rather than the reported household size.

The Food and Goods and Services Footprints are based directly on national data from our national Ecological Footprint calculations. These national estimates use government data on national production and trade of all major resources and goods. They are then scaled to the local level using population figures.

## What can Sarasota County do with its Ecological Footprint?

Towns and regions, situated at the nexus of policymaking and consumption, will be key leverage points as we pursue more sustainable lifestyles. The Ecological Footprint can help direct local planning and policy decisions in Sarasota County that affect important resource use issues such as sprawl, community vitality, zoning, transportation, environmental regulations, and open space preservation.

The Footprint can help Sarasota County:

- ❖ *See where it could make the most effective movement toward sustainability.* Examination of the County's Footprint will show not just the biggest 'culprits' in producing that Footprint, but also allow the County to examine the costs of reducing those. Such an examination will help the County determine a direction for reducing its Footprint and therefore its overall shadow on the planet.
- ❖ *Define its sustainability goals, in specific and measurable terms.* It provides local government and NGOs with a standard for the tangible realization of their sustainability goals. The Footprint helps build consensus to focus on sustainability, providing a meaningful context for decisionmaking.
- ❖ *Assess current progress in this direction.* By creating a benchmark for ecological performance, Sarasota County can assess its ecological impact, compare this impact to nature's capacity to regenerate, and document gains as it moves toward sustainability.
- ❖ *Create strategies for accelerating progress.* The Footprint encourages more systemic approaches at the community level, identifying difficult trade-offs as well as opportunities for improving people's quality of life on smaller Footprints. It creates a platform for municipal planning around housing, energy infrastructure, and transportation, motivating policies that guide private and public decisionmaking toward sustainable choices.
- ❖ *Develop activities that maintain the community's interest in building a sustainable future.* The Footprint communicates easily, offering a useful educational tool for furthering public debate on sustainability, and encouraging appropriate action. Footprints add depth to existing Community Indicators Projects, Green Plans, and other environmental reporting frameworks.

## Improving the Sarasota County Assessment

The national Footprint accounts are scientifically robust and have been continually refined with seven years of research. Our national accounts have been significantly expanded in the past two years, adding greater detail, improving the analytical capabilities, and strengthening underlying assumptions. Our accounting template automatically downloads data to make the computation of Footprints quicker, more automatic, and free of data-entry errors. The methodology was recently published in the Proceedings of the National Academy of Sciences (available: <http://www.pnas.org/cgi/reprint/142033699v1.pdf>). However, the national accounts

do not completely address the differences between local consumption patterns across the country. We use them as a good approximation for those categories that cannot now be measured at the local level, but hope to have more complete local data in the future. Local Footprints, as with all Footprint assessments, are as good as the available data. Local consumption data and effective conversion methods are difficult to find. In particular, it is much more common to measure how much is *spent* on these things rather than *how much* of them is actually used. This makes it very difficult to account for differences in pricing, which can vary dramatically for something as simple as a loaf of bread.

An alternative to using indicator data from local agencies would be to conduct Footprint surveys to collect the desired data for a region. This would likely yield the most accurate results, but could be costly and time-intensive. Household Footprint surveys, randomized to capture all household types in a statistically meaningful way, could address key consumption patterns, such as energy use, purchasing, and food consumption, and provide the most interesting data for local Footprint assessments.