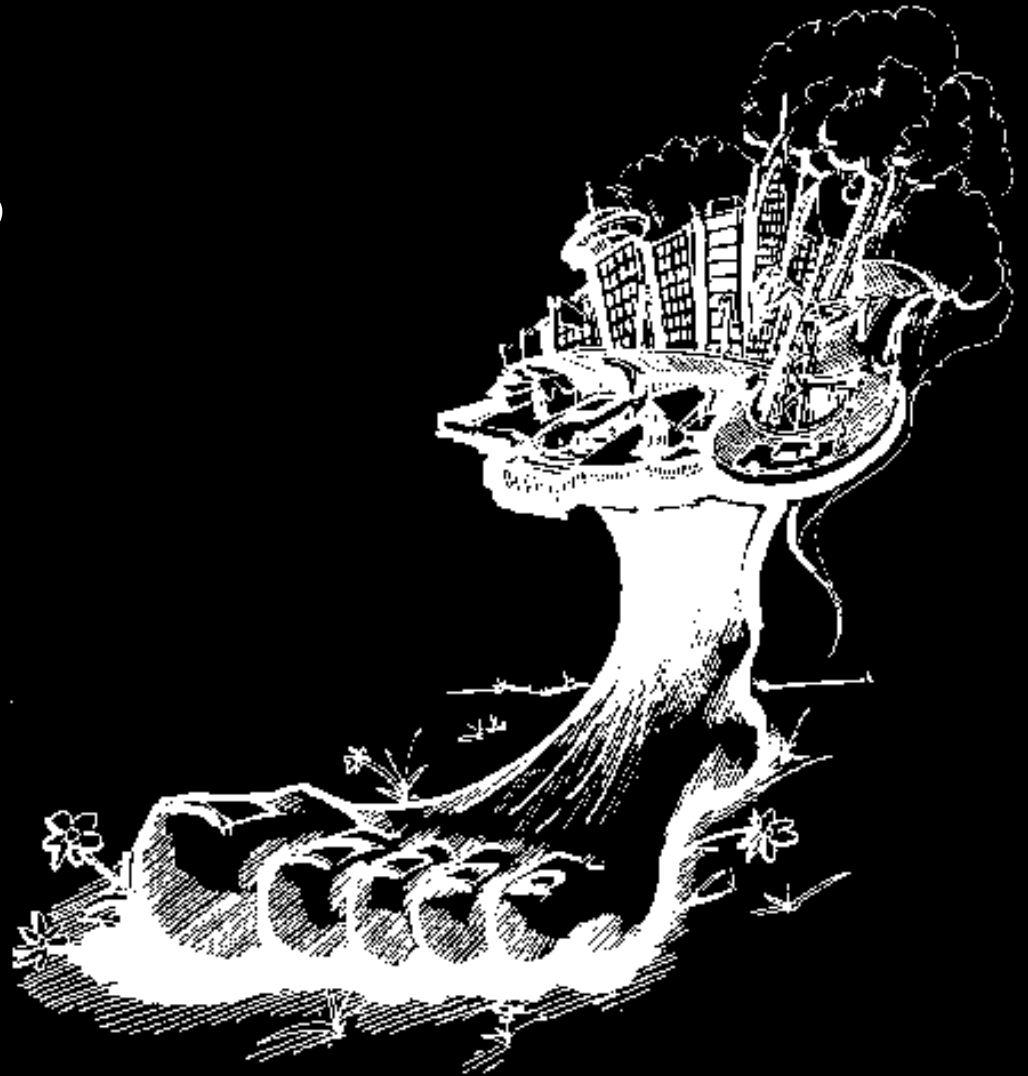


# Ecological Footprints

Melinda Angeles  
Green Design & the City



# Rees' dilemma

## Carrying Capacity

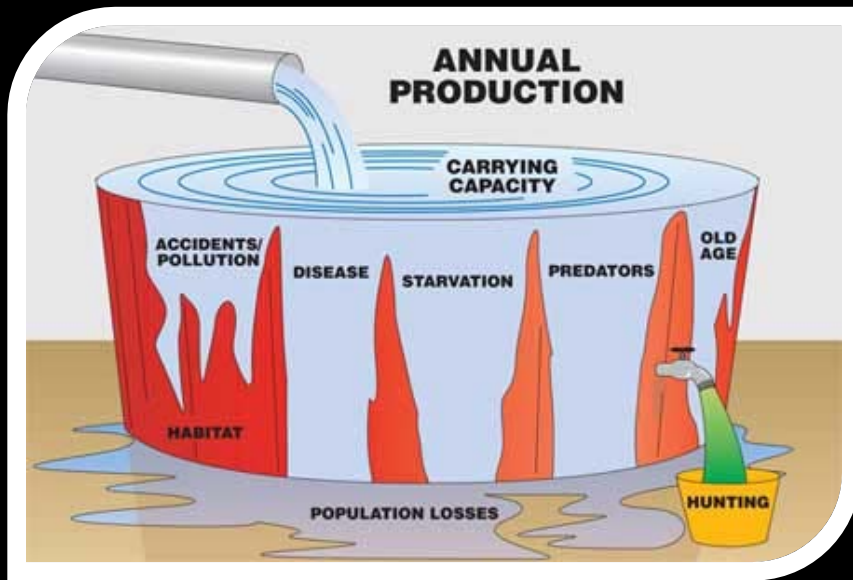


Image: Today's Bowhunter

≠

?

[1]

(for wildlife)

(for humans)

# Rees' dilemma

## Carrying Capacity

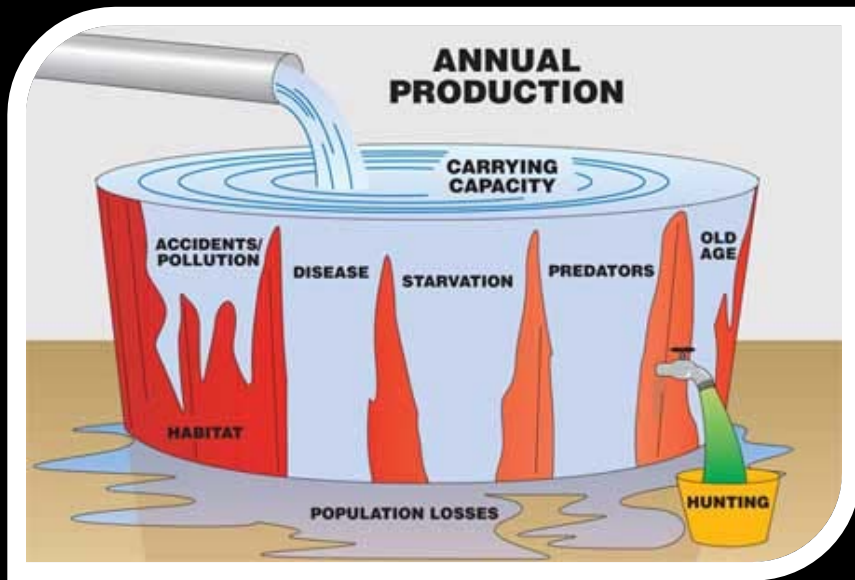


Image: Today's Bowhunter

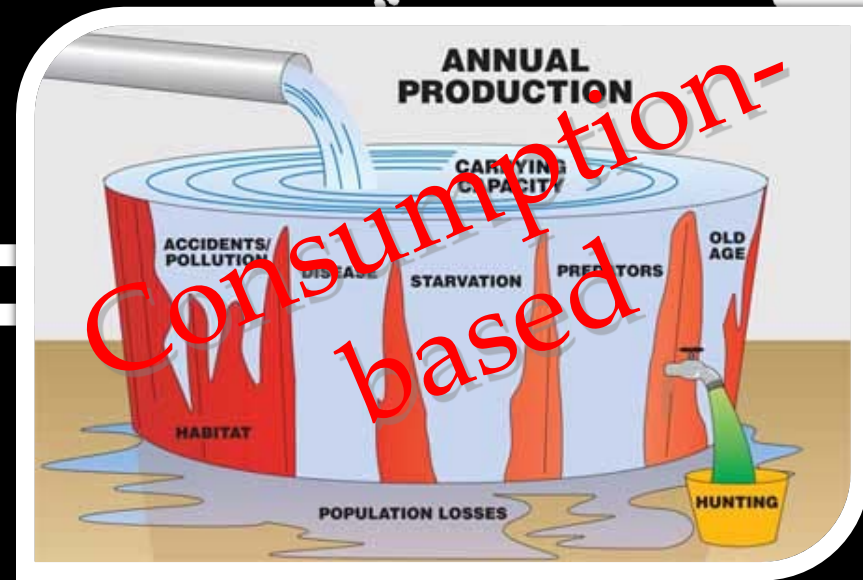


Image: Today's Bowhunter

[1]

(for wildlife)

(for humans)

# The Ecological Footprint

## MEASURES

how fast we consume resources and generate waste





# methodology

amt of product harvested or waste  
emitted

$$EF = \frac{P}{Y_N} \cdot YF \cdot EQF$$

national average yield

national biocapacity

yield factor

$$\frac{BC}{A} = YF \cdot EQF$$

area

equivalence factor

# methodology

amt of product harvested or waste  
emitted

national biocapacity

$$EF = \frac{P}{Y_N} \cdot \frac{BC}{A}$$

national average yield

area



# Keys to excellent indicators

- Relevancy

  - Human Consumption

- Easy to understand

  - Area-based

- Reliable

  - Monitored and updated

- Based on accessible data

  - National data (Census), etc.

WHOLE EARTH CATALOG

*access to tools*



Fall 1969  
\$4

and  
One planet  
economics

finite sources



# Limitations

“some aspects of sustainability are excluded from its scope, some aspects of demand are hard to quantify, and errors can occur in the calculation” due to human error or erroneous assumptions

- The Global Footprint Network

EFs are mainly underestimates



# Limitations

- Temporal [6]

Maintain & update

- Somewhat Subjective [7]

What is “productive” land?

- Aggregate Indicator [8]

Not meant to pinpoint

- Simple [9]

No recommendations;  
must be extrapolated



# EARTH OVER SHOOT DAY 2009

January 1, 2009

Humanity has used **00%**  
of nature's budget for the year.

*$[worldbiocapacity / worldEcologicalFootprint] \times 365 = EcologicalDebtDay$*

To estimate your footprint, please select those options that most closely reflect your lifestyle:

I live in the United Kingdom, I travel mostly by  and usually holiday

I live in a  that I share with

For the size of my home, my heating/cooling bills are relatively .

I buy my electricity from  and I tend .

I am a regular meat-eater  and usually eat

I produce  amount of domestic waste, most of which is .

Your estimated carbon footprint is 11.2 tonnes CO2 with an ecological footprint of 5.7 global hectares. If everyone in the world lived like you, we would need 3.5 planets to support global consumption.

CO2 emissions (tonnes)

Carbon footprint by component

- Mobility
- Food & drink
- Housing
- Health & education
- Holidays
- Other goods & services
- Other infrastructure

Efficiency of economy (% improvement)


Best Foot Forward

individual EF calculator

### Your Journey:

Please click on the map to choose your departure point and destination, then see the cost calculated below.

*(if the map is too squashed, open map in a separate window)*




travel calculator (CO<sub>2</sub>)

## Water Footprint

Introduction

People use lots of water for drinking, cooking and washing, but also for cotton clothes, etc. The water footprint is an indicator of water use by consumers or producer. The water footprint of an individual, community or business is the total volume of freshwater that is used to produce the goods and services consumed by that individual, community or business.

1350 litres water  → 1 kg wheat 

- Introduction
- About WFN
- National Water Footprints
- Corporate Water Footprints
- Your Footprint Calculator
- Product Gallery
- Case Studies
- Training Materials
- Publications

water calculator

Ecological Footprint

Measuring our impact on the environment



reset quiz

individual EF calculator

## The CO<sub>2</sub> Calculator

The CO<sub>2</sub> calculator can be used to calculate CO<sub>2</sub> emissions from everyday Japanese electrical appliances and automobiles based on energy consumption figures. By marking the appliances you use and filling out the required information, you can get a quick idea of how you can impact on the environment through your lifestyle. The final calculation is based on the number of households in Japan, and points out how people impact on the environment as a collective force. Try adding and subtracting the various items to see what products tend to have larger impacts.

While the figures and calculations are based on a Japanese context, it does help in illustrating the kinds of impact that everyday appliances can have on the environment. Indeed, not all electrical appliances used in a typical Japanese household are included, but demonstrates causal relationships!!

Colour TV (Standard) hrs/day:

CO<sub>2</sub> calculator

adventures with **Bobbie Bigfoot**

Help me find out how big my Ecological Footprint is

Kids begin here

Teachers begin here

Lesson Plans

EF calculator for kids

### Footprint Estimation Form

Presented through the efforts and generosity of Jason Vercellis.

Do not enter any COMMAS. Fill all fields. Enter values less than 1 as, for example, one half is 0.5 NOT .5.

In an average week how much of the following food items do you eat?

Vegetables and Fruits 1 serving = 6 oz. & 0.5 lbs.	<input type="text"/>	lbs.	Fish Avg. week = 0.33 lbs.	<input type="text"/>	lbs.
Pasta Enter # of 4 oz. servings	<input type="text"/>	#	Beef Avg. week = 1.5 lbs.	<input type="text"/>	lbs.
Chicken Avg. week = 1.25 lbs.	<input type="text"/>	lbs.	Cheese and Butter Avg. week = 0.5 lbs.	<input type="text"/>	lbs.
Pork Avg. week = 1 lbs.	<input type="text"/>	lbs.	Eggs per week?	<input type="text"/>	#

How many 8 oz. glasses of the following beverages are consumed in the average week?

Juice	<input type="text"/>	# servings	Wine	<input type="text"/>	# servings
Soda	<input type="text"/>	# servings	Milk	<input type="text"/>	# servings
Coffee	<input type="text"/>	# servings			

How many times in an average week do you eat breakfast, lunch or dinner at a restaurant?

Number of times

individual EF calculator

1. What country do you live in?

Choose your country here

or on the map:



2. What measurement system would you like to use?

individual EF calculator

EDF ENVIRONMENTAL DATA FOOTPRINT

Paper Calculator

Why do paper choices matter?

See the environmental benefits.

What Users Are Saying

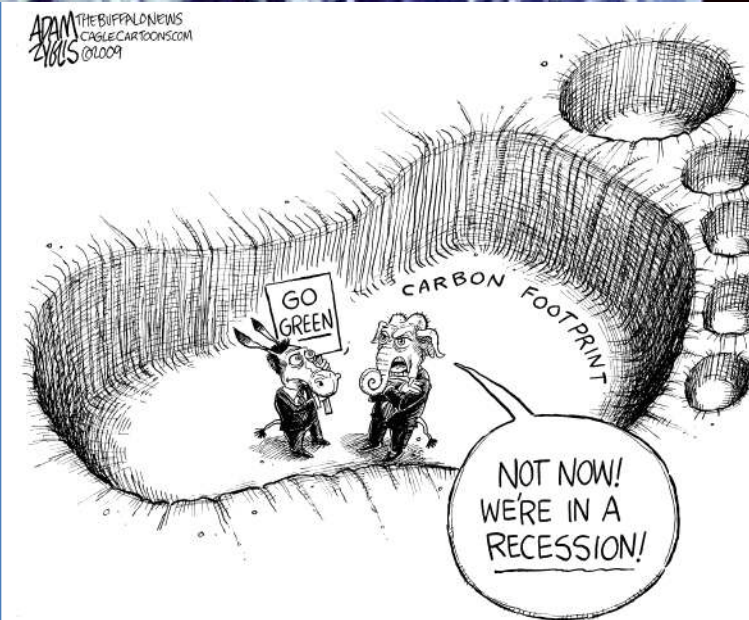
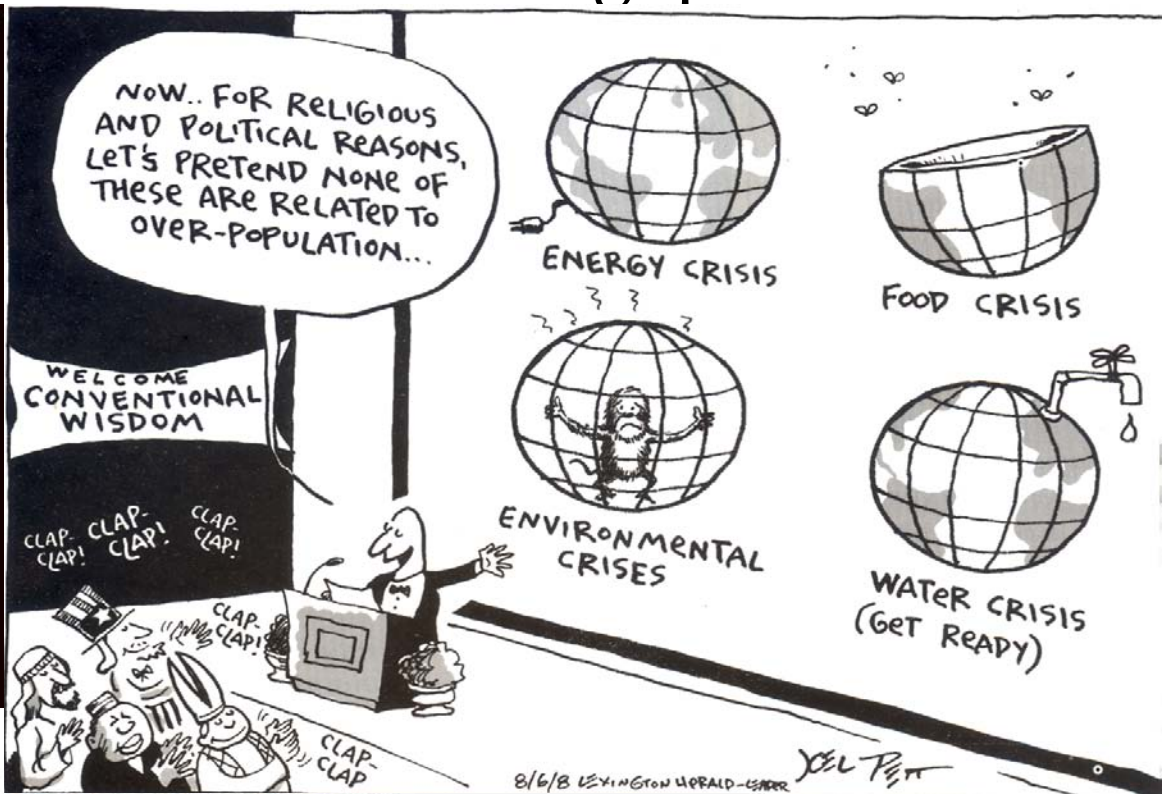
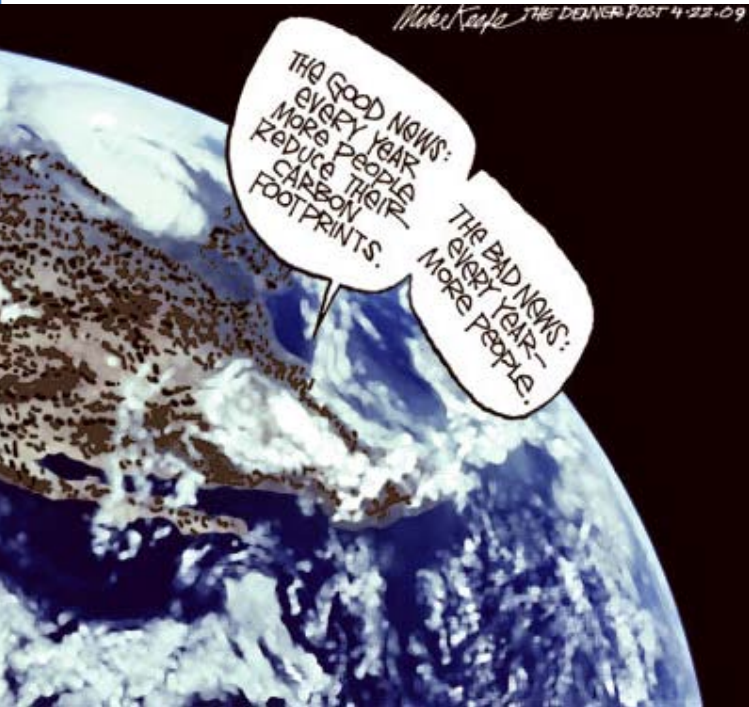
paper calculator



# Sources

- [1] Foss, Kelly. "Originator of the ecological footprint to lecture at Memorial." *The Gazette*. Memorial University. <<http://www.mun.ca/gazette/issues/vol41no8/originator.php>>
- [2] Ewing, Brad, et al. "Calculation Methodology for the Global Footprint Accounts, 2008 Edition." Global Footprint Network.
- [3] "Characteristics of effective indicators." Sustainable Measures. <<http://www.sustainablemeasures.com/Indicators/Characteristics.html>>
- [4] Science, Technology, and Society class. Nathan Ensmenger.
- [5] Ewing, Brad et. al. "The Ecological Footprint Atlas 2008." Global Footprint Network. 28 Oct. 2008.
- [6] Fiala, Nathan. "Measuring Sustainability: Why the Ecological Footprint is Bad Economics and Bad Environmental Science." University of California, Irvine: Department of Economics. 15 July 2008.
- [7] Ibid.
- [8] Kitzes, Justin and Mathis Wackernagel. "Answers to common questions in Ecological Footprint Accounting." Global Footprint Network. *Ecological Indicators*. Vol. 9, pg 812-817. 21 Sept. 2008.
- [9] Ibid.
- [10] The Global Footprint Network. World Overshoot Day 2009. Flash animation.

# Stuff to look at while I'm answering questions



Be fruitful and multiply...



Now divide.

