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Module 01: Introduction to Urban Ecology

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PowerPoint - What Do We Think of Our Cities?

Center for Urban Resilience

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What do we think of our cities?

- Do we think of cities as beautiful places?
- Are cities healthy places to live?
- Do most of the world's people live in cities?
- Do cities function like other natural systems, such as deserts and forests?

These questions help us to frame
our investigation of urban landscapes



Cities are centers of culture and industry. Cities should be at the core of our vision for a healthy and sustainable environment. As young urban dwellers, you have a fantastic opportunity to learn more about your city and to help transform it into a more livable environment.

Some questions to help us develop our understanding of cities...

- Why study cities scientifically as ecosystems?
- How do cities differ from other ecosystems?
- What adaptations do animal and plant species have in order to exploit the urban ecosystem?
- How can you, as a student who lives in a city, use this information?

Why Study Cities Scientifically ?

- The majority of the world's population now live in cities (>50% worldwide; >65% United States)
- Current pattern of *urban sprawl* is the most ecologically damaging model for development
- The quality and character of urban landscapes shape how people view nature
- By focusing research efforts on urban ecology, cities can become more livable - development pressure can be taken off of suburban and rural lands

Let's Investigate an Asian city famous for its size...

- Hong Kong, a city off the coast of China, is one of the first mega-cities on earth
- Hong Kong is built on a series of more than 1000 separate islands
- This city is considered by many to be the best example of a huge metropolis

Hong Kong skyline at night

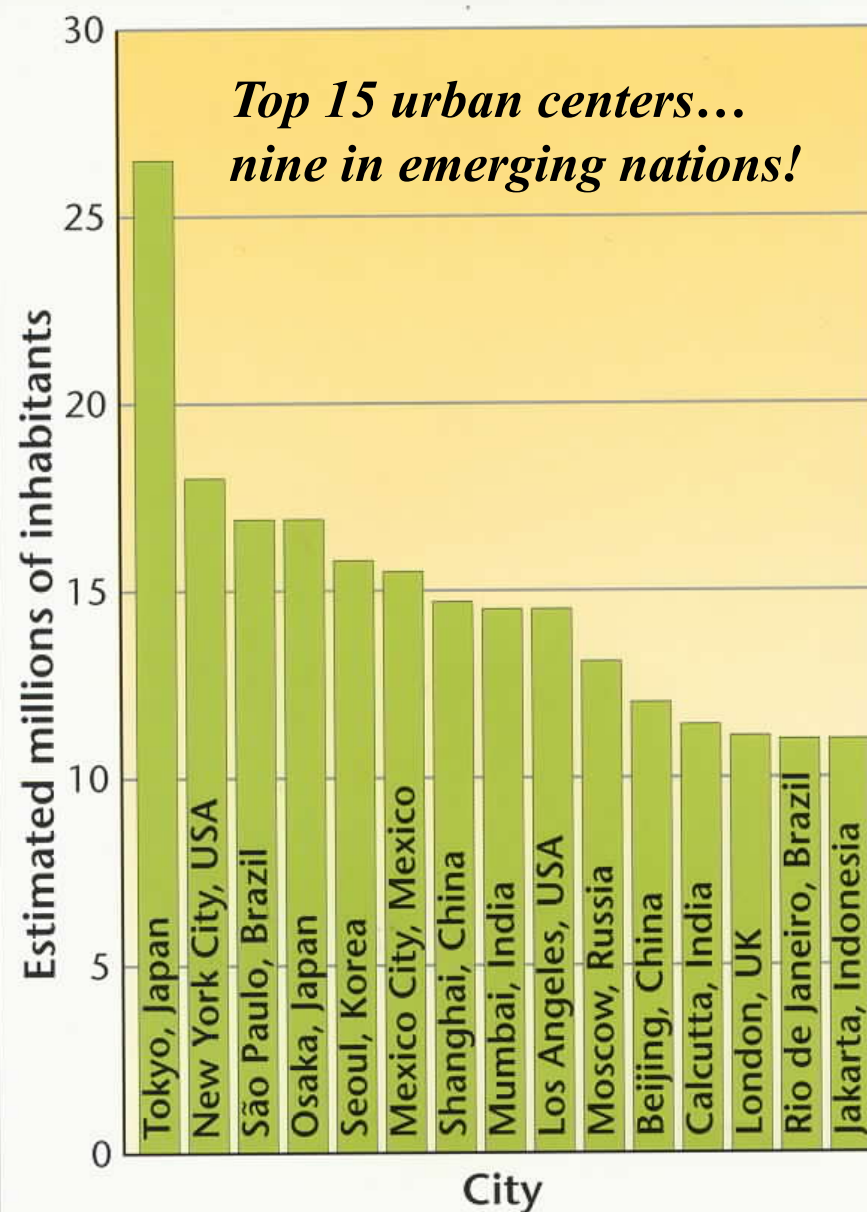


One of the world's largest & most densely populated cities (app. ten million). The urban footprint has completely surrounded the estuary with no remaining open space.

Despite its enormous population density, Hong Kong is ultimately limited by land mass and is not even one of the fifteen largest cities in the world.

The largest metropolitan areas exceed 15 million people with the fastest growing urban areas in developing nations (nine) ... with the least resources to deal with urban sprawl.

Largest Urban Areas



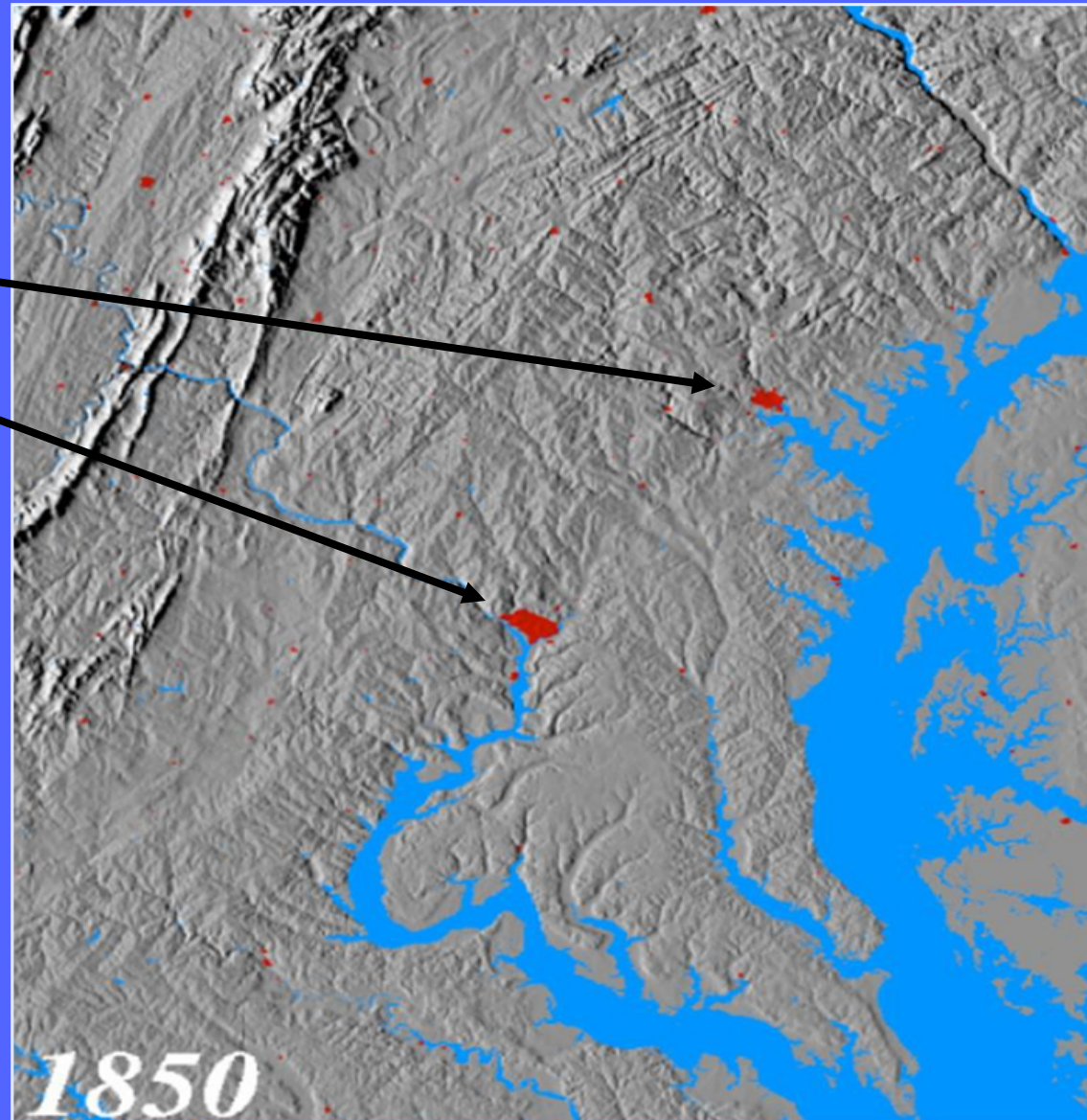
Source: U.S. Bureau of Census, International Database 2000

Cities Take up physical space - an idea called the *Urban Footprint*

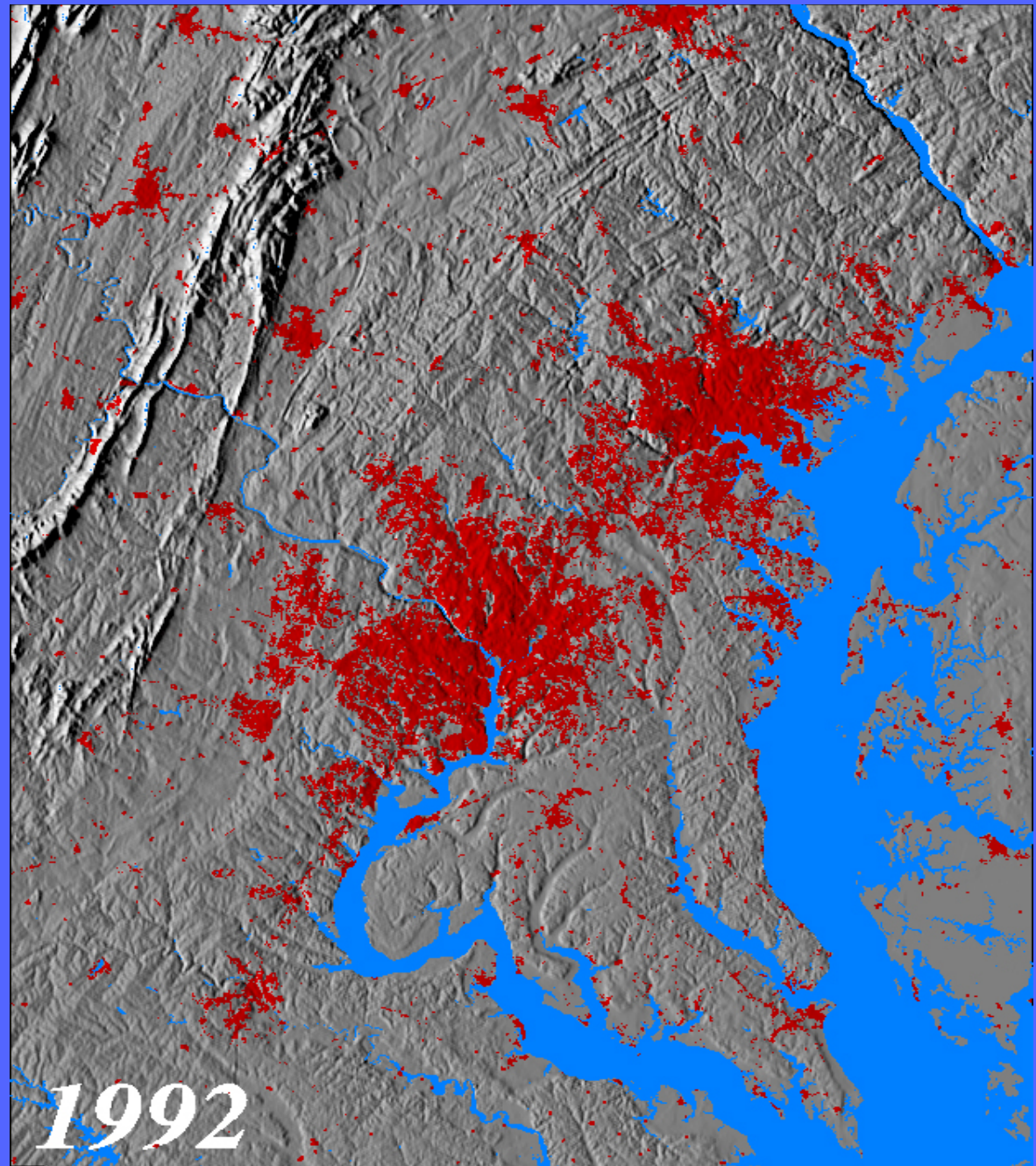
- As urban populations grow, the physical size of the city will grow to accommodate the additional people, therefore increasing the size of the urban footprint
- Hong Kong cannot increase its footprint - there is no more land upon which to build the city
- Most other city footprints are growing rapidly; consider the growth of Baltimore and Washington DC over the past 140 years

Urban footprints have grown immensely around the world.

Here we see the
Baltimore
(north) and
Washington D.C.
urban boundaries
as they appeared
in 1850.



In this image the urban footprints are depicted from 1992. The rapid urbanization was made possible by the advent of rapid transportation and the ability to concentrate resources into densely inhabited areas



Growing footprints give rise to *Urban Sprawl*

- Often, when the population of a city grows, so does its physical size - this growth of physical size is called Urban Sprawl
- In many cities, the acceleration of urban sprawl is dramatic and a real challenge to the health of the city.
- The following are examples of urban growth from four American cities - these cities have grown much more rapidly in size than they have in population.

The growth of cities has been most pronounced when the data are measured as changes in land use practices (sprawl)...

Table 1 - Expansion of Population and Urbanized Land Area in Four Metropolitan Areas 1970-1990

Metropolitan Area	Change in Population 1970-1990	Change in Urbanized Land 1970-1990
Chicago	+4%	+46%
Los Angeles	+45%	+300%
New York City	+8 %	+65%
Seattle	+38%	+87%

Source: Adapted from Leinberger 1995, as reprinted in Diamond and Noonan 1996, Fig. 3.

From: Platt, R. (2000) Ecological Cities Symposium at Boston College

The growth of urban areas is closely linked to the development of technology

- Cities have grown rapidly as technology and the industrial revolution of the past 150 years has created opportunities for people in urban areas.
- The impact of industrialization, especially the burning of fossil fuels, has led to environmental decline due to the release of greenhouse gases.
- Global warming is closely associated with human industrial practices.