

## LESSON 3: URBAN SPRawl

### **OVERVIEW:**

*The purpose of this lesson is for students to explore urban sprawl. They will first analyze urban growth patterns at the national level and then compare the density changes associated with various urban areas in the United States. Finally, they will research information about their own metropolitan area to conclude if it is currently contributing to urban sprawl and suggest how land use policies may have contributed to its current state.*

### **WAYS OF KNOWING URBAN ECOLOGY:**

		Students will...
<b><u>Understand</u></b>		<ul style="list-style-type: none"> <li>Understand that one of the dominant demographic changes in the United States is the increased urbanization of the landscape and the rapid growth of urban sprawl. (<i>human impact, forces and drivers</i>)</li> <li>Understand that city land use policies influence the extent to which urban sprawl will occur. (<i>human impact, forces and drivers, ecosystem state and structure</i>)</li> </ul>
<b><u>Talk</u></b>		<ul style="list-style-type: none"> <li>Develop an argument for to support their assessment of the current degree to which their metropolitan area may be contributing to urban sprawl.</li> </ul>
<b><u>Do</u></b>		<ul style="list-style-type: none"> <li>Do a case study of their own metropolitan region to determine to what degree it is contributing to urban sprawl.</li> </ul>
<b><u>Act</u></b>		<i>No specific goals connected with acting on urban ecology in this lesson.</i>

### **SAFETY GUIDELINES:**

No specific safety precautions

### **PREPARATION:**

#### **Time:**

2 class periods

#### **Materials:**

#### **Day 1**

##### **Activity 3.1**

LCD projector

US\_Urbanization.ppt

##### **Activity 3.2**

LCD projector (if not in a computer lab)  
us\_urban\_sprawl.swf  
Computers for students  
Copies of Case Study Sheet for each student

## Day 2

### Activity 3.3

Access to the internet

## INSTRUCTIONAL SEQUENCE

### Day 1

#### **Activity 3.1: Urbanization of the United States?**

This activity is designed to get students thinking about the increased urbanization of land in the United States and to think about different approaches to city planning.

1. Start this lesson with the discussion what constitutes an urban area? Asking students to think about their local area whether they think they live in an urban and how they would characterize an urban area to a non-urban area.
  - o You can either break the students into groups and have them brainstorm what it means to be urban or have an entire class conversation.

### **Teaching Information**

The United States Census Bureau defines an urbanized area as one who has a population density of 1000 people per square mile. According to this definition there are no other variables that are considered.

Whereas **Metropolitan Area (MA)** is one of a large population nucleus, together with adjacent communities that have a high degree of economic and social integration with that nucleus. Some MAs are defined around two or more cities (an example is Dallas-Forth or Minneapolis-St. Paul).

2. After the students have had a chance to talk about what it means to live in an urban area show the PowerPoint file: "US\_Urbanization.ppt". This file shows the following
  - United States Urbanized Areas in 1990
  - United States Urbanized Areas in 2000
  - United States Metropolitan Areas in 1990
  - United States Metropolitan Areas in 2000
  - United States Population Changes from 1990 – 2000 in percent
  - o Have the students discuss any patterns that they may see as you go through the PowerPoint slides. The slides are designed to overlay one to help identify patterns. One strategy is to go back and forth between the first slides and pointing out to the students to notice if any areas had significant urbanized land growth. Do the same with the next two slides that show the metropolitan areas.

### **Teaching Information**

There are several patterns that can be discerned from the data in the PowerPoint file. In particular, some that may point by your students are:

- Since 1990 the number of urbanized areas have increased dramatically
- East of the Mississippi river has seen the greatest increase in urbanized areas
- The increased urbanization has resulted in increased fragmentation of the land across the U.S.
- Metropolitan areas have grown even faster in size than urbanized areas which leads to sprawl

3. Close this activity by telling the students that they are now going to investigate a few more cities in more detail.

### Activity 3.2: Examination of various cities

In this activity students will be investigating different cities and examining how metropolitan cities have changed along three variables:

- **Percent Land Use change** – This variable is how much land the metropolitan area increased/decreased during the 15 year period from 1982-1997
  - **Percent Population** - This variable shows the population changes the metropolitan area underwent during the 15 year period from 1982-1997
  - **Population Density**- This variable shows the population density changes the metropolitan area underwent during the 15 year period from 1982-1997
1. Have students open the file: “**us\_urban\_sprawl.swf**”. This file should be opened in a web-browser. Click on the green dots to change the upper graph (green) and the red dots to change the lower graph (red).
    - Have students compare 4-5 cities and use student Urban Sprawl handout to record their findings and ideas.

### Teaching Information: Defining Sprawl

According to the Brookings Institution report *Who Sprawls Most?* sprawl as a measurement of land consumed for urbanization is an elusive term. To some, it means a pattern of auto-oriented suburban development. To others, it means low-density residential subdivisions on the metropolitan fringe.

One of the more common method of defining sprawl is to characterize it simply in terms of land resources consumed to accommodate new urbanization. If land is being consumed at a faster rate than population growth, then a metropolitan area can be characterized as “sprawling.” If population is growing more rapidly than land is being consumed for urbanization, then a metropolitan area can be characterized as “densifying.”

This definition is not the only one for sprawl, but it does provide a useful baseline of sprawl as it relates to the land resources of our nation and its metropolitan areas.

### Sprawl misconception

Many of the densest metropolitan areas in the United States are located in the West—most specifically, in California, Arizona, and Nevada. Meanwhile, the older metropolitan areas of the Northeast and Midwest—while their underlying densities are high by national standards—are sprawling far worse than their counterparts elsewhere in the nation. This is not to say that the Western cities do not have sprawl patterns; it is just that the perception, particularly as often reported in the popular press, that older cities tend not to have as much of a sprawl problem as younger western cities in the United States.

2. After the students have had a chance to explore at least 4-5 cities lead the class in a discussion about what they had observed or found. Of particular importance is that the students begin to notice the following pattern:
  - A city probably has more sprawl if its land use percent is going up and its population density is going down
  - Southern cities, in particular, have more sprawl than their Midwestern and Western counterparts
  - Some cities are currently experiencing significant sprawl such as Dallas, Phoenix, Atlanta, Pittsburgh, and Boston
3. As a part of this discussion brainstorm with the students about why some cities are sprawling more than others. Specifically, ask the students about what decisions some cities may have made to limit sprawl or what the cities can do to stop sprawl.

### Teaching Information

According to the Brookings Institute Report: “Who Sprawls Most? How Growth Patterns differ Across the U.S.” the following pattern may emerge from the discussion above:

- Most metropolitan areas in the United States are adding urbanized land at a much faster rate than they are adding population
- The West is home to some of the densest metropolitan areas in the nation
- Metropolitan areas tend to consume less land for urbanization-relative to population growth-when they are growing rapidly
- Metropolitan areas tend to consume more land for urbanization (relative to population growth) if they are already high-density metro areas and if they have fragmented governments

### Day 2

#### Activity 3.3 – A Case Study – What is the current state of your metropolitan area?

In this activity students research the current growth pattern of their metropolitan area and identify specific land use policies that have influenced the pattern. Like the data that was used in the previous activity, they will want to determine,

- How the population of the metropolitan area has changed over the past 20 years.
- How the size of the metropolitan area has changed over the past 20 years.

- What current land use policies exist with regards to the development of homes, such as how much land is required to build, what type of homes are allowed to be built or have been built, what type of transportation exists, etc.?
1. This activity is best done using cooperative groups of 2-3 students per group. After distributing the worksheet to students, you may choose to have each group research all aspects of the case study, or you may choose to have different groups research different information and them report back to the class.
  2. At the end of the research, the point is to have students come to a conclusion about whether their current metropolitan area is sprawling or not using evidence to support their claim and giving reasons for why they think this is occurring.

### **Conclusion**

Have students consider the following land use policy and discuss how such a policy would impact the land use in a hypothetical region.

Houses may only be built on lots that are at least one acre in size and must accommodate only a single family.