

Emerging Infections

Public Awareness of Emerging Infections



Emerging And Re-emerging Infectious Agents

A. Viruses

SARS (Severe acute respiratory syndrome)

West Nile

Influenza

Eastern Equine Encephalitis

Hantavirus

Ebola

B. Bacteria and rickettsiae

Plague

E. coli 0157

Rickettsial pox (Rocky Mountain spotted fever)

Cholera

c. Protozoa

Malaria

Cryptosporidium parvum

Trypanosomiasis (African)

Leishmaniasis

Medical Ecology Of Infectious Diseases



Medical Ecology: Environmental Disturbance and Disease
E-Seminar 1, The Normal Environment: How Things Got This Way
Taught by Dickson Despommier



http://ci.columbia.edu/ci/eseminars/1111_detail.html
<http://www.medicalecology.org/>

Environmental Disturbance Leads To Emergence Or Establishment Of Infectious Agents

- Dam building
- Traditional Agriculture
- Urbanization
- De-forestation
- Irrigation
- Political unrest and open warfare
- Natural disasters and unusual weather patterns

The Ecotone*



The Earth At Night



The Ecotone And Infectious Diseases

Viruses:

Rabies
Yellow Fever
Lassa Fever
Ebola
Hanta
Influenza

Bacteria:

Cholera
Lyme Disease

Protozoa:

Malaria
Trypanosomiasis

Helminths:

Schistosomiasis

Environmental Disturbance Leads To Emergence Or Establishment Of Infectious Agents

Dam building:

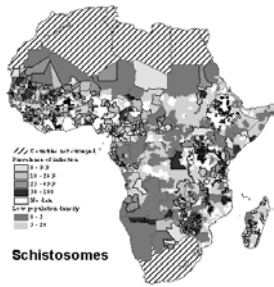
There are currently over 800,000 dams throughout the world, with 75,000 within the USA.

Diseases (mostly tropical) associated with dams:

1. Schistosomiasis
2. Malaria
3. River blindness (Onchocerciasis)



Schistosomiasis In Africa



Courtesy WHO

Schistosomiasis Was Prevalent Among Ancient Egyptians And Still Is Today



Mummy in Cairo Museum

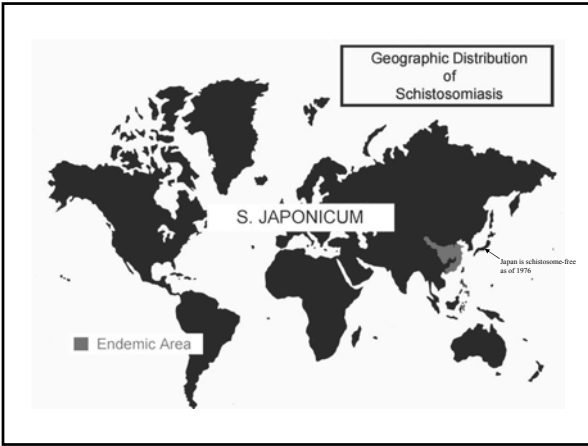


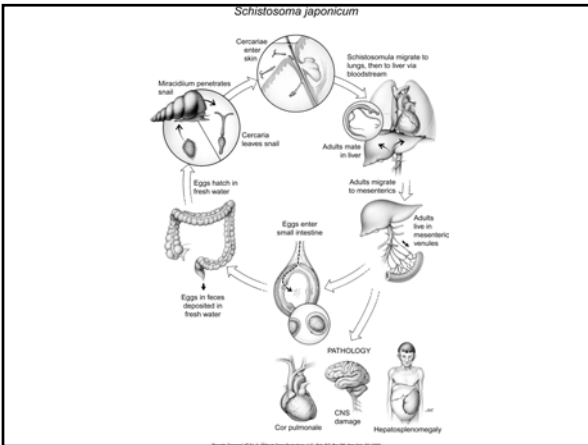
Schistosoma haematophyllum eggs in Mummy wall

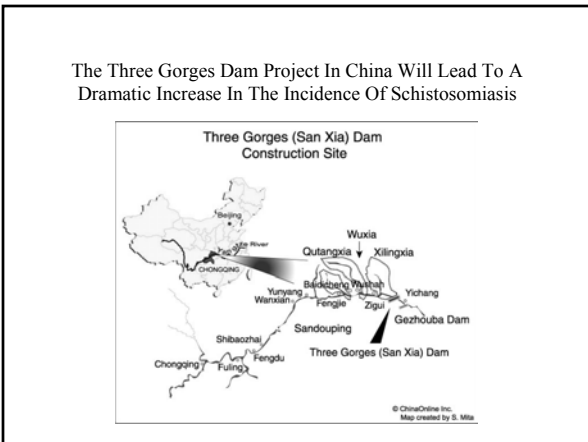
Lake Nasser and the Aswan high dam in Egypt

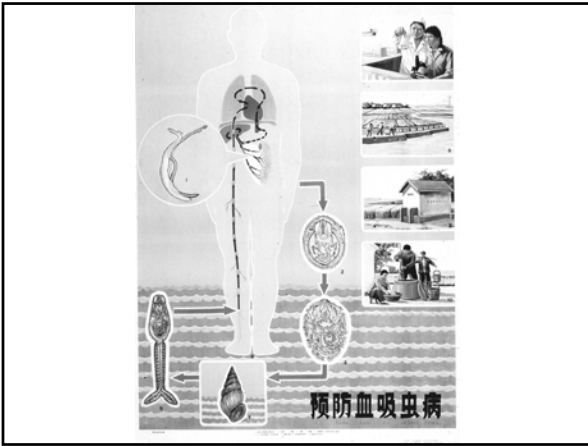


Photo S. Mangrove





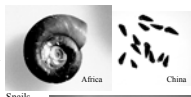




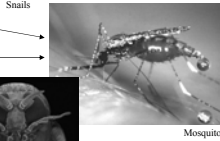
Environmental Disturbance Leads To Emergence Or Establishment Of Infectious Agents

Irrigation:

1. Schistosomiasis →



2. Malaria*



3. Filariasis*



*Vector-borne diseases

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Traditional Agriculture:

Geohelminths - Hookworm, Ascaris, Trichuris



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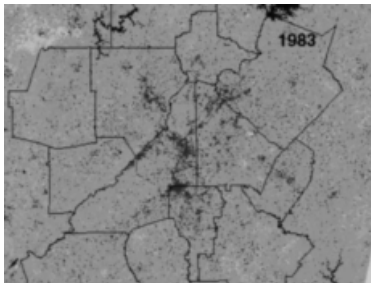
Urbanization: (encroachment into natural systems)

- Rabies
- Upper respiratory viruses
- Lyme Disease
- Arboviruses
- Ebola, Lassa, Hanta
- Plague

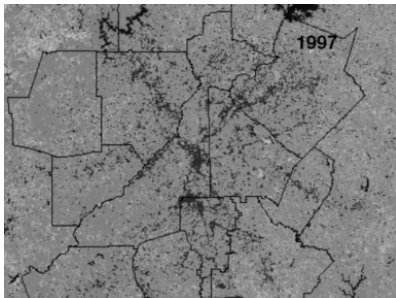


Photo: D. Sharf

Urbanization: Atlanta 1983



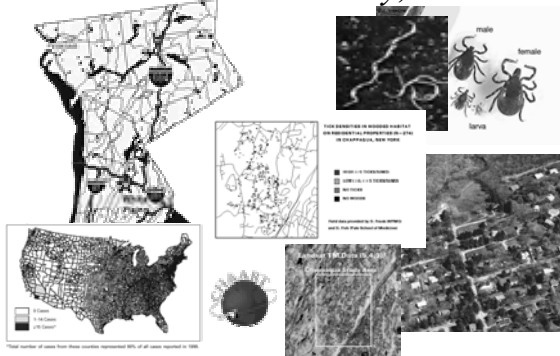
Urbanization: Atlanta 1997



Lyme Disease Maintenance:
Urbanization and De-forestation



Westchester County, NY



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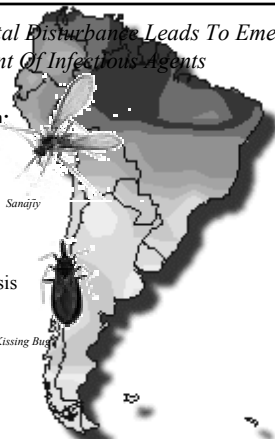
De-forestation:

Leishmaniasis

Sanajiy

Trypanosomiasis

Kissing Bug



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Political unrest and warfare:

- Malaria
- African Trypanosomiasis
- Leishmaniasis
- Tuberculosis

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Natural disasters and unusual weather patterns:

	Flood	Drought	Above-average PPT
Hanta		X	X
Plague		X	X
West Nile		X	
Schistosomiasis	X		

Plague In The USA

