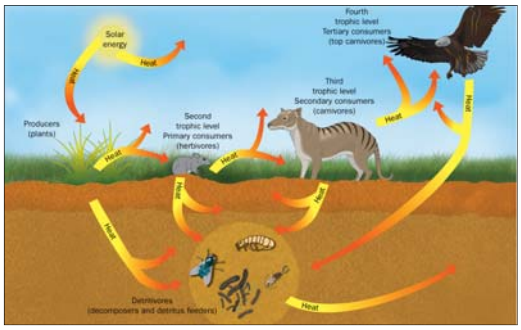
Earth Sc 2EI3 - Lecture 3 - Ecosystems and Biodiversity

1. Energy Flow in Ecosystems and Biodiversity
2. Alien and Invasive Species
3. What is Canada's Record with Invasive Species?

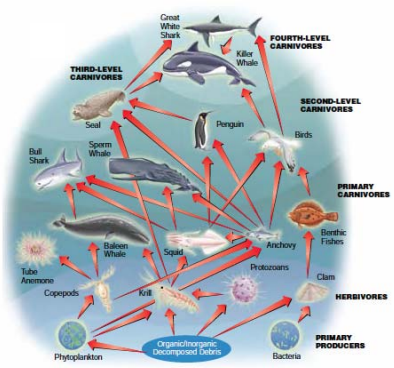
Key Concepts

- Biodiversity and Energy Flow in Ecosystems
- Biodiversity and Endemic Species in Canada
- Invasive Species in Canada
- Canada's record; trends and efforts

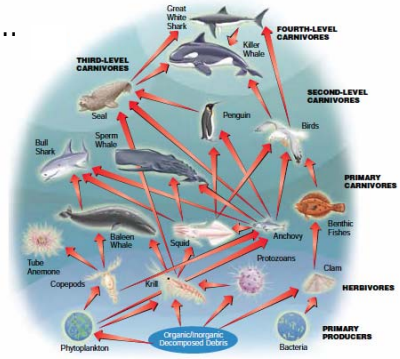
1. Energy Flow in Ecosystems and Biodiversity



Let's Take A Look At This Marine Food Web



Before…



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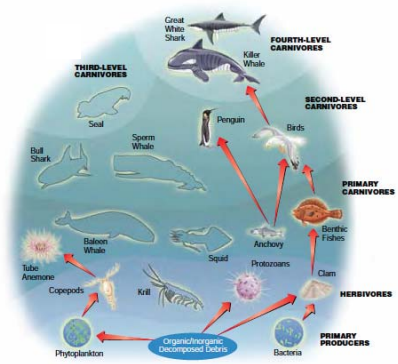

What are Endemic Species?

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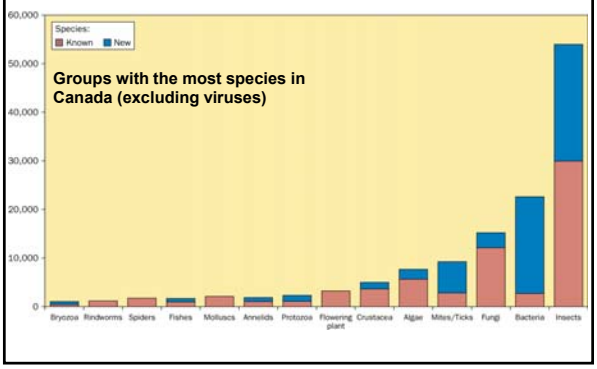
- Canada:
- Australia:

Canada's Record on Protecting its Biodiversity?

- Federal, provinces, and territories put in place an outcome-based plan (2006)
- Problem:

Biodiversity in Canada



2. Alien and Invasive Species

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- 500 species of alien plants are now weeds

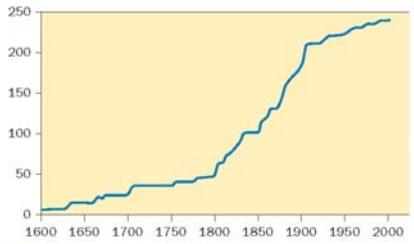
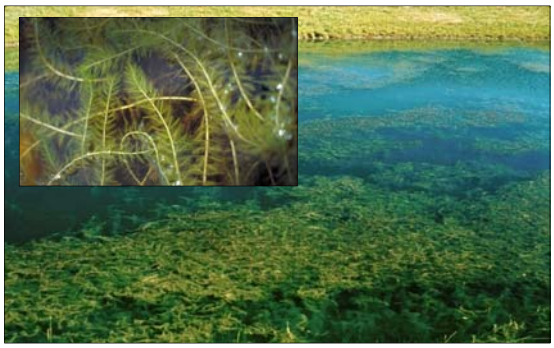
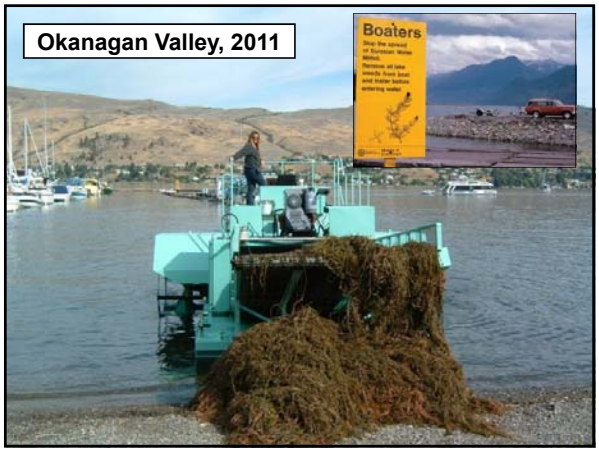


Figure 3.6 | Invasive non-native plants in Canada. *Source: Federal, Provincial, and Territorial Governments of Canada (2010: 54).*

Protecting Ecosystems





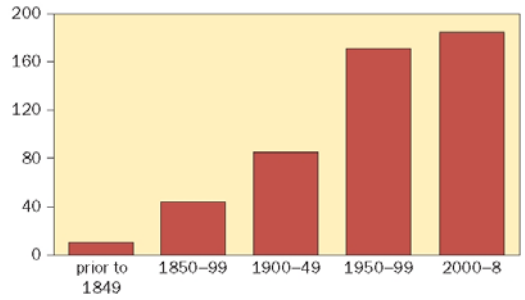
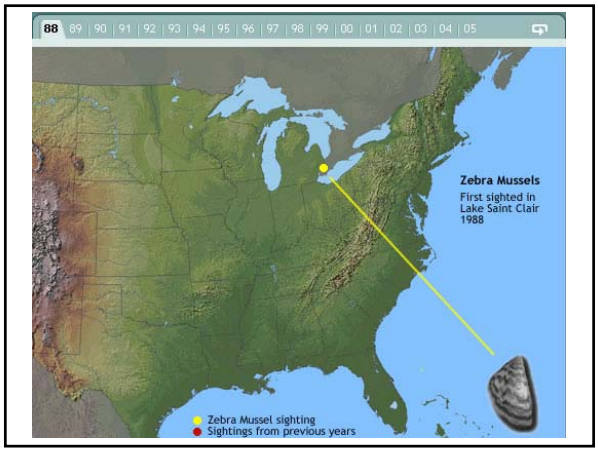
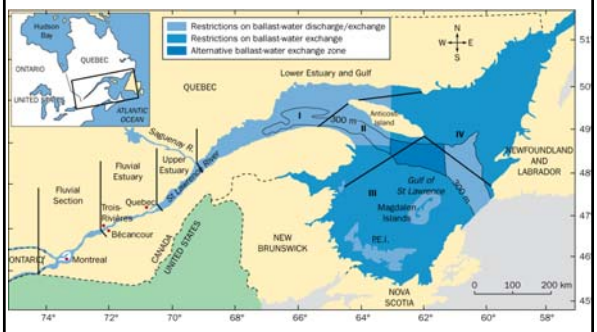


Figure 3.7 | Trends in non-native species in the Great Lakes. *Source: Federal, Provincial, and Territorial Governments of Canada (2010: 52).*



Controls on Ballast Water



3. What is Canada's Record with Invasive Species?

- **According to the Commissioner for Environment and Sustainable Development (2008), Fisheries and Oceans Canada has:**
- Been too slow at detecting environmental, economic, and social risks
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-
- Implemented (in 2006) the control of ballasts
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Conclusion

1. While Canada has policies to protect its biodiversity, it remains in practice poorly tracked monitored
2. Invasive species constitute a major challenge in Canada – particularly for aquatic ecosystems
3. Canada has a poor record in the implementation of strategies against invasive species

Things to Consider

1. If there are ongoing debates in the scientific community about certain environmental issues, does this mean that governments have to wait for these debates to be resolved, for them to take action?

2. What do you believe is Earth's carrying capacity? How would you go about estimating it?

TO DO!

1. For next Lecture: material covered in Chapter 4

2. Podcasts: Ecosystems and Matter Cycling - Units 1 to 5

3. Tutorials start next week

- Print and bring a copy of the Group Discussion Answer Sheet