Diet of introduced American bullfrog (*Lithobates catesbeianus*) after five years of control shows decreased conspecific and plant usage.

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Concerns

- Predation
- Reorganization of the food web,
- Changes in nutrient flows and sinks
- Spread pathogens
- Extinction of species

The removal of an invasive species can have unintended consequences

- Sheep on Santa Cruz Island in California - 23% increase in woody overstory (Beltran et al. 2014)
- Fish in Sydney, Australia resulted - native tadpole abundance x140 (Pollard et al., 2017)
- Cats -> Pacific rat <- breeding success of Cook’s petrel in New Zealand (Rayner et al. 2007)
What happens to their diet as bullfrog densities fall?
Study site

- ~ 1300 acres
- 30+ ponds
- Temperate
- Bordered by two mountains and the Columbia River
Better View of Landslide
Egg Mass removals
156
856 hours

Valley wide removals
7,264
132 nights 669 hours

Stomachs analyzed
3,651

Ordinal Year
Unique Dataset

All tadpoles/bullfrogs caught per effort (hrs)

Analyzed frog counts by pond

<table>
<thead>
<tr>
<th>Pond Name</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
<th>4th year</th>
<th>5th year</th>
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<tbody>
<tr>
<td>Celilo</td>
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<td>Dead Tree</td>
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<td>40</td>
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<td>3</td>
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<td>Smith</td>
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<td>11</td>
<td>13</td>
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<tr>
<td>Snag</td>
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</tbody>
</table>

≥ 80 mm total: 3,651

< 80 mm total: 3,651
Diet items by Taxa

Total removals over 4 years
Diet items by Taxa
Changes in Amphibian Consumption
Changes in plant and detritus consumption
Changes in Arthropod consumption ≥ 80 mm

- Myriapoda
- Hymenoptera
- Isopoda
- Arachnida
- terrestrial Coleoptera
- aquatic Coleoptera
- Diptera
- Hemiptera
- Crustatean
- Odonata
Change in Richness and number of items

Overall richness of stomach contents

mean # items per stomach

average # different items

# items in stomach

year 1 year 2 year 3 year 4 year 5

≥ 80 mm frogs < 80 mm frogs

≥ 80 frogs < 80 frogs
Why does it matter?

Floating macrophytes
(de Tezanos et al. 2014)

Temperatures, pH, light infiltration

2016

2021
Control Level?

No control
Control
Complete extirpation
Limitations

• Data created from control work not systematic sampling
• Expertise level in Arthropod identification
• No trophic level availability information

Additional Research

• Pond productivity as control work progresses
• How does the bullfrog hunting strategy change
References


Questions?

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