Indian Island

The health of the bay 2014

Five-year review
Seastar Wasting Syndrome
Inter-tidal Ochre Stars
Indian Island 2014

Mortality peaked in late June and declined in August
In warm years, sea stars peak in May then move into deeper water.
Densovirinae (Parvoviridae)
Previously reported hosts are all insects
Found in healthy and sick echinoderms
Ubiquitous and opportunistic?
Mortality was lowest in deeper, more exposed tide pools.
False Ochres have declined for years! Orchitophrya?
Heterosigma akashiwo
## Bloomers

<table>
<thead>
<tr>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceratium</td>
<td>Ceratium*</td>
</tr>
<tr>
<td>Ditylum*</td>
<td>Coscinodiscus</td>
</tr>
<tr>
<td>Scrippsiella</td>
<td>Detonula</td>
</tr>
<tr>
<td>Thallasionema</td>
<td>Gonyaulax</td>
</tr>
<tr>
<td>Thallasiosira</td>
<td><strong>Heterosigma</strong></td>
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<tr>
<td></td>
<td>Minuscula</td>
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<tr>
<td></td>
<td>Nitzschia</td>
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<tr>
<td></td>
<td>Noctiluca*</td>
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<tr>
<td></td>
<td>Scrippsiella</td>
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<td></td>
<td>Thallasiosira*</td>
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</tbody>
</table>
Indian Island phytoplankton relative abundance 2014

- Dinoflagellates
- Diatoms

Driven by dinoflagellates
Driven by diatoms

Raw data courtesy SoundToxins
Indian Island phytoplankton relative abundance 2013

Driven by diatoms

Driven by dinoflagellates

- Dinoflagellates
- Diatoms
Viral Hemorrhagic Septicemia
Eelgrass shoot density declined in the shallows.
Gradual downward trend in Pipefish
And upwards for Midshipmen
Many infaunal clams have declined
Both “hard-” and “soft-shell” species
Only Baltics are recruiting vigorously
Pyrethroid residues in Protophaca staminea from Fishing Bay, Orcas Island

Contamination appears to have decreased
Crab species have good and bad years
Mean index crabs per day

R² = 0.7546

All together, crabs peaked in 2012
Sea slugs: Residents, seasonal, opportunistic visitors

- Monterey dorid
- Taylor's sea hare
- Frosted dirona
Vascular plant species

<table>
<thead>
<tr>
<th>Type</th>
<th>Native</th>
<th>Non-native</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees, shrubs</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Wildflowers</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>Grasses</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>20</td>
</tr>
</tbody>
</table>