

# OCNMS exploratory plots

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This is a basic file for processing and providing basic plots for the 2015 Olympic Coast National Marine Sanctuary Dive Surveys.

## The important data.frames and lists for 2015 data are these:

- “dat.quad” has all of the recent cover data associated with quadrat counts
- “dat.quad.count” has all of the count data of mobile and countable inverts from the quadrat surveys
- “dat.trans.algae” has all the transect observations for algae an
- “dat.trans.mammal.bird” has all the mammal and bird observations
- “dat.trans.fish” has all of the transect observations for fish species.
- “dat.trans.invert” has all of the transect observations for invertebrates. I made this into a list that has multiple entries for species folk are likely interested in

```
names(dat.trans.invert)
```

```
## [1] "All.invert" "Urchin"      "Cucumber"    "Sea.star"    "Crab"
## [6] "Chiton"     "Limpet"      "Gastropod"   "Bivalve"     "Nudi"
```

- “dat.kvitek” is a list with the historical data available from the 1987,1995, and 1999 surveys. There are a couple of different kinds of surveys.

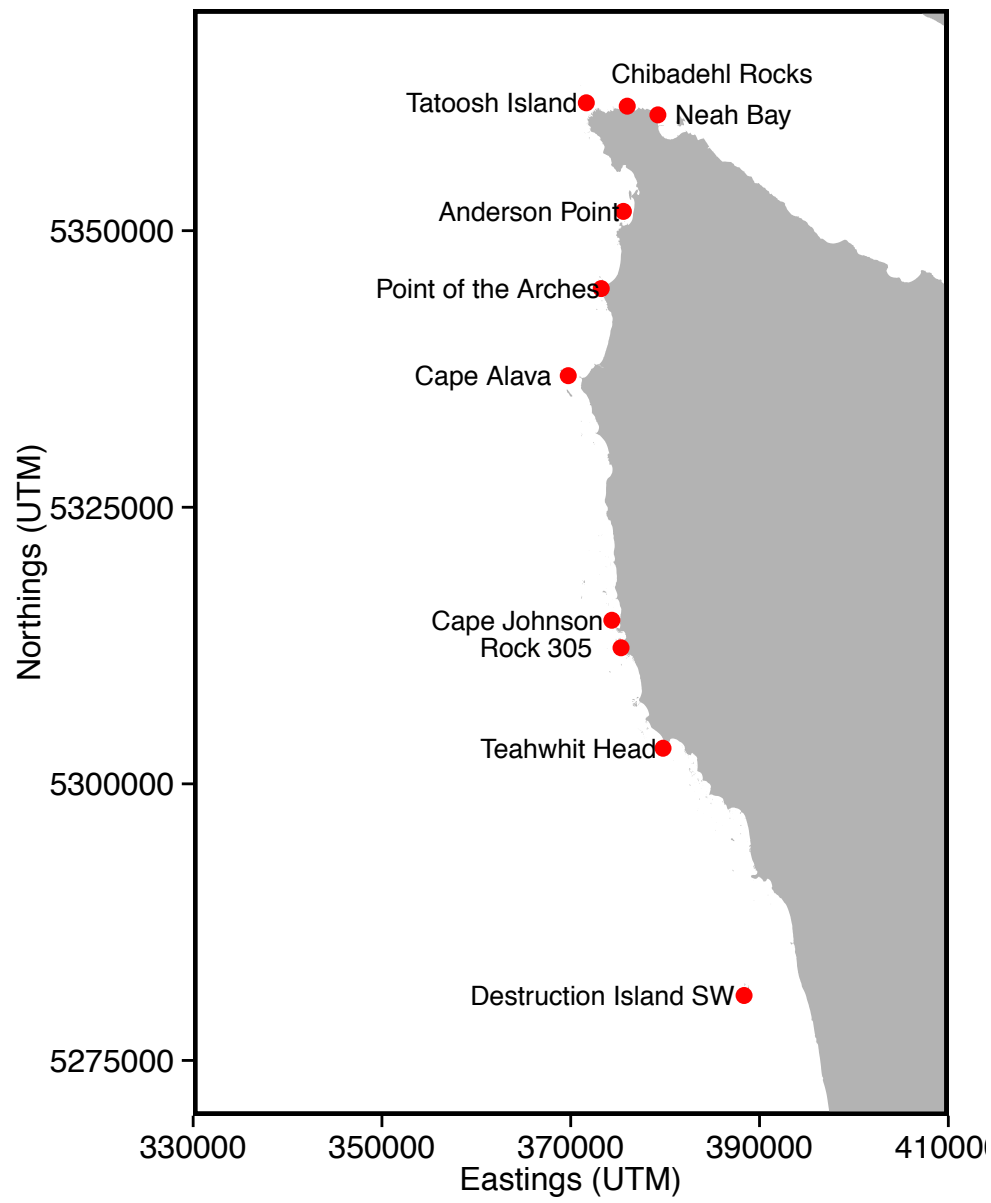
```
names(dat.kvitek)
```

```
## [1] "Invert.quad" "Invert.trans" "Veg"
```

All surveys were conducted on these dates:

```
## [1] "8/3/15" "8/4/15" "8/5/15" "8/6/15" "8/7/15"
```

Here is a map showing the approximate locations of the sites



## Methods

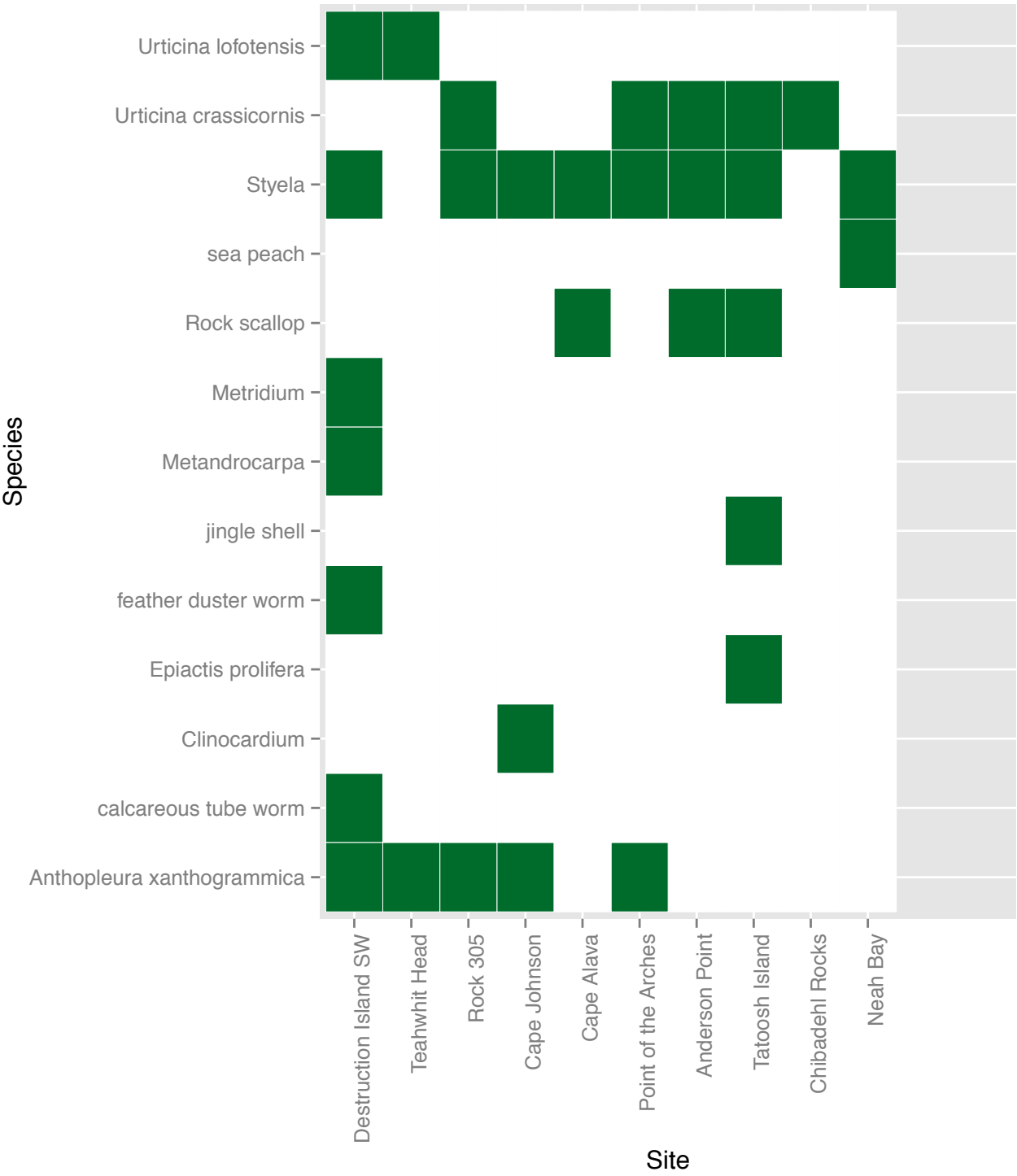
Four divers conducted dive surveys at each site (two teams of two). Each diver pair surveyed two 30m long transects. All dives in 2015 were conducted at about 6-8m depth.

I've focused on summarizing the species observed in at each site (for the quadrats, invertebrate transects, and fish transects)

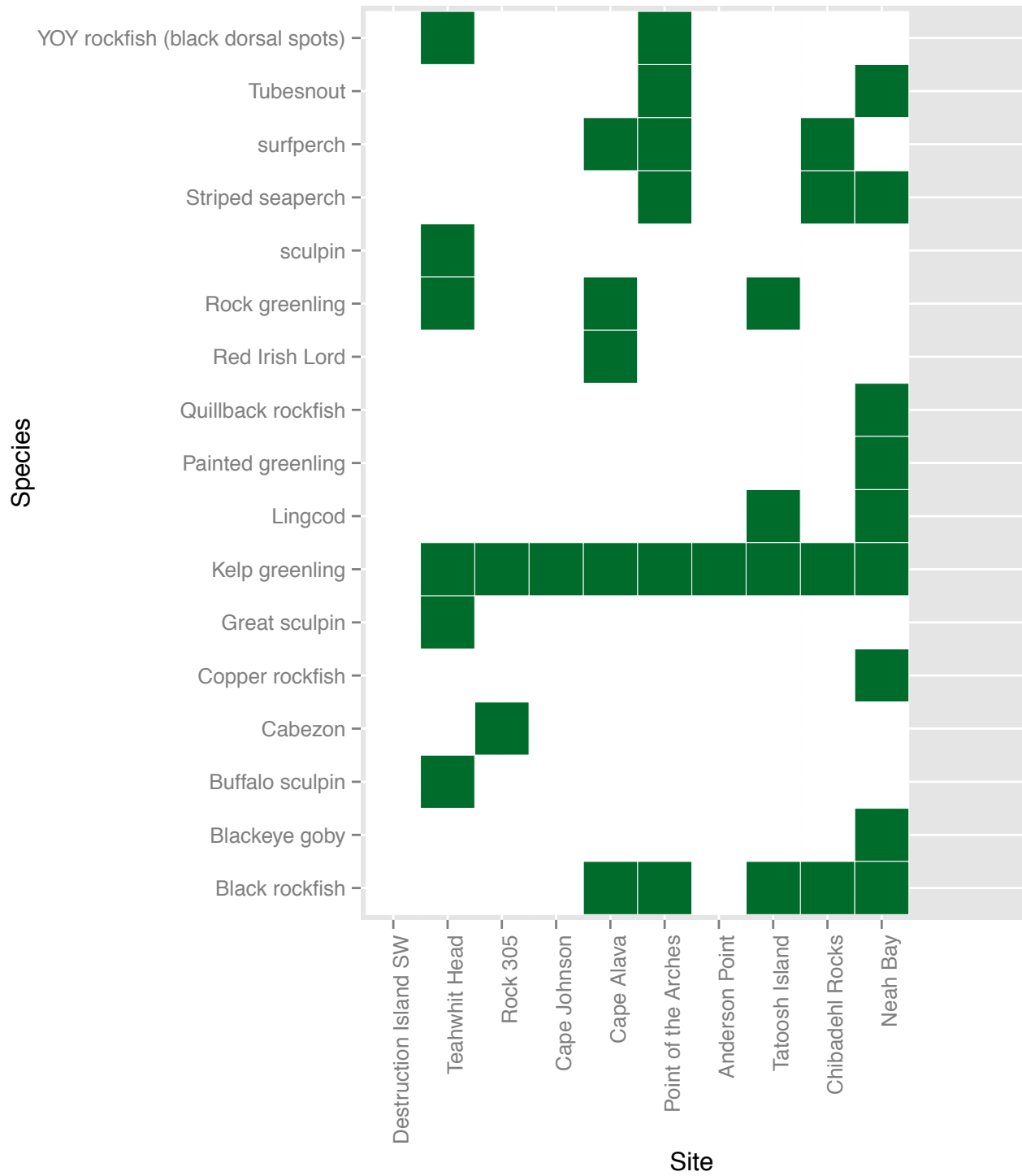
Sessile creatures (and some benthic categories) in quadrats



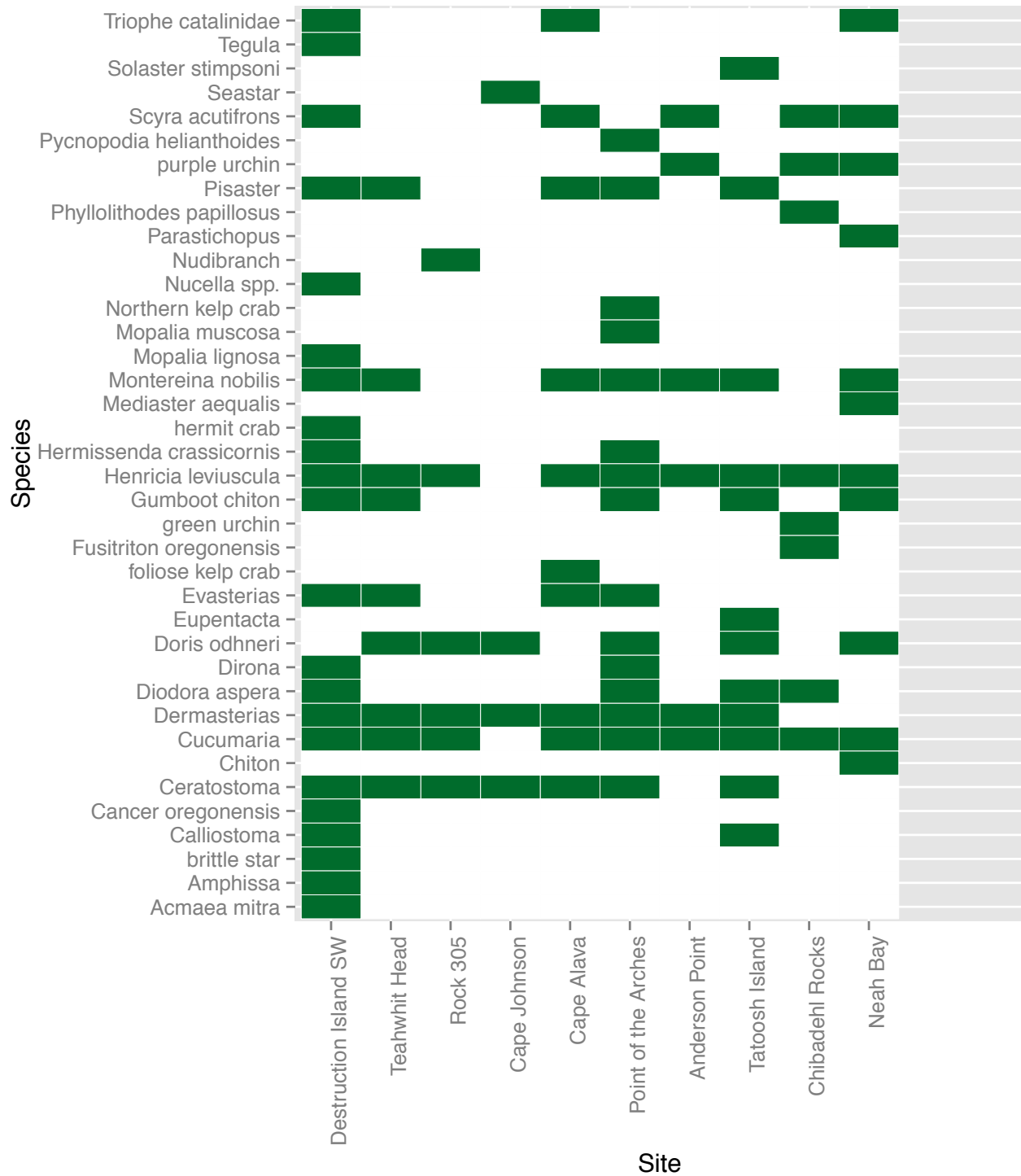
Sessile Invertebrates on Transects



## Fish species on transects



## Mobile invertebrate species on transects



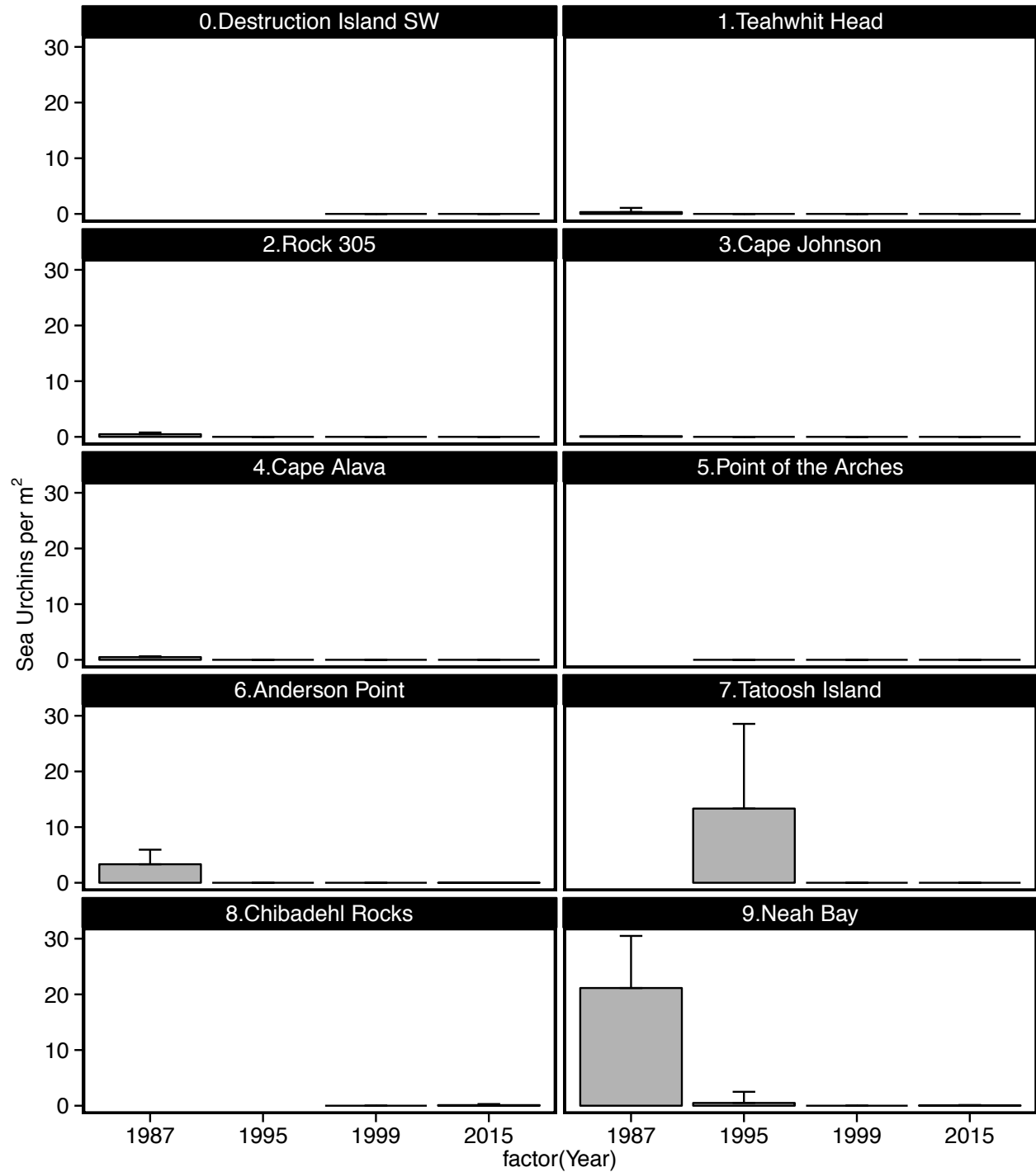
## Comparing mobile invertebrates

Data from all sites in all years. I include only data from 6m and shallower from historical data.



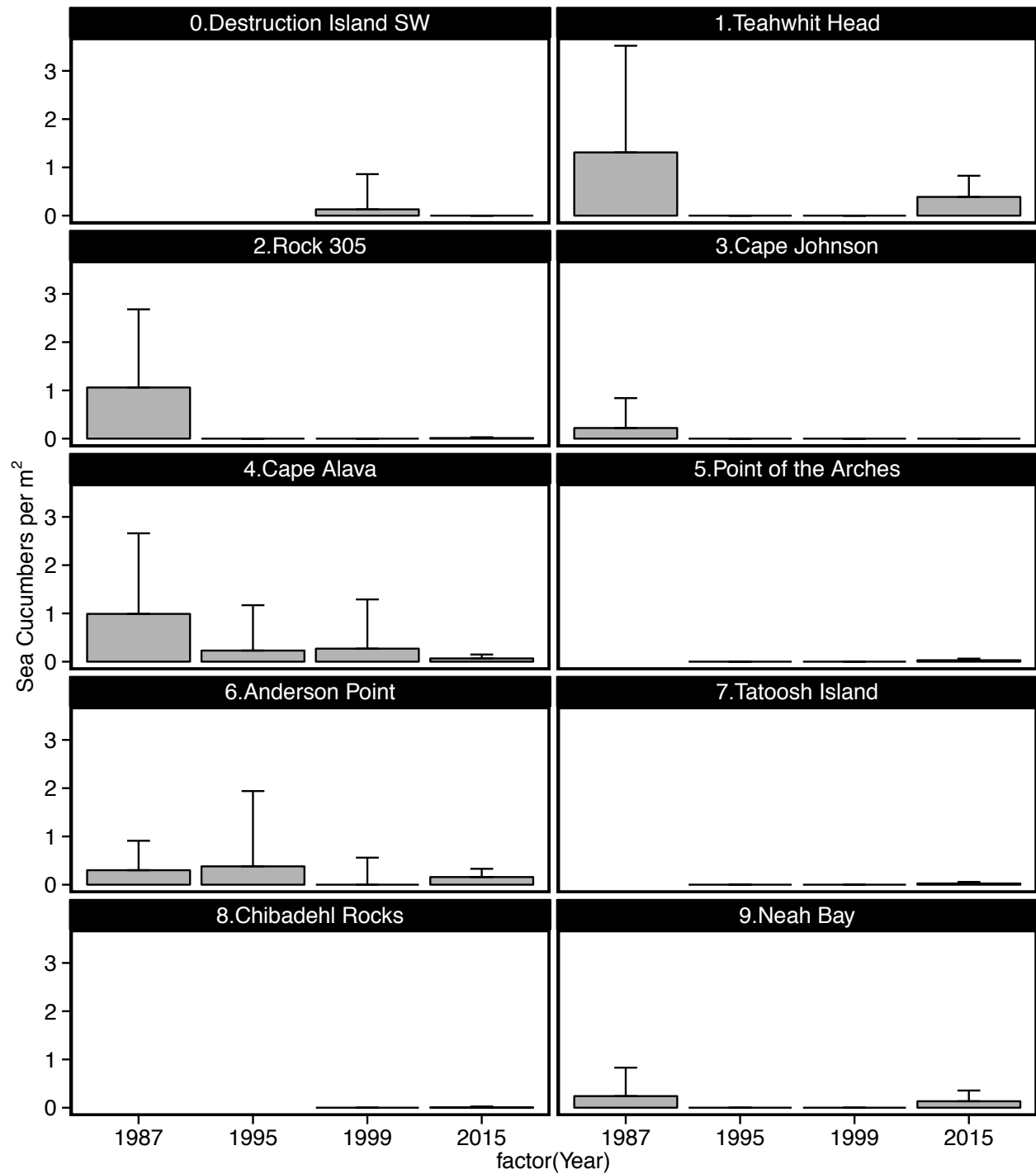
Urchins (Mean  $\pm$  SD).

Zeros shown as thin lines, missing data shown as blank



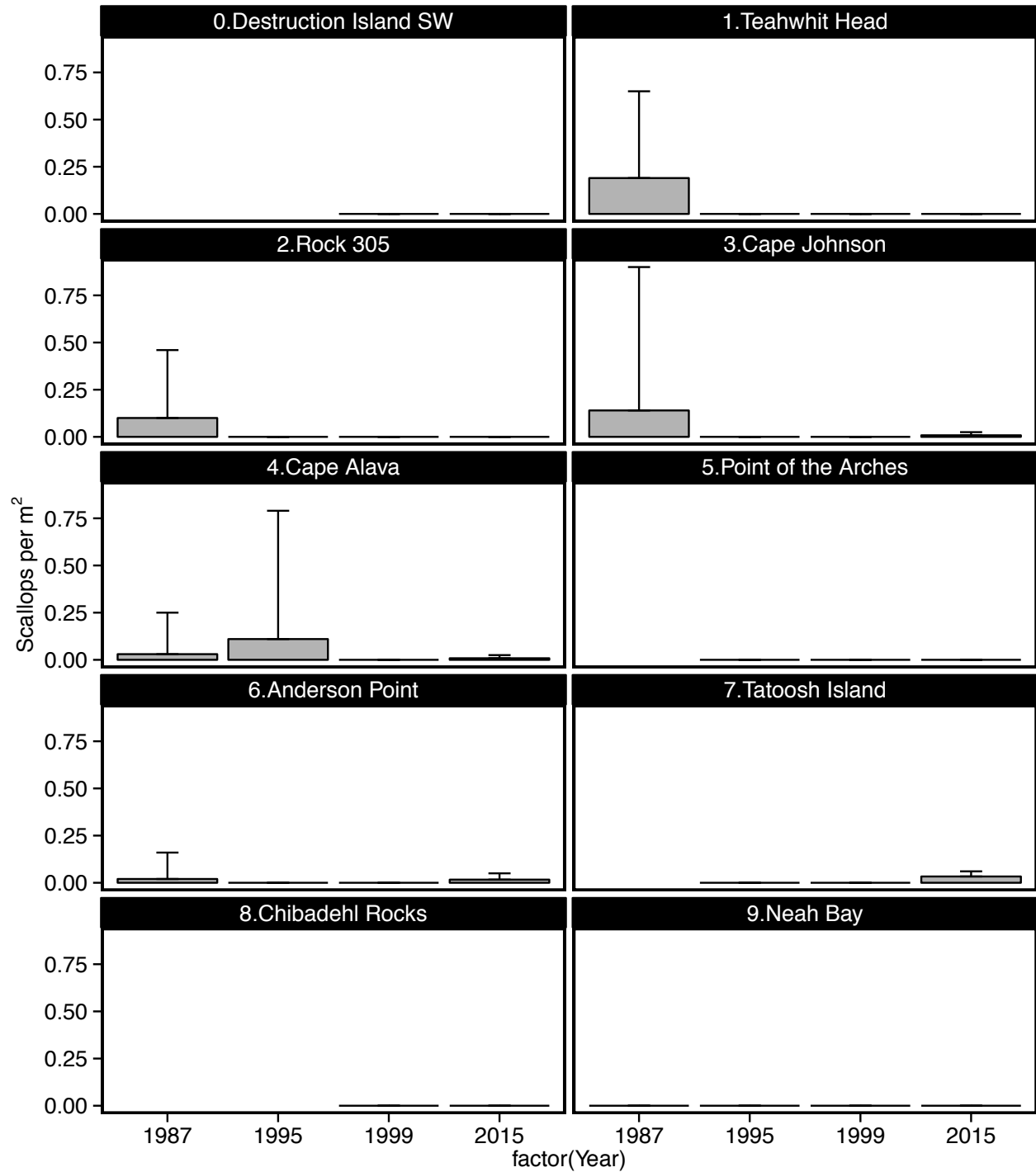
# Sea Cucumbers (Mean $\pm$ SD).

Zeros shown as thin lines, missing data shown as blank



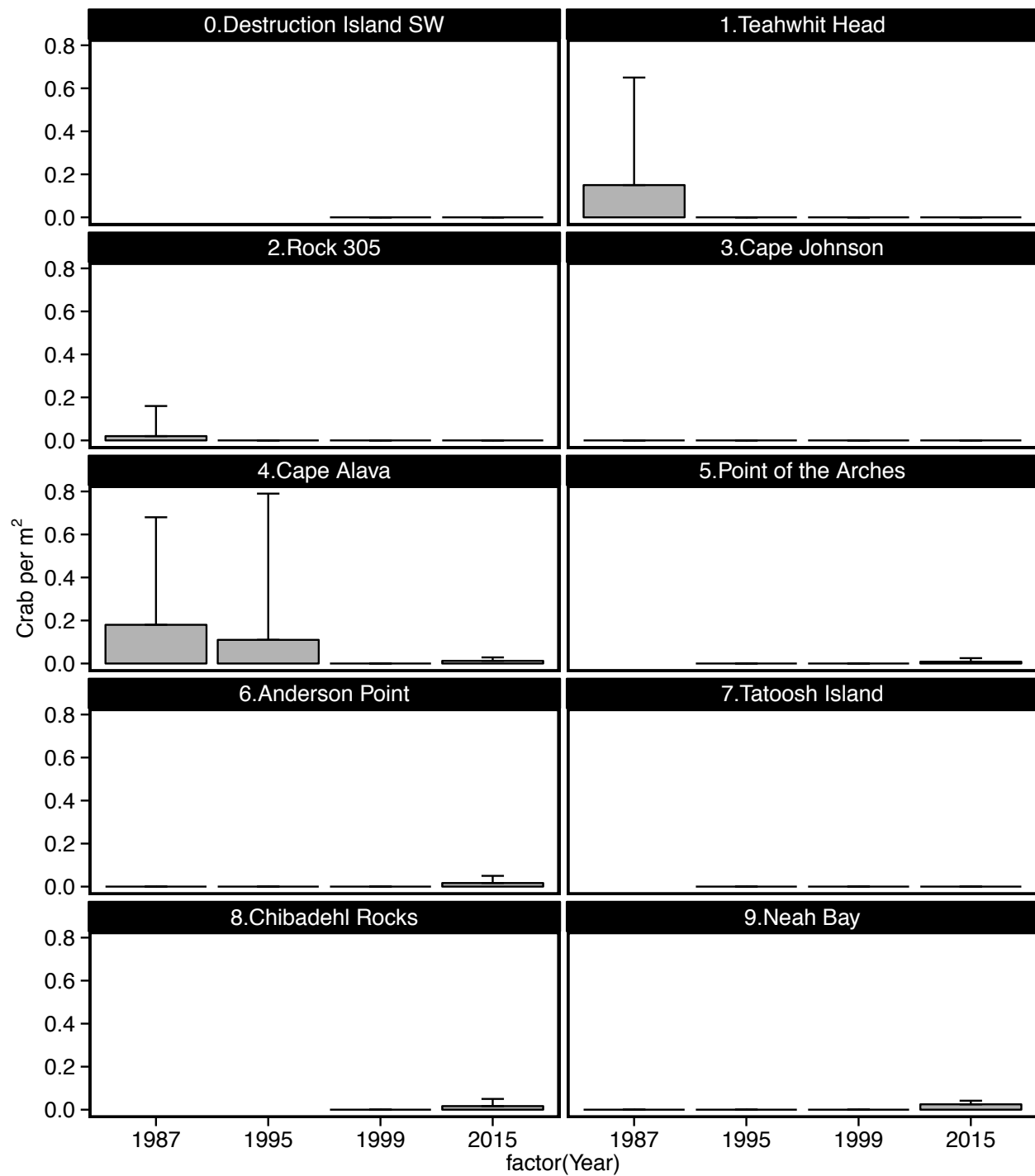
Scallops (Mean  $\pm$  SD).

Zeros shown as thin lines, missing data shown as blank



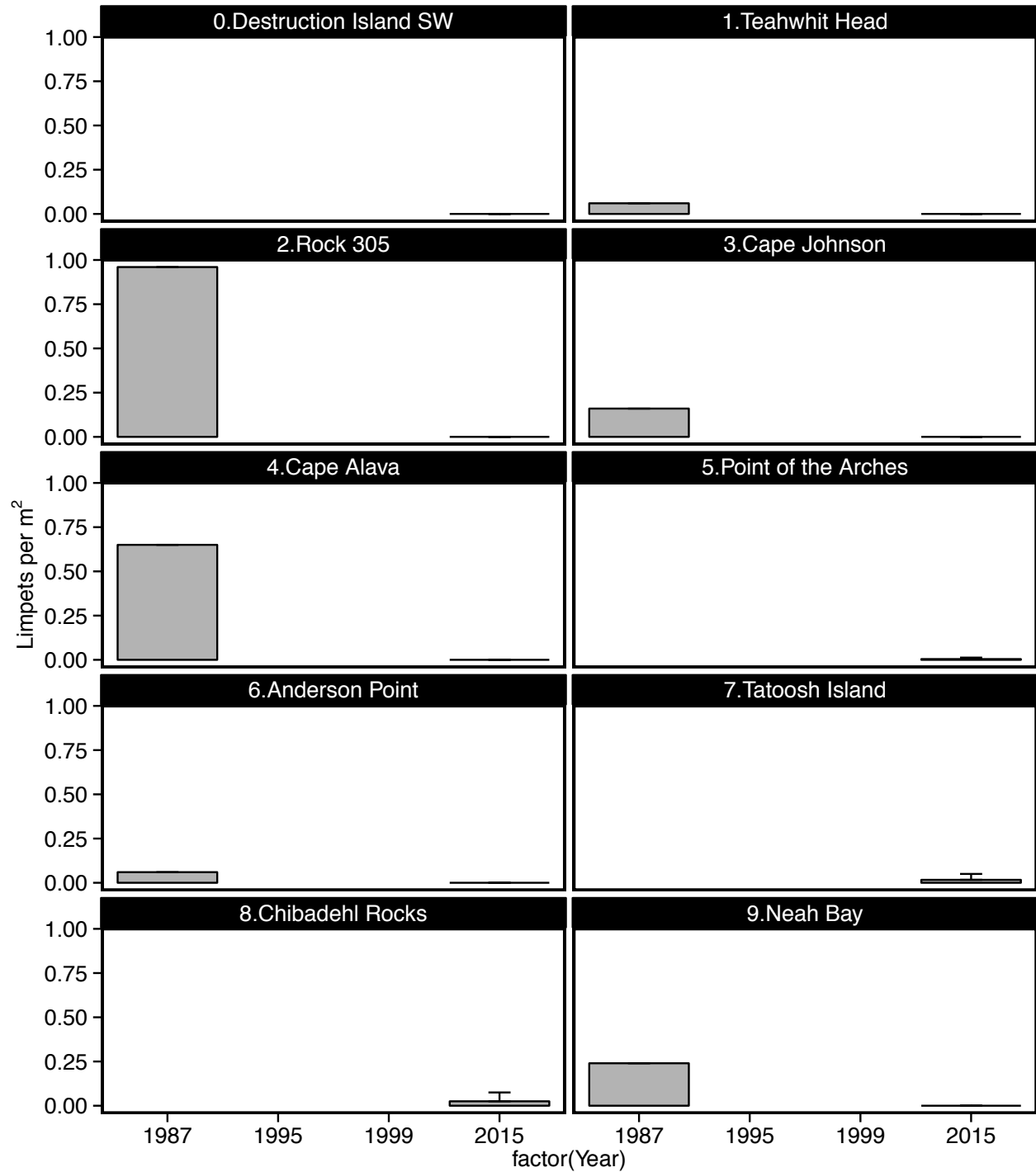
Crabs (Mean  $\pm$  SD).

Zeros shown as thin lines, missing data shown as blank



Limpets (Mean  $\pm$  SD).

Zeros shown as thin lines, missing data shown as blank



### Non-Limpet Gastropods (Mean $\pm$ SD).

Zeros shown as thin lines, missing data shown as blank

