This analysis uses nationally collected landings data for the for theNorth Pacificregion, downloaded from the NOAA FOSS site https://foss.nmfs.noaa.gov/apexfoss/f?p=215:200:::::::.

```
## [[1]]
## [1] "When back calculated, Q_{i,t} did not equal V_{i,t}/PI_{i,t}"
##
## [[2]]
## [1] "Rows of R_{s,i,t} for 2_00Other did not sum to 1"
##
## [[3]]
## [1] "When back calculated, Q_{i,t} did not equal V_{i,t}/PI_{i,t}"
##
## [[4]]
## [1] "When back calculated, Q_{i,t} did not equal V_{i,t}/PI_{i,t}"
##
## [[5]]
## [1] "When back calculated, Q_t did not equal V_t/PI_t"
##
## [[6]]
## [1] "When back calculated, ln(Q_t/Q_{t-1}) = did not equal sum( ( frac{R_{i, t} - R_{i, t-1}}{2})  *
##
## [[7]]
## [1] "Out of 31 columns, 0 of species V columns are completely empty, 0 of species Q columns are compl
```

Species in Each category by Common Name

```
## $Shellfish
##  [1] "ABALONES **"                   "SNAILS (CONCHS) **"            "CLAMS OR BIVALVES **"
##  [6] "SCALLOP, WEATHERVANE "         "OYSTER, PACIFIC "              "COCKLE, NUTTALL "
## [11] "CLAM, PACIFIC GEODUCK "        "SQUIDS **"                     "SQUID, CALIFORNIA MARKET "
## [16] "CRUSTACEANS **"                "CRABS **"                      "SHRIMP, PENAEID **"
## [21] "CRAB, SNOW/TANNER **"          "CRAB, SNOW "                   "CRAB, SOUTHERN TANNER "
## [26] "SEA CUCUMBER, UNCLASSIFIED **" "OYSTER, OLYMPIA "
##
## $Finfish
##  [1] "SHARKS, UNCLASSIFIED **"        "SHARK, DOGFISH **"             "SHARK, SPINY DOGFISH "
##  [5] "SALMON, PACIFIC **"             "SALMON, PINK "                 "SALMON, CHUM "
##  [9] "SALMON, SOCKEYE "               "SALMON, CHINOOK "              "TROUT, RAINBOW "
## [13] "CHAR, ARCTIC "                  "TROUT, LAKE "                  "INCONNU "
## [17] "CAPELIN "                       "SMELT, EULACHON "              "PIKES **"
## [21] "TOMCOD, PACIFIC "               "GRENADIERS **"                 "ROCKFISHES **"
## [25] "ROCKFISH, REDBANDED "           "ROCKFISH, SILVERGRAY "         "ROCKFISH, COPPER "
## [29] "ROCKFISH, GREENSTRIPED "        "ROCKFISH, WIDOW "              "ROCKFISH, YELLOWTAIL "
## [33] "ROCKFISH, VERMILION "           "ROCKFISH, BLUE "               "ROCKFISH, CHINA "
## [37] "ROCKFISH, CANARY "              "ROCKFISH, REDSTRIPE "          "ROCKFISH, YELLOWMOUTH "
## [41] "ROCKFISH, SHARPCHIN "           "ROCKFISH, STARRY "             "LINGCOD "
## [45] "SABLEFISH "                     "SCULPINS **"                   "WHITEFISH, OCEAN "
## [49] "FLATFISH **"                    "FLOUNDERS, RIGHTEYE **"        "SOLE, PETRALE "
## [53] "SOLE, DOVER "                   "FLOUNDER, STARRY "             "SOLE, YELLOWFIN "
## [57] "SOLE, ENGLISH "                 "SOLE, SAND "                   "HALIBUT, GREENLAND "
## [61] "SOLE, REX "                     "SOLES **"                      "SOLE, ROCK "
##
## $Other
## [1] "SEAWEED, KELP **"                "CORALS **"                        "CLAM, BUTTER "
```

```
## [5] "HERRING, PACIFIC, ROE ON KELP **" "POLLOCK, WALLEYE "                  "FLOUNDER, ARROWTOOTH "
```

Where are there negative values?

X	Tsn	Year	State	AFS.Name	Pounds	Dollars	Collection	Confidentiality	category.tax
51314	165647	2014	New Jersey	MUMMICHOG	-321	-4494	Commercial	Public	Actinopteryg
72470	168791	2014	Connecticut	DOLPHINFISH	-1	-2	Commercial	Public	Actinopteryg

Where are there negative values?

X	Tsn	Year	State	AFS.Name	Pounds	Dollars	Collection	Confidentiality
429	11272	2017	Rhode Island	SEAWEED, KELP **	-1	7390	Commercial	Public
6543	79916	2015	New York	MUSSEL, SLIPPERSHELL	-1	NA	Commercial	Public
8386	81495	2010	Maryland	CLAM, QUAHOG **	-29	1506	Commercial	Public
25465	160502	2009	Virginia	SHARK, BONNETHEAD	-5	1011	Commercial	Public
28827	161030	2007	New Jersey	FINFISH **	-8	NA	Commercial	Public
51314	165647	2014	New Jersey	MUMMICHOG	-321	-4494	Commercial	Public
72470	168791	2014	Connecticut	DOLPHINFISH	-1	-2	Commercial	Public
92811	172412	2014	Connecticut	MACKEREL, CHUB	-1	NA	Commercial	Public
111150	551570	2017	Connecticut	SHRIMP, BROWN	-1	229	Commercial	Public