

squid issues 2016



Joint Plan Team meetings September 2016

overview

- re: SSC comments regarding moving squid to EC
- squid catches 1977-1990
- environmental effects on squid

squid complex: what do we mean by “squid”?

predators



Gonatus onyx



Eogonatus tinro



Gonatus pyros



B. Magister JUV



G. borealis JUV



Gonatus madokai



Gonatus middendorffi

survey & fishery

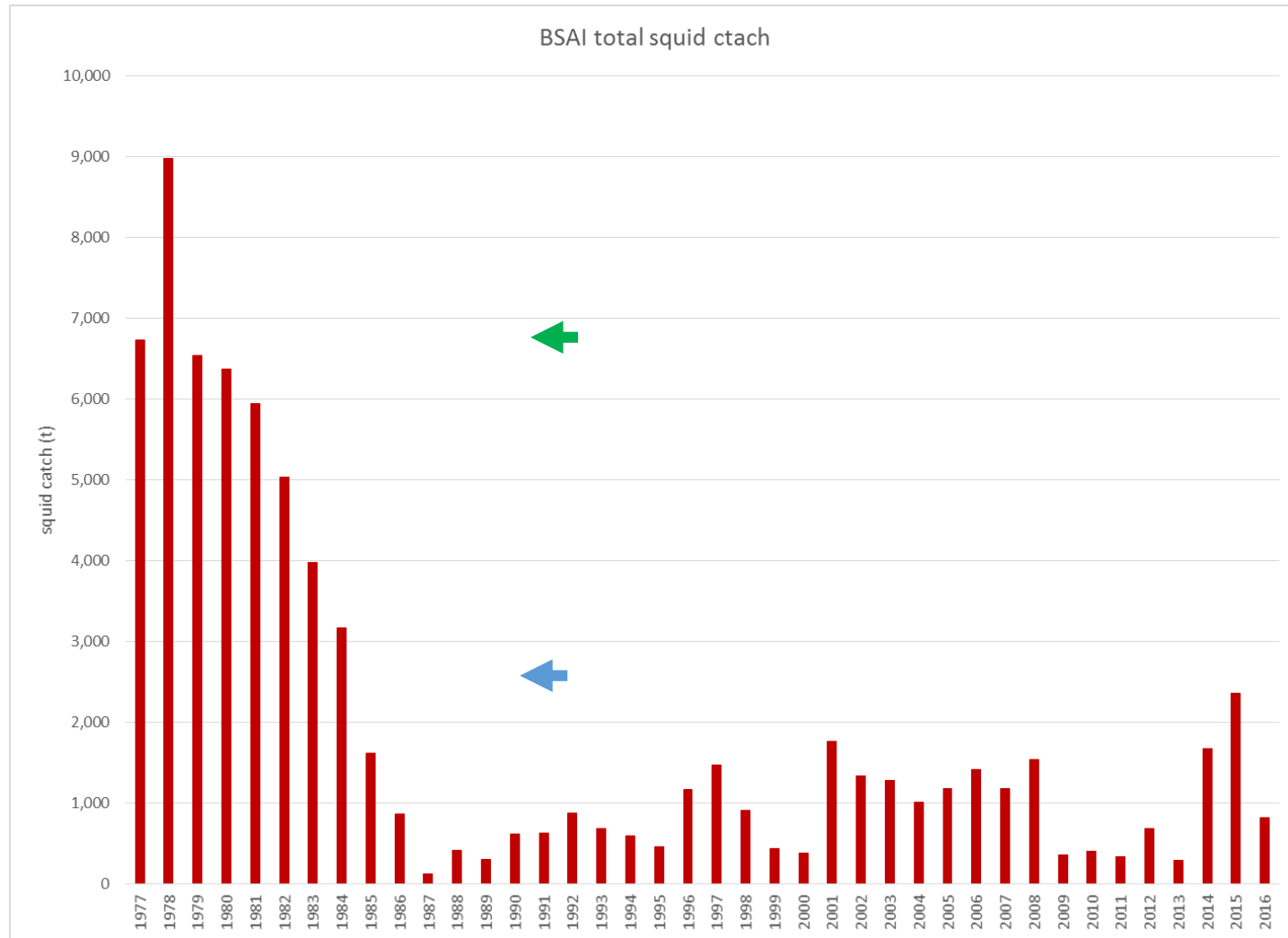


Berryteuthis magister

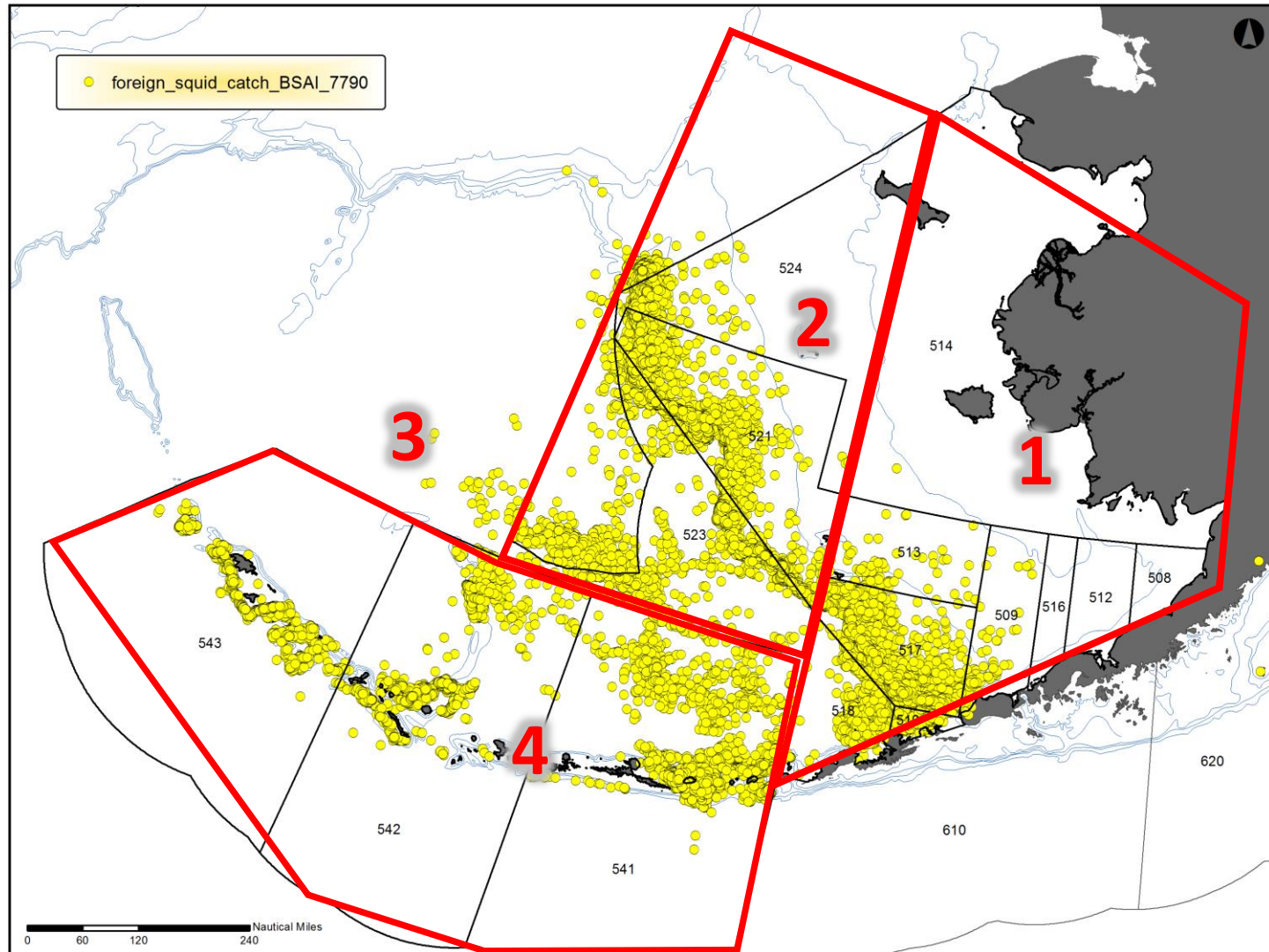


Gonatopsis borealis

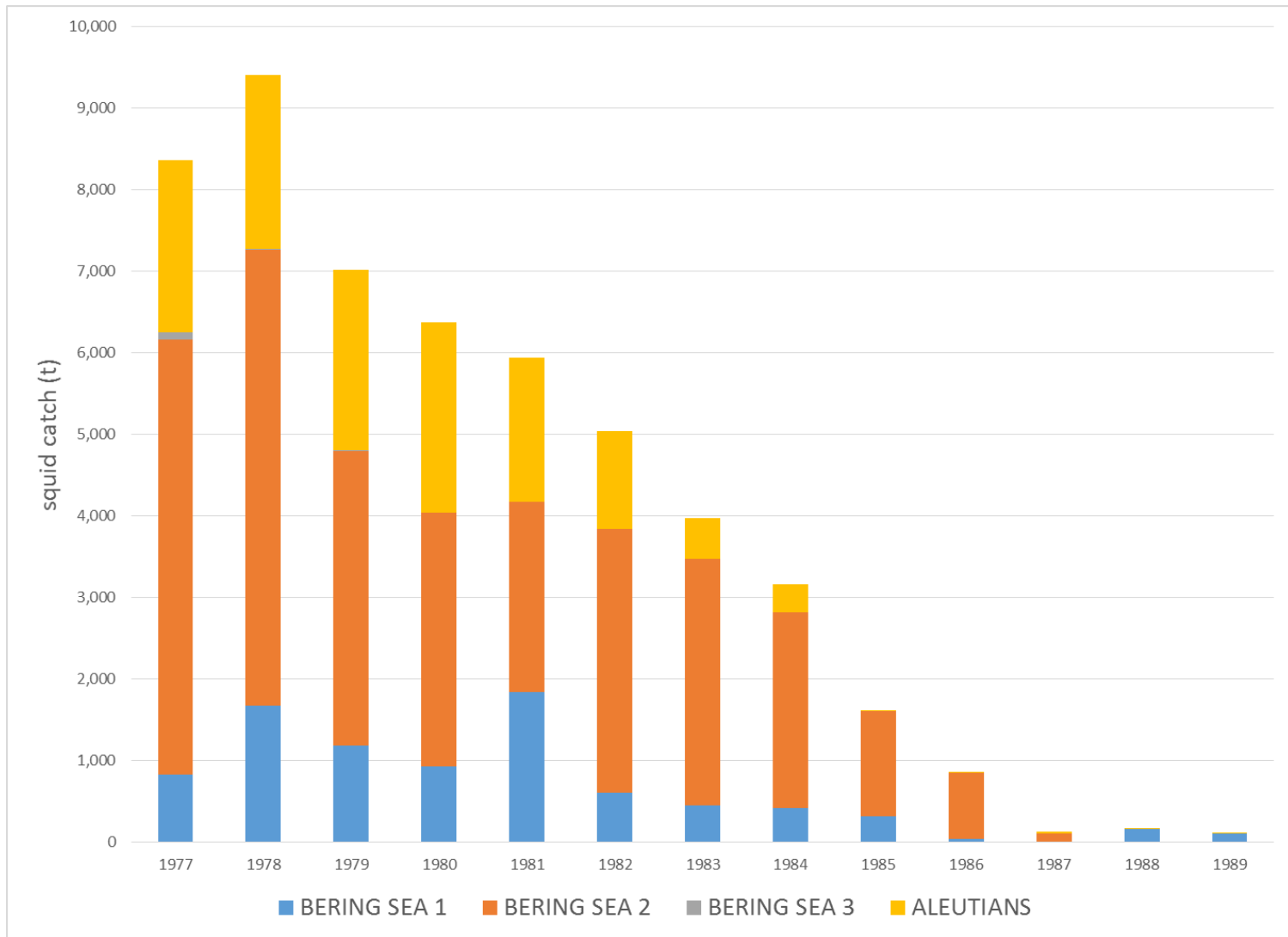
BSAI squid catch history (1977-1990) and OFLs



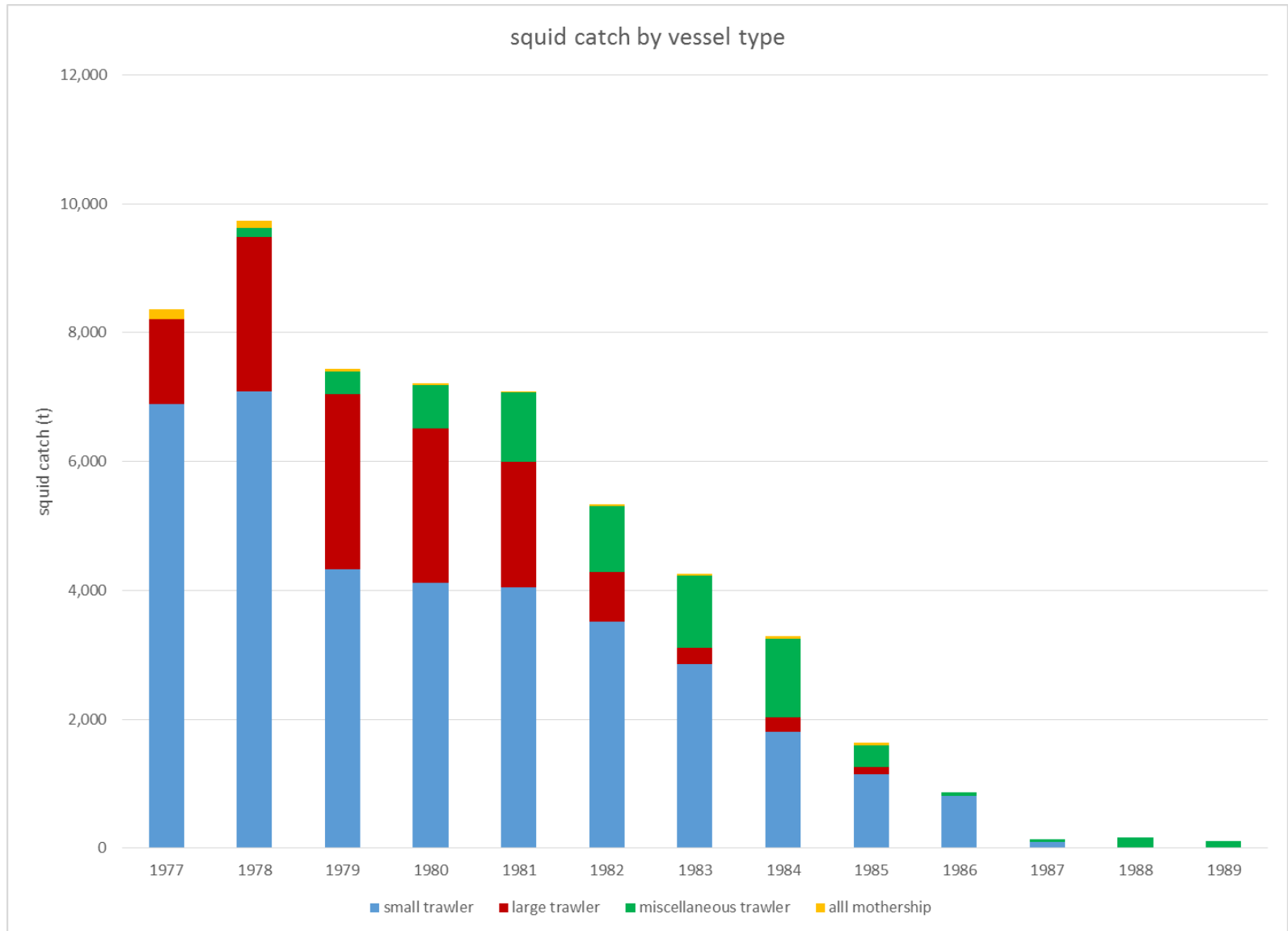
foreign BSAI squid catch 1977-1990



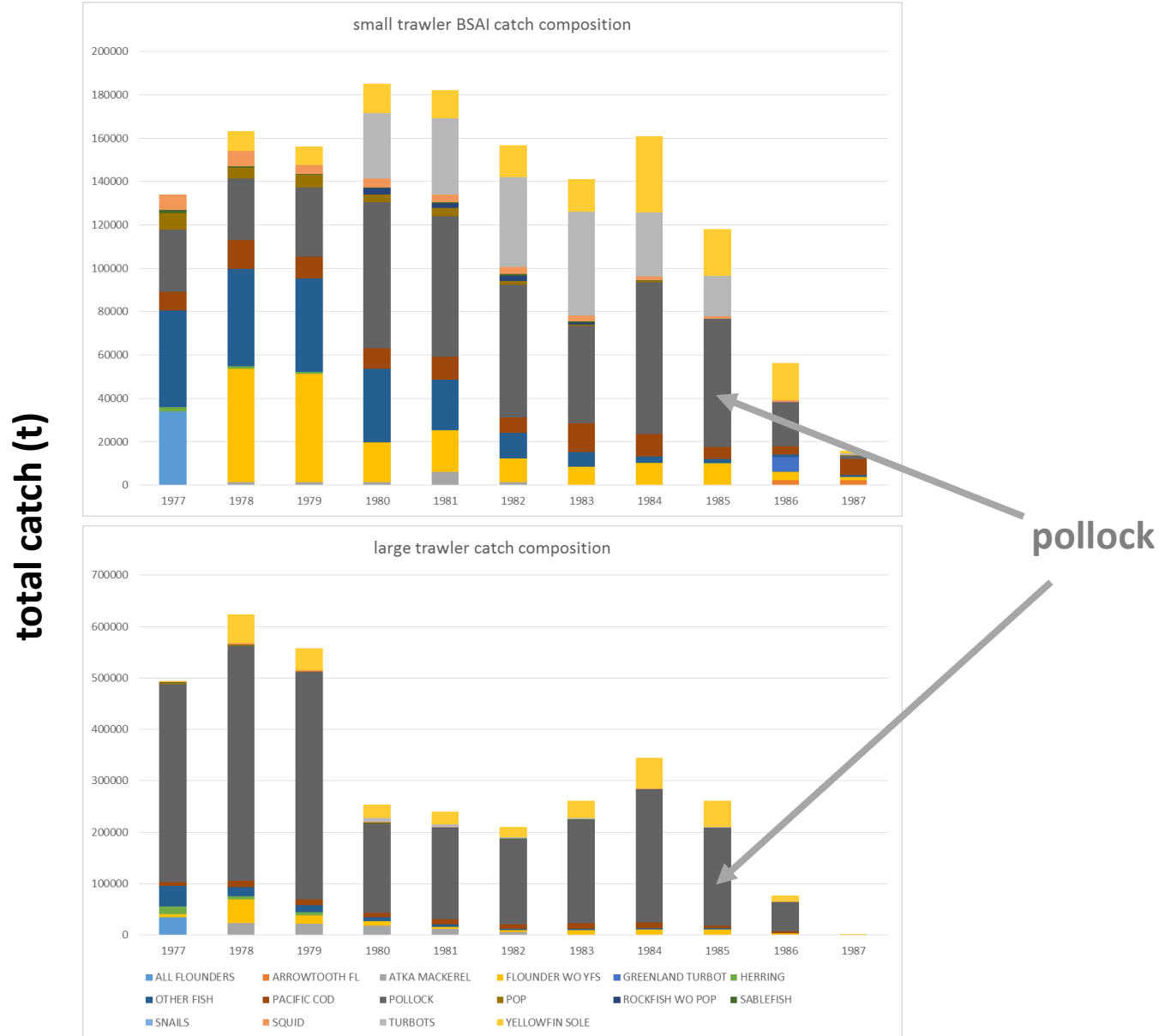
foreign BSAI squid catch by area



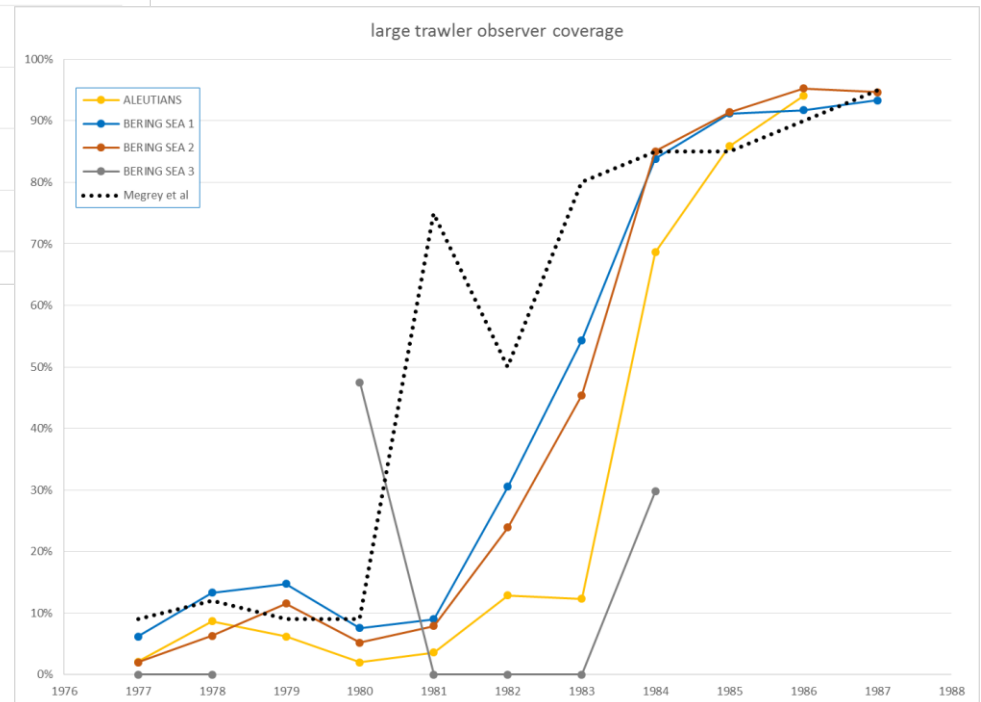
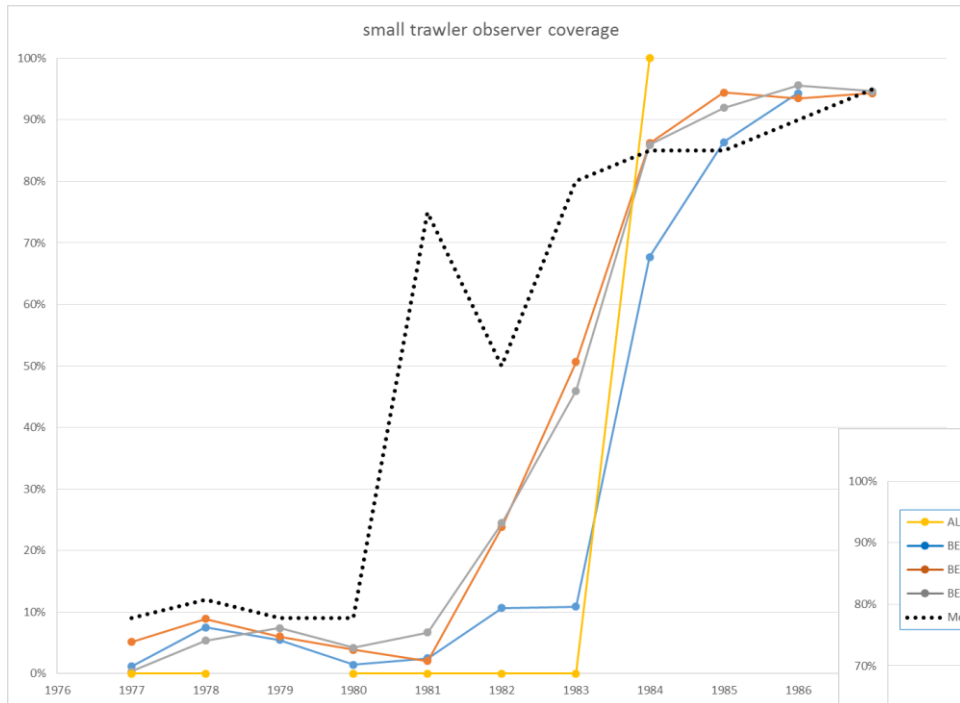
foreign BSAI squid catch by vessel type



foreign BSAI catch composition by vessel type



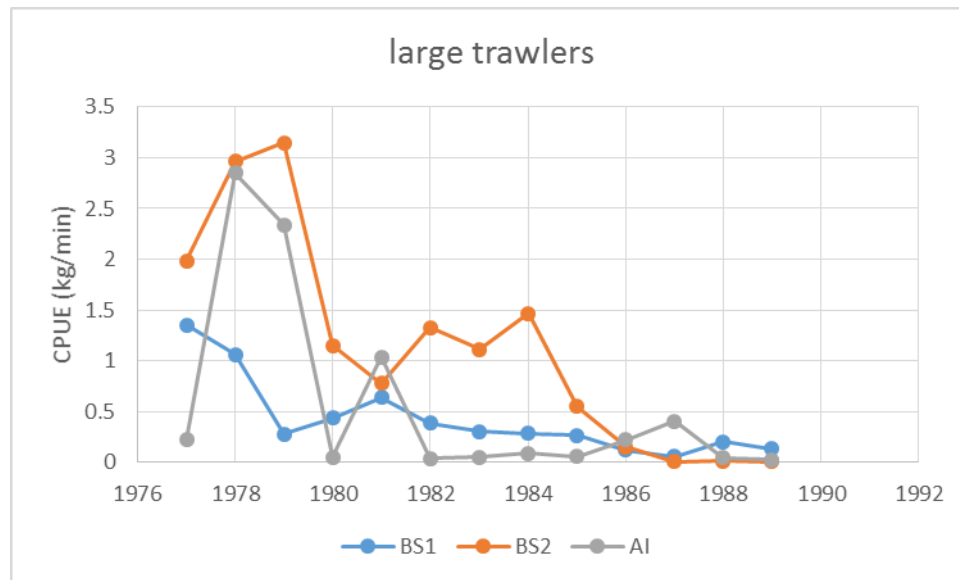
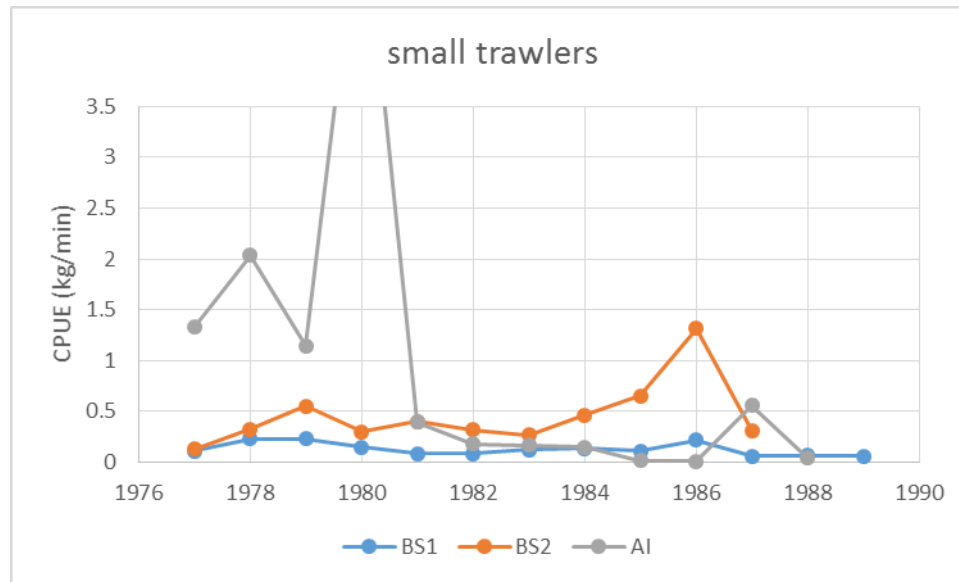
foreign vessel observer coverage



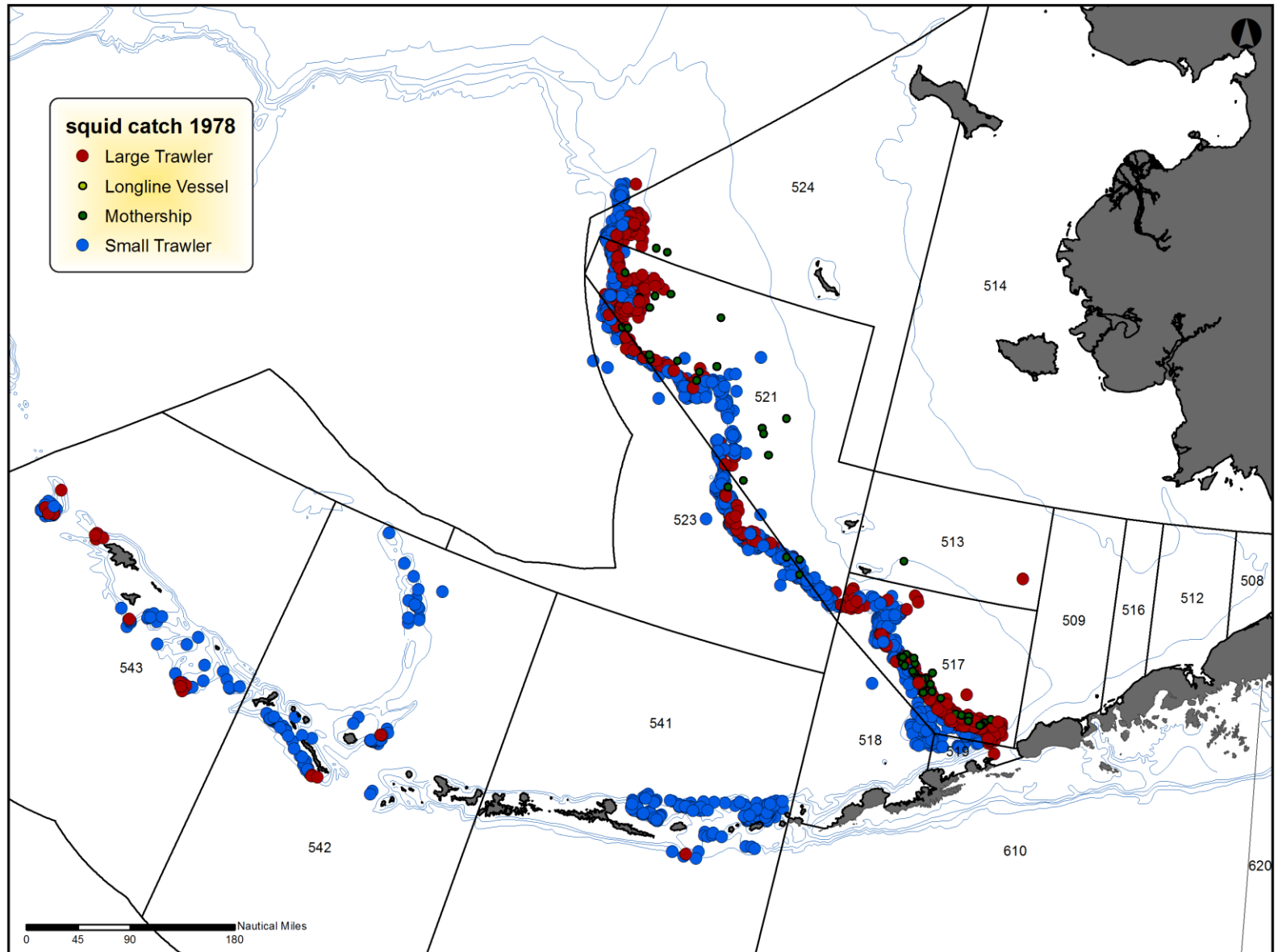
2 ways of looking at effort

- **vessel days**
- **CPUE**
 - **by vessel type**
 - **kg/minute**
 - **kg/haul**
 - **vessel CPUE weighted by effort (days)**
to get overall mean CPUE

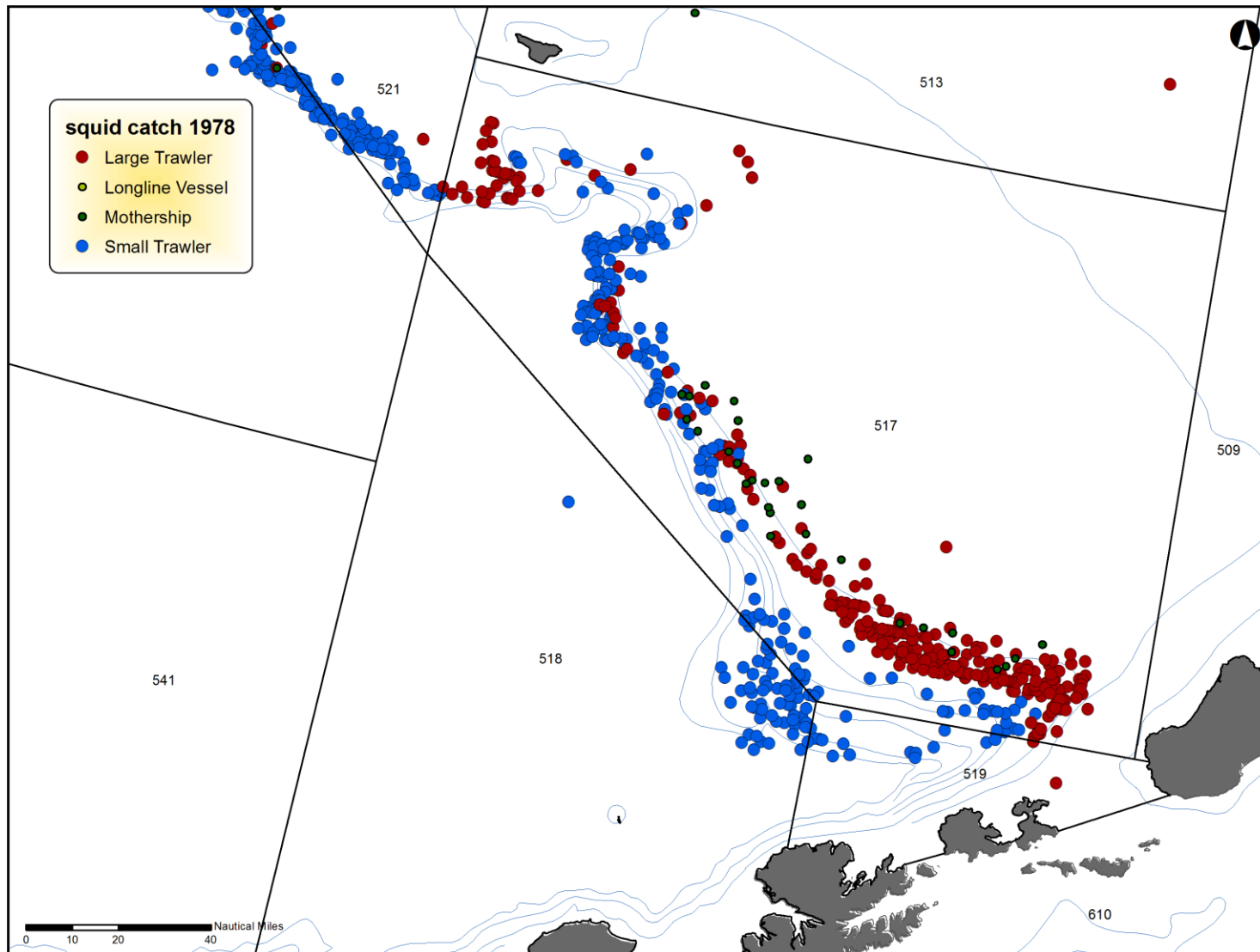
area-specific CPUE by vessel type



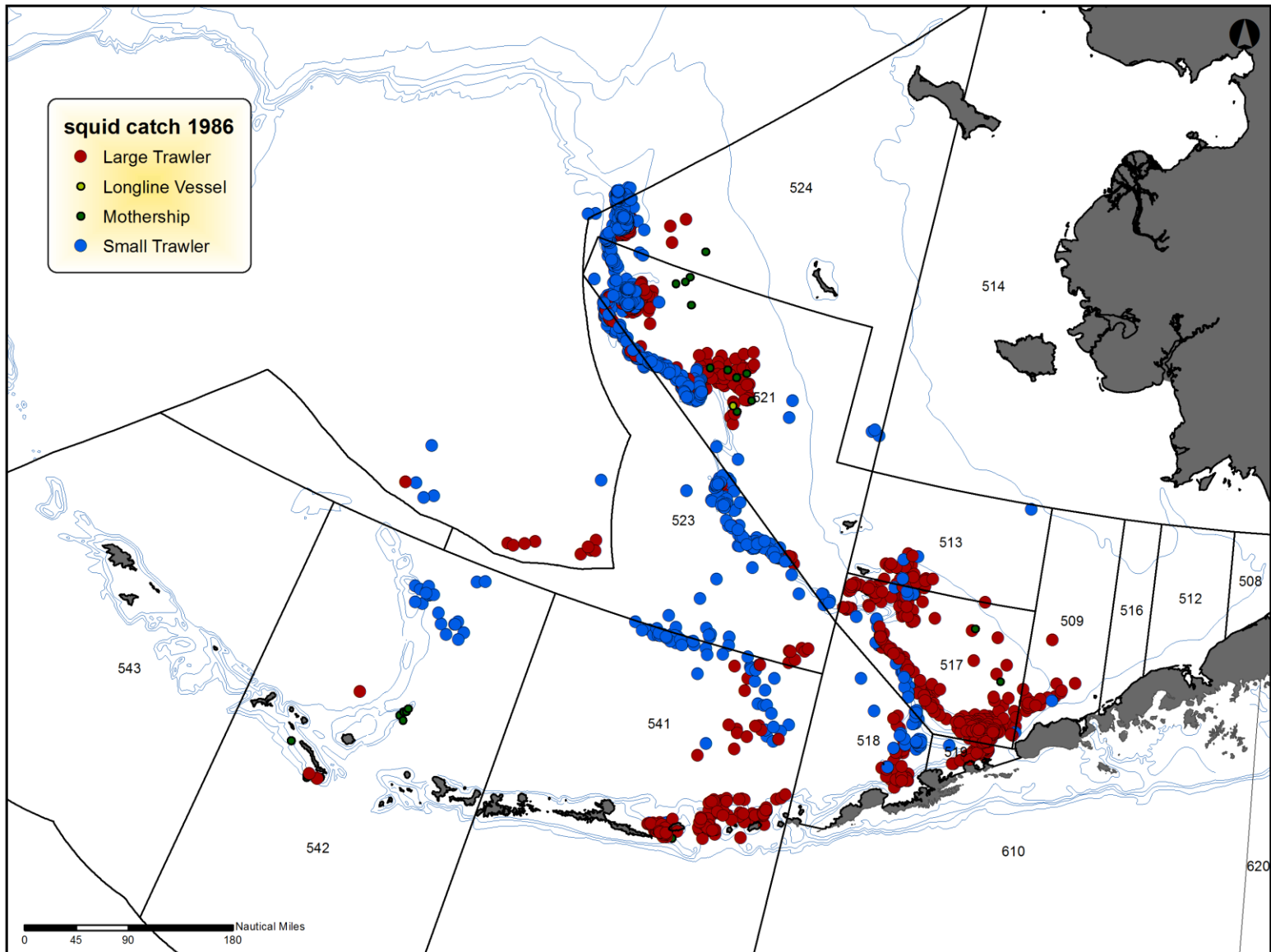
squid catch locations by vessel type



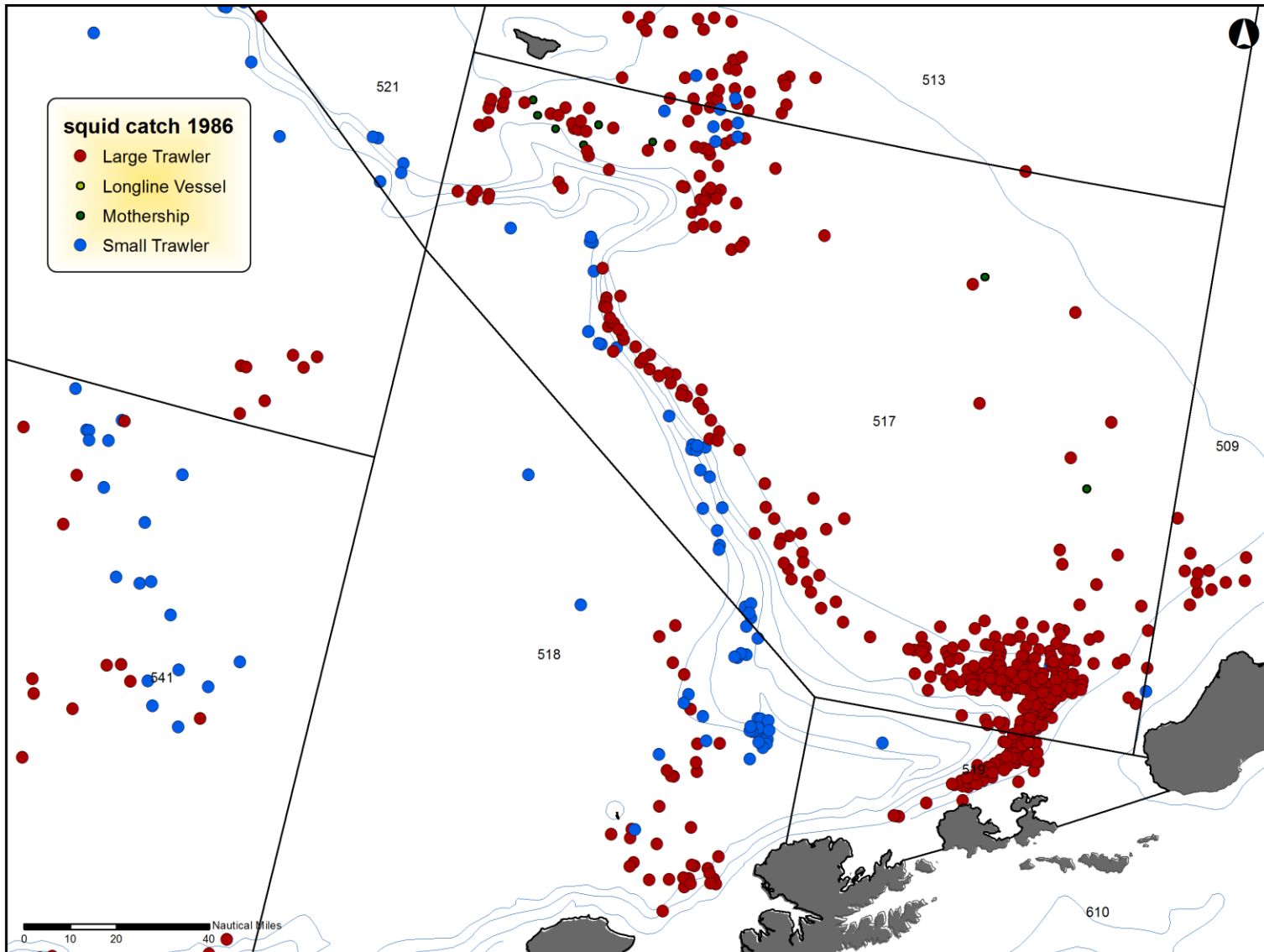
squid catch locations by vessel type



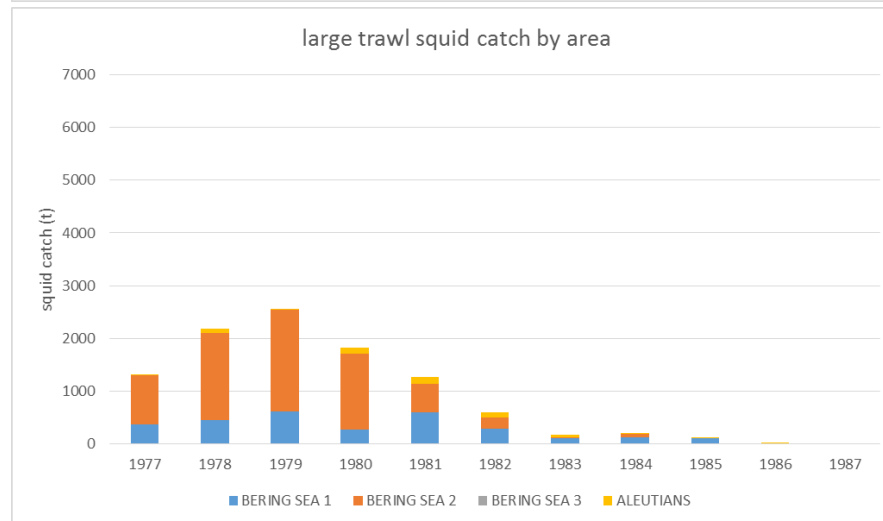
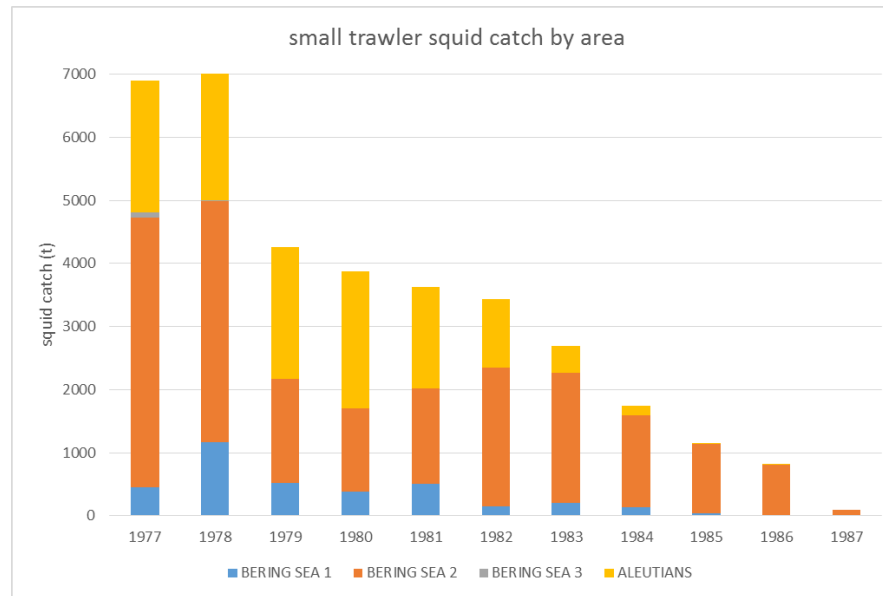
squid catch locations by vessel type



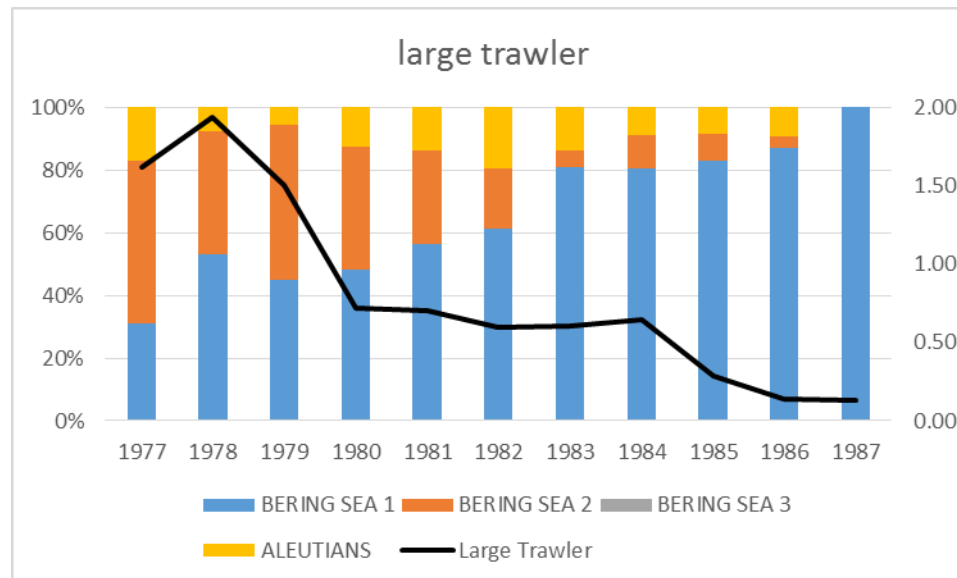
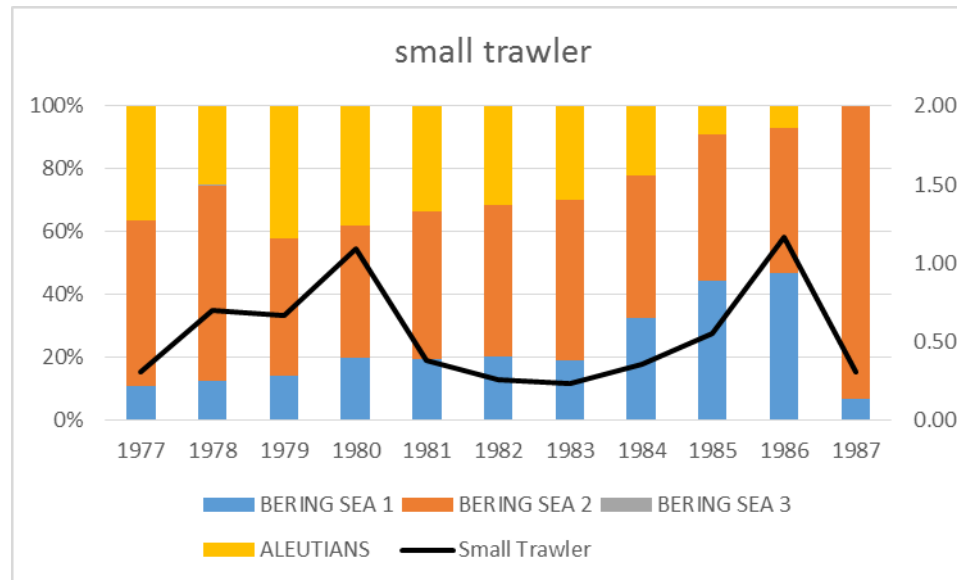
squid catch locations by vessel type



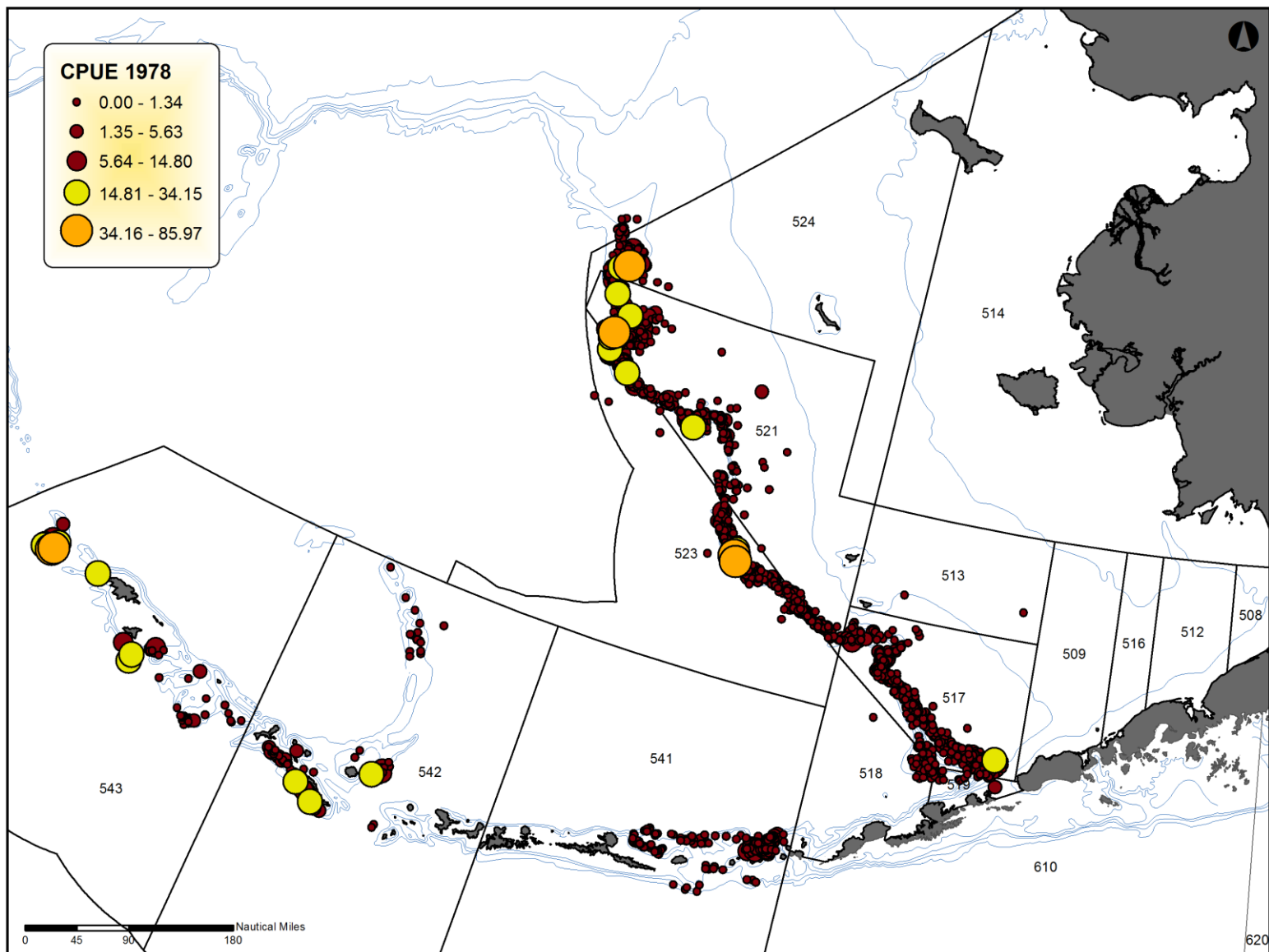
area-specific catch by vessel type



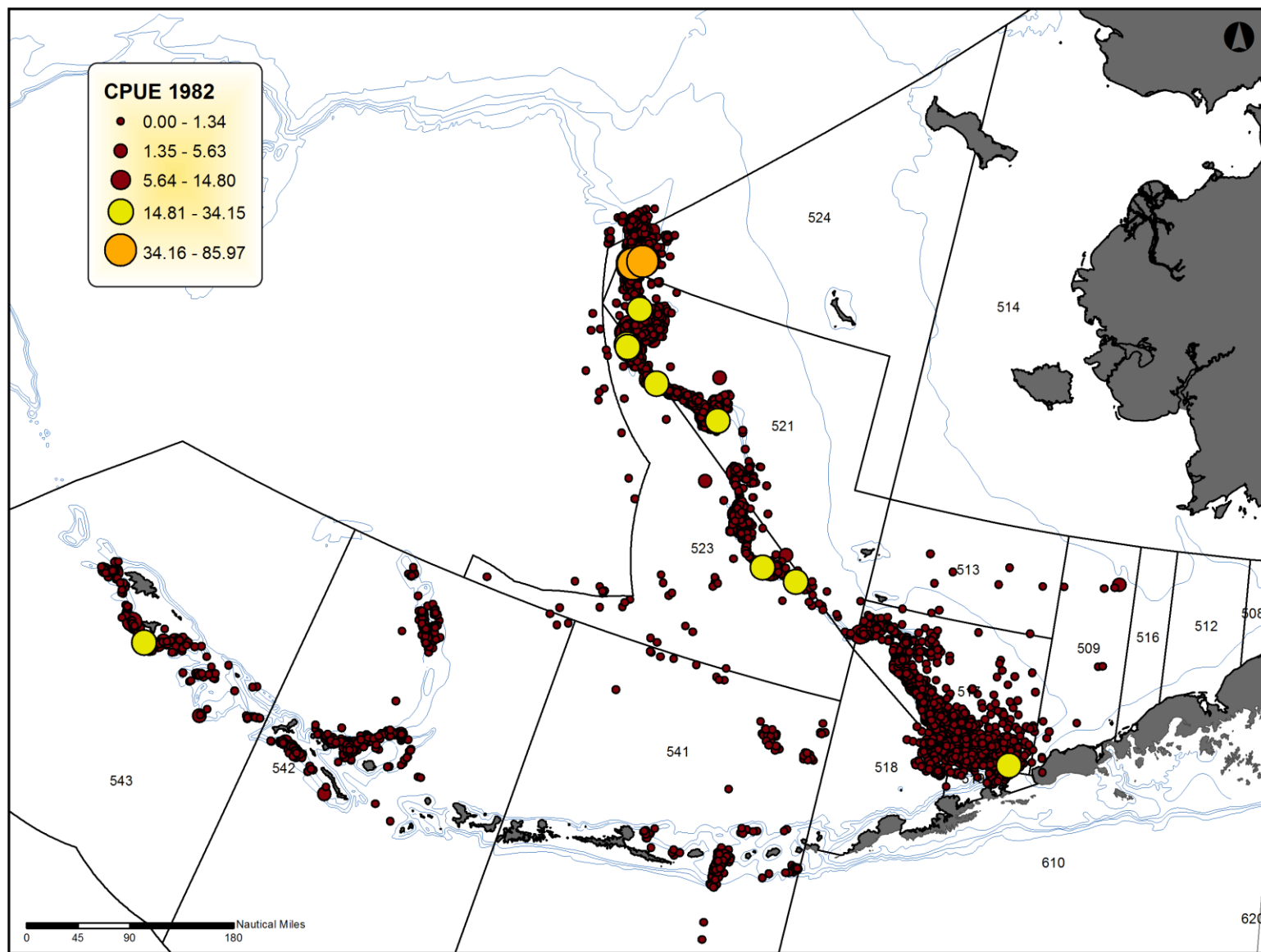
area-specific effort and CPUE



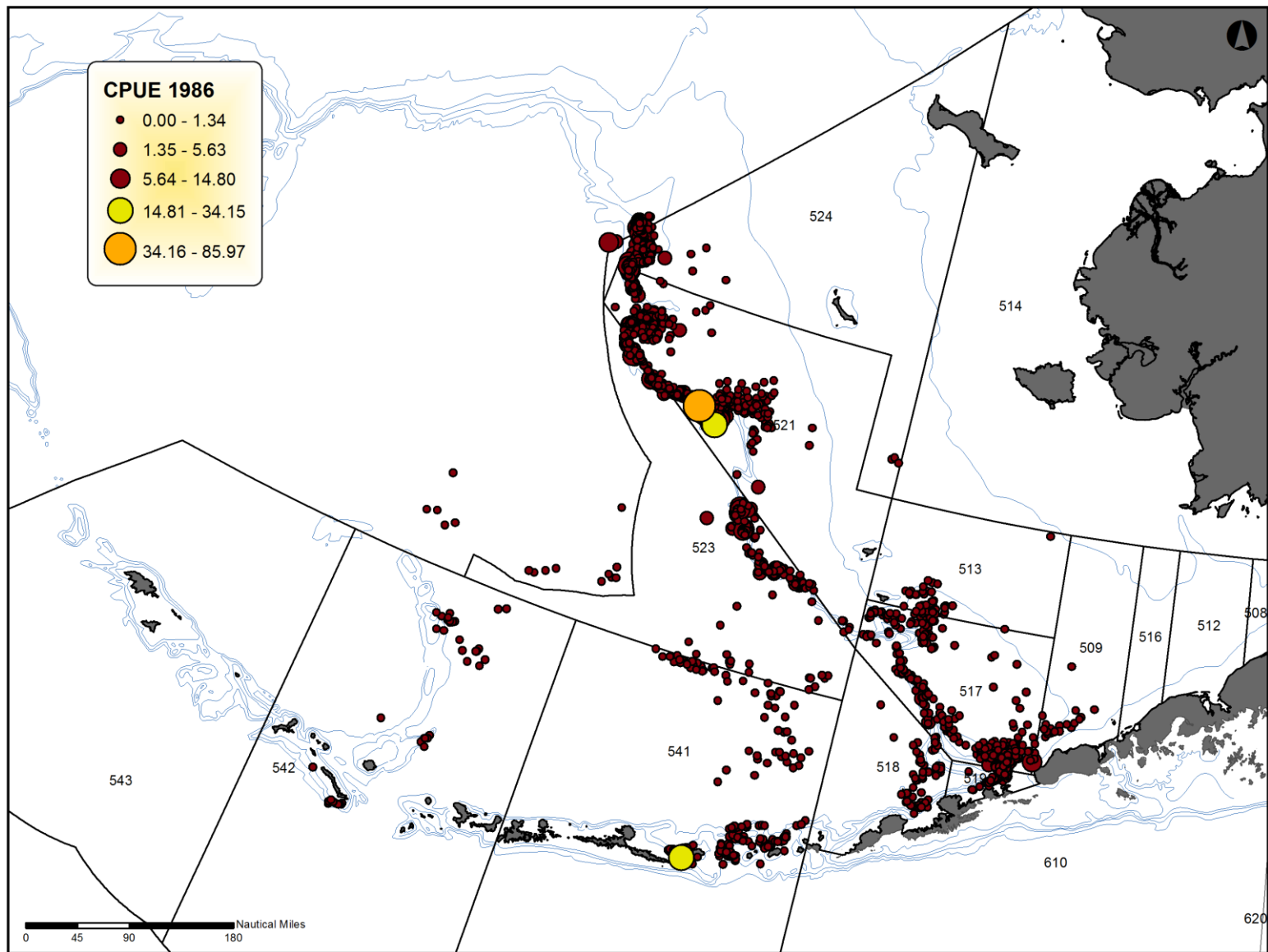
squid CPUE patterns



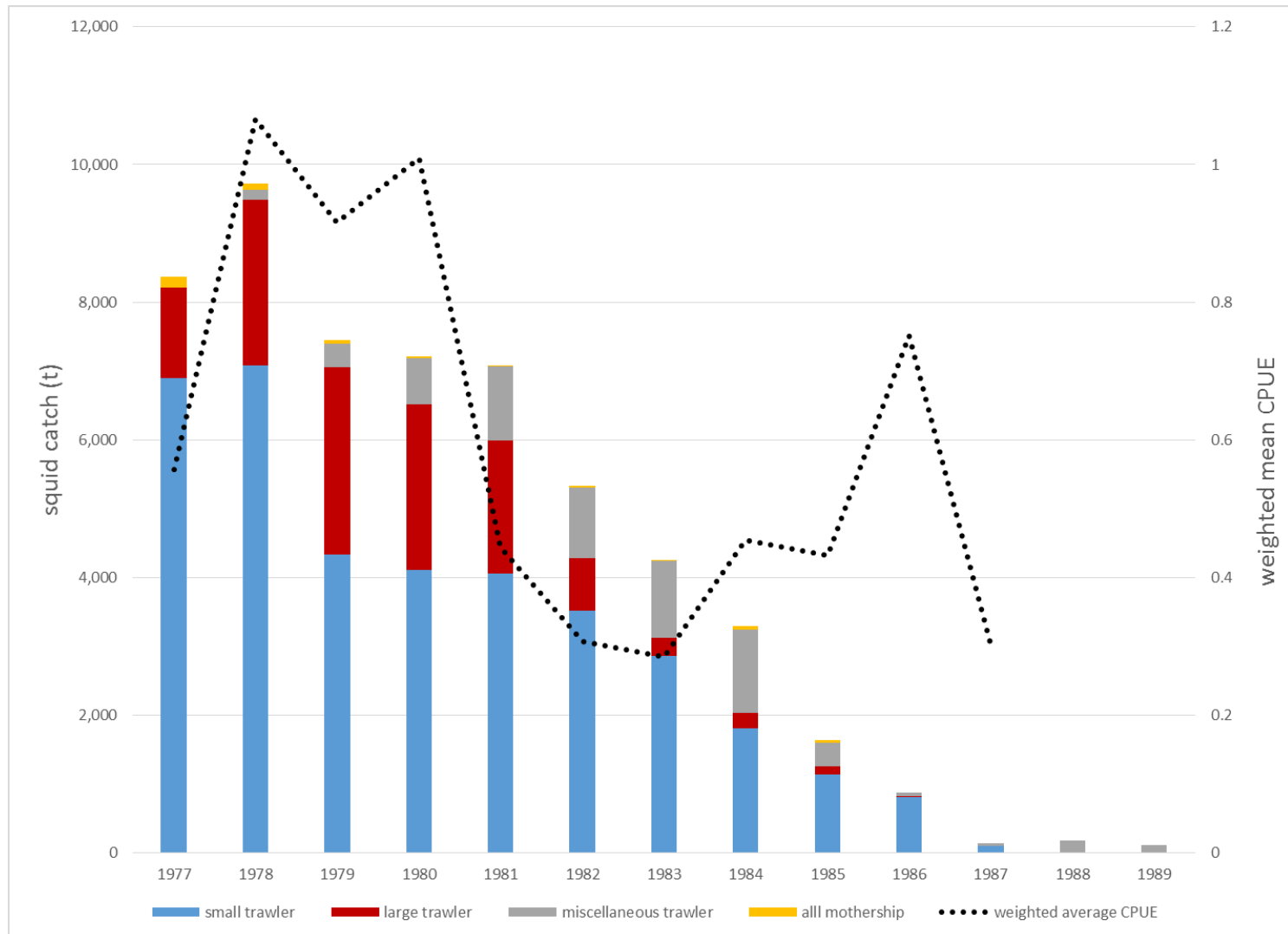
squid CPUE patterns



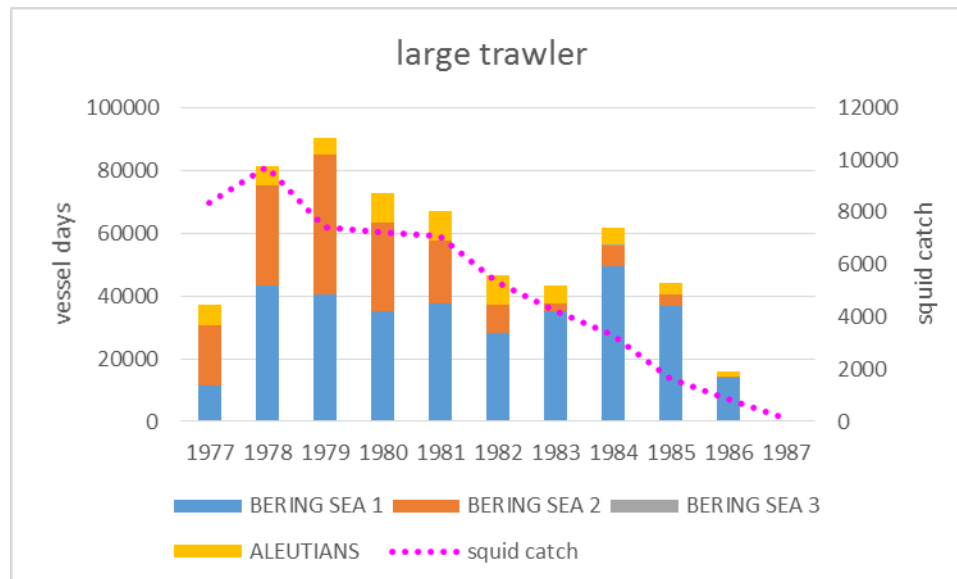
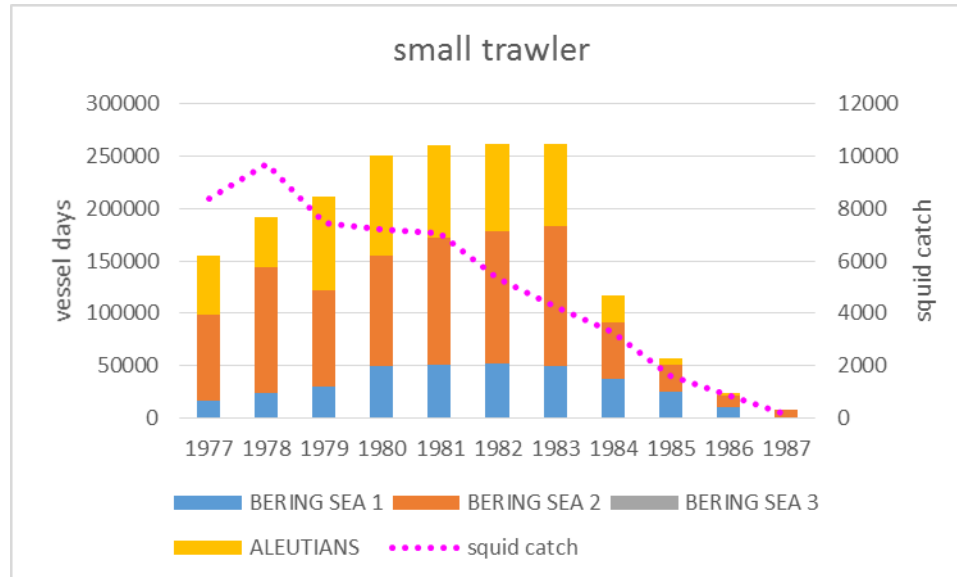
squid CPUE patterns



catch vs weighted mean CPUE



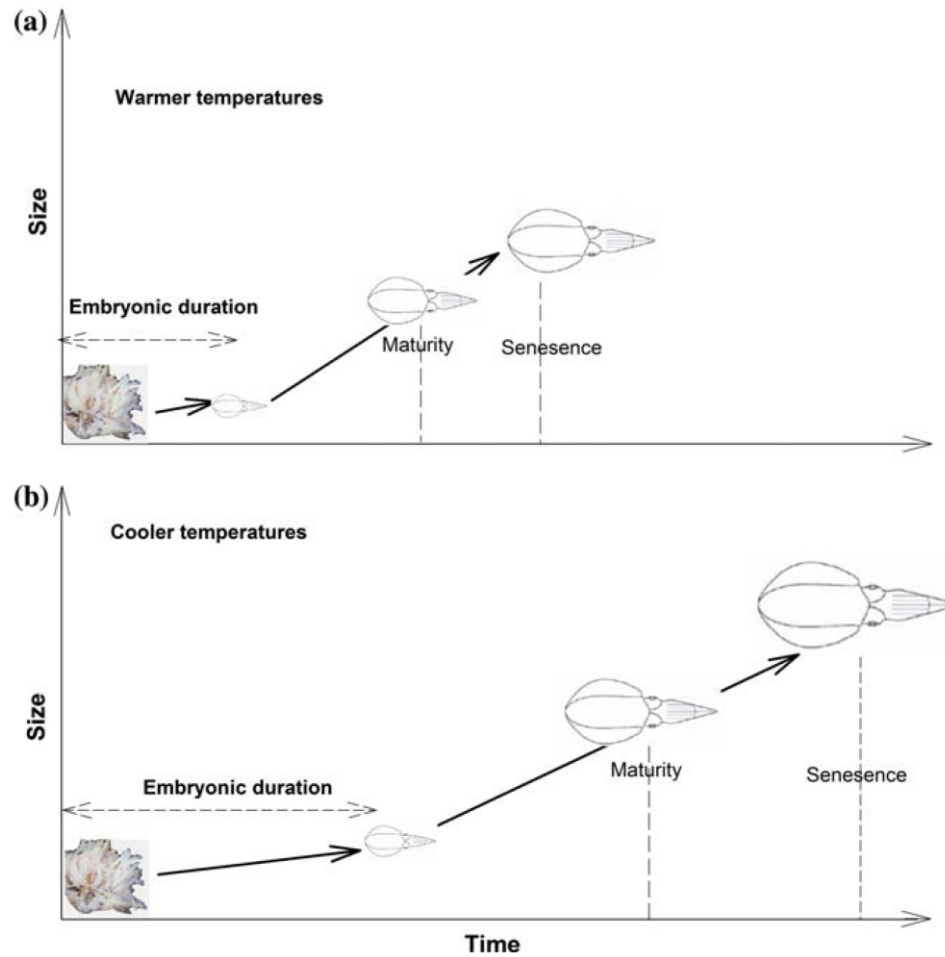
vessel days and total catch



squid catch summary

- **reduced catches after 1981 result from decreasing effort**
- **CPUE unrelated to total squid catch (mostly)**
- **causes of 1977-1981 patterns unclear but may be related to changes in within-area and between-area fishing locations**
- **observer coverage low during catch period used for OFL (1977-1981)**

environmental effects on squid (briefly)



environmental effects on squid (briefly)

- **warmer temperatures = faster growth**
- **growth effects depend on prey availability, oxygen**
- **less ability to survive poor conditions due to increased metabolic rate**
- **maturation at smaller size, smaller offspring**
- **increases in multiple cohorts, changes in annual patterns**