

squid issues 2016



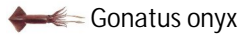
Joint Plan Team meetings September 2016

overview

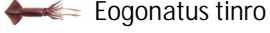
- re: SSC comments regarding moving squid to EC
- squid catches 1977-1990
- environmental effects on squid

squid complex: what do we mean by "squid"?

predators



Gonatus onyx



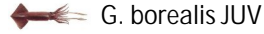
Eogonatus tinro



Gonatus pyros



B. Magister JUV



G. borealis JUV



Gonatus madokai



Gonatus middendorffi

survey & fishery

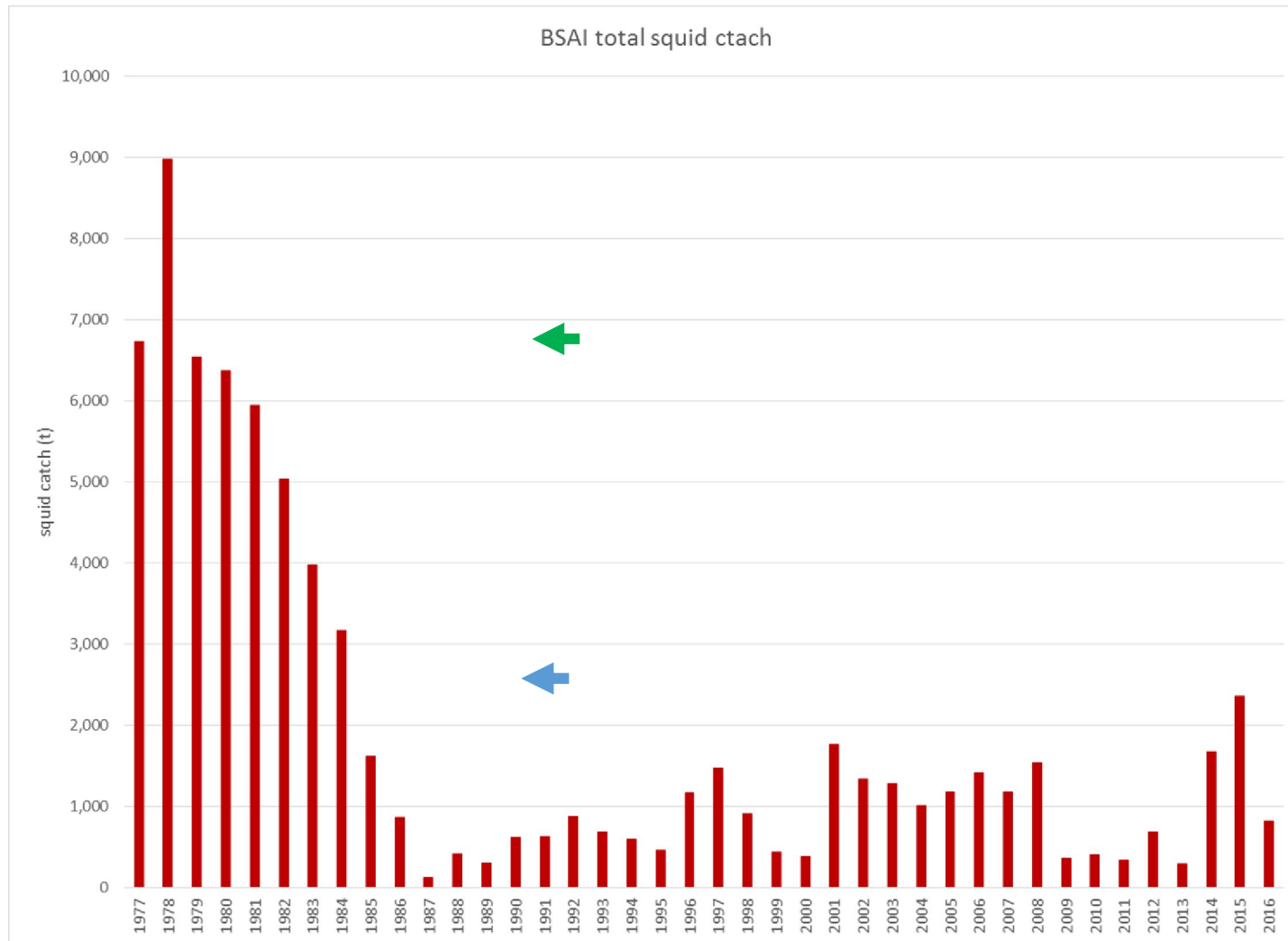


Berryteuthis magister

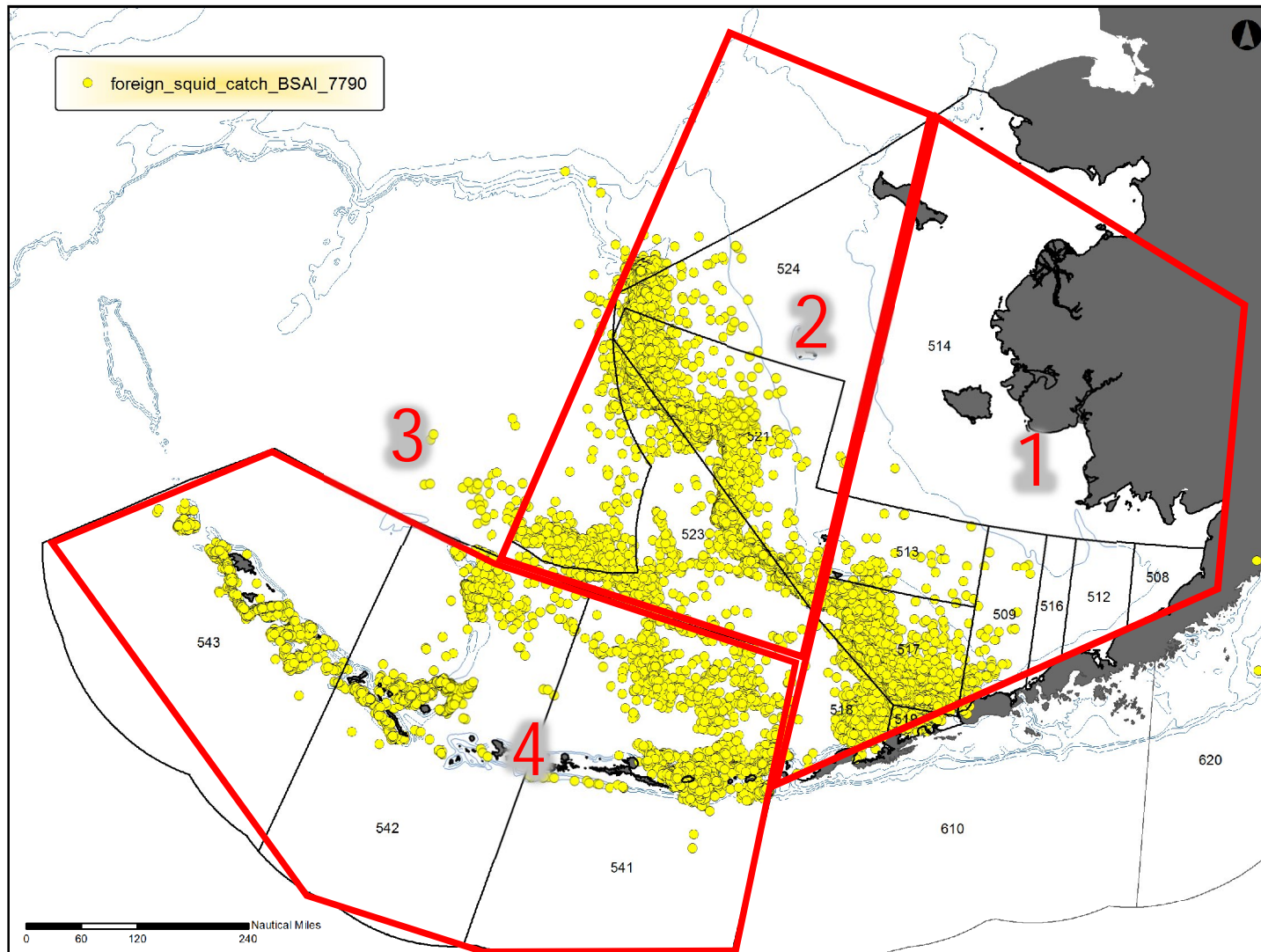


Gonatopsis borealis

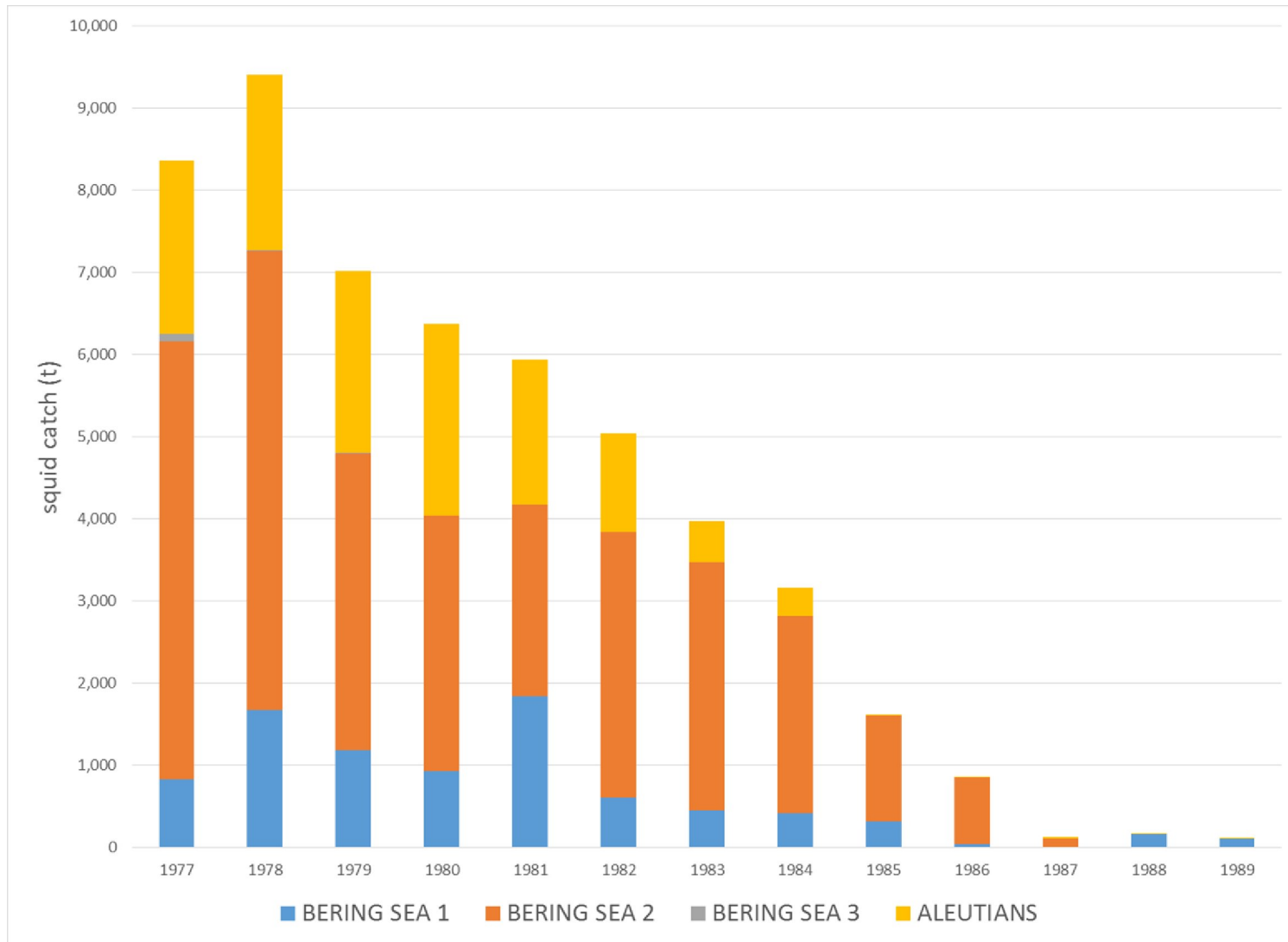
BSAI squid catch history (1977-1990) and OFLs



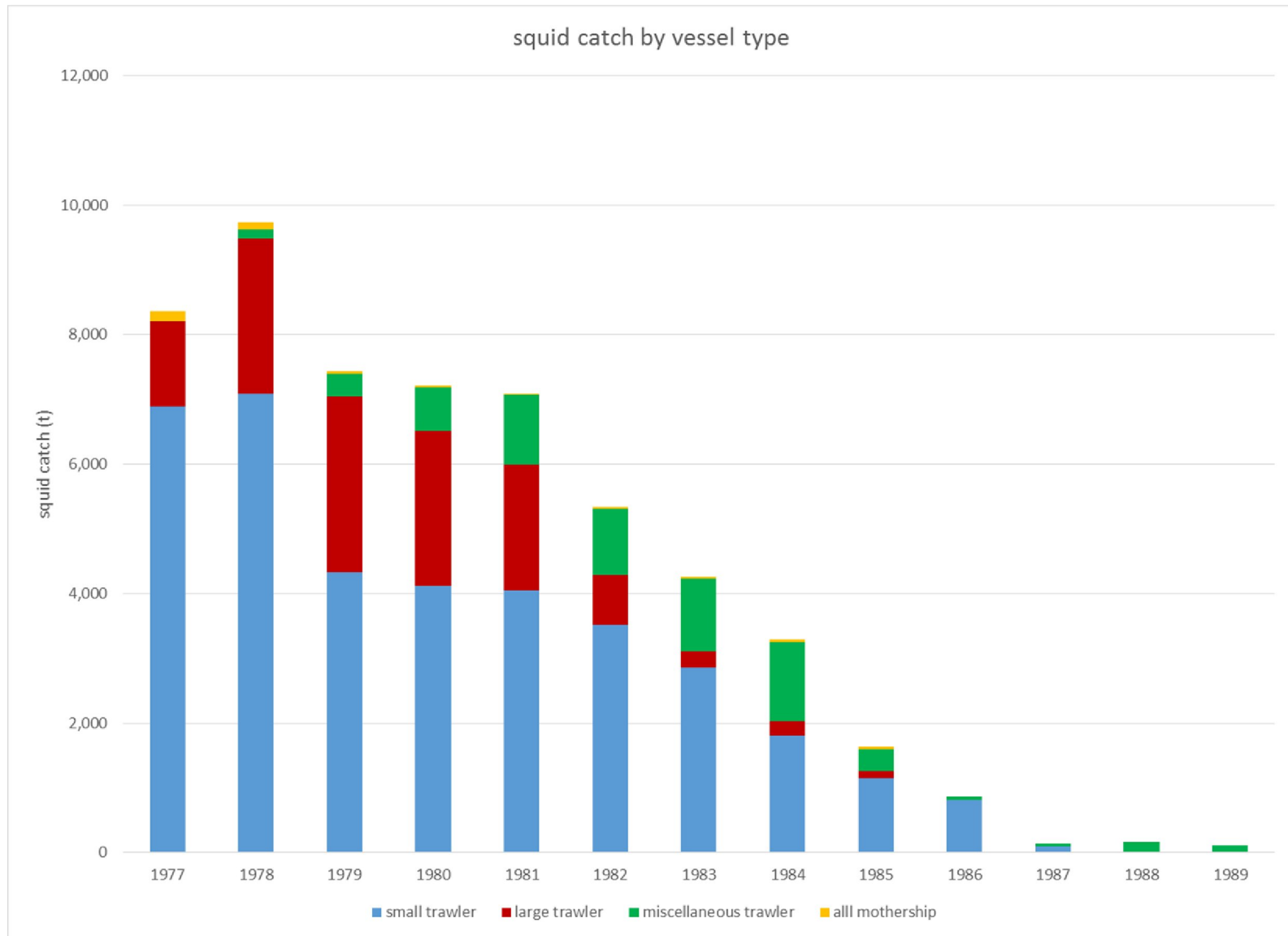
foreign BSAI squid catch 1977-1990



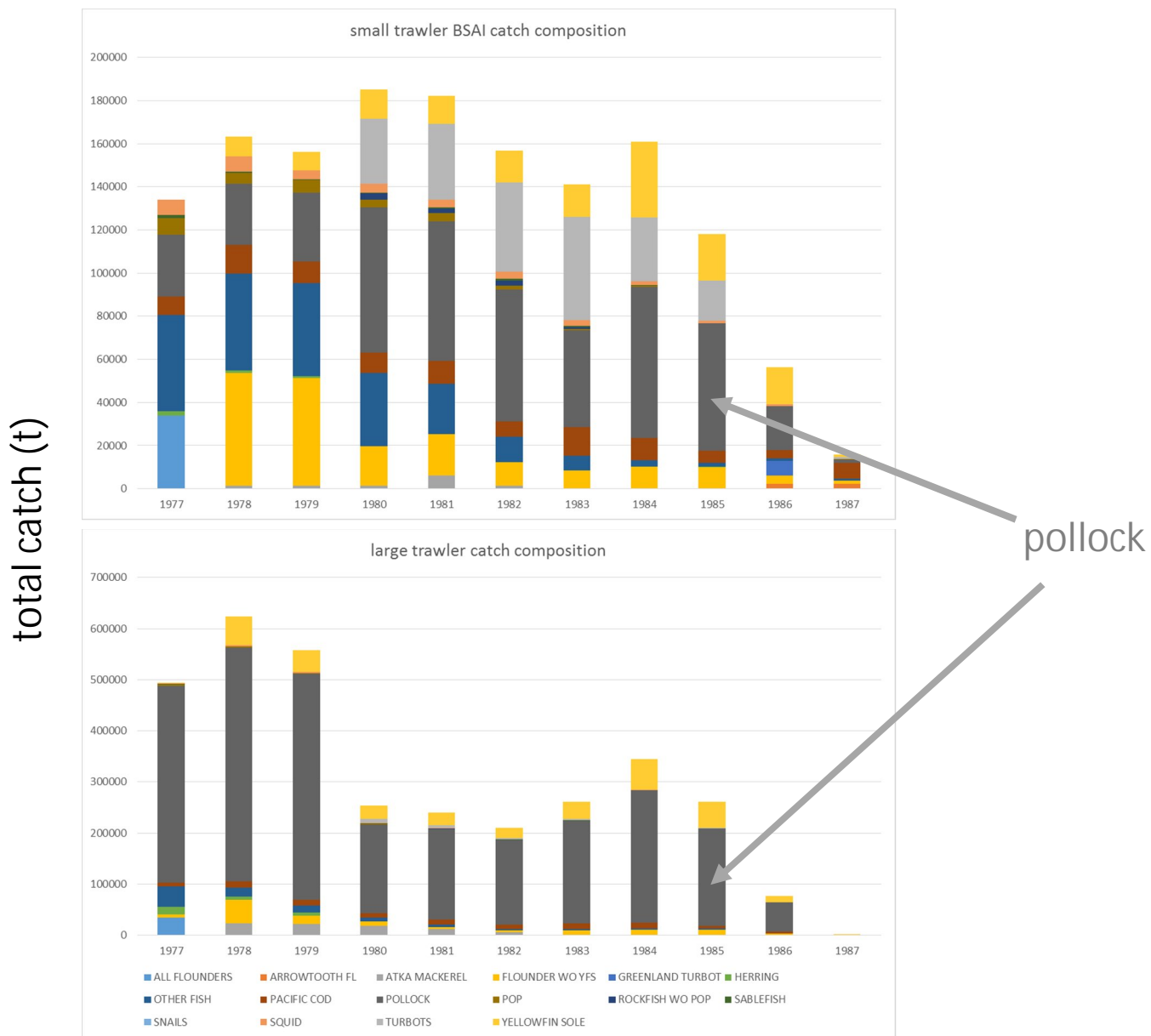
foreign BSAI squid catch by area



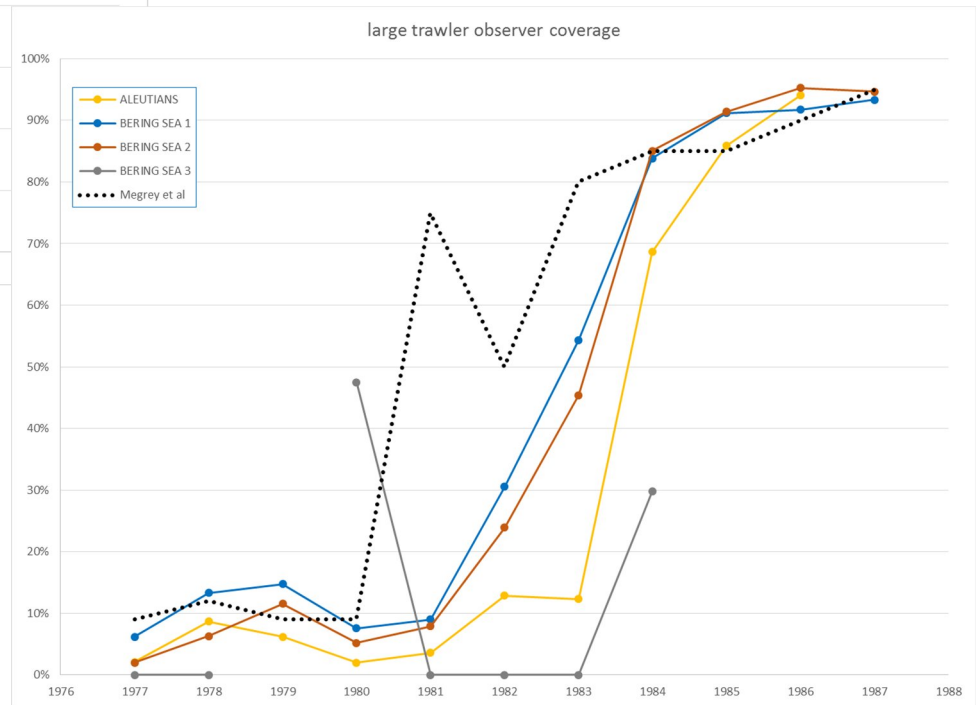
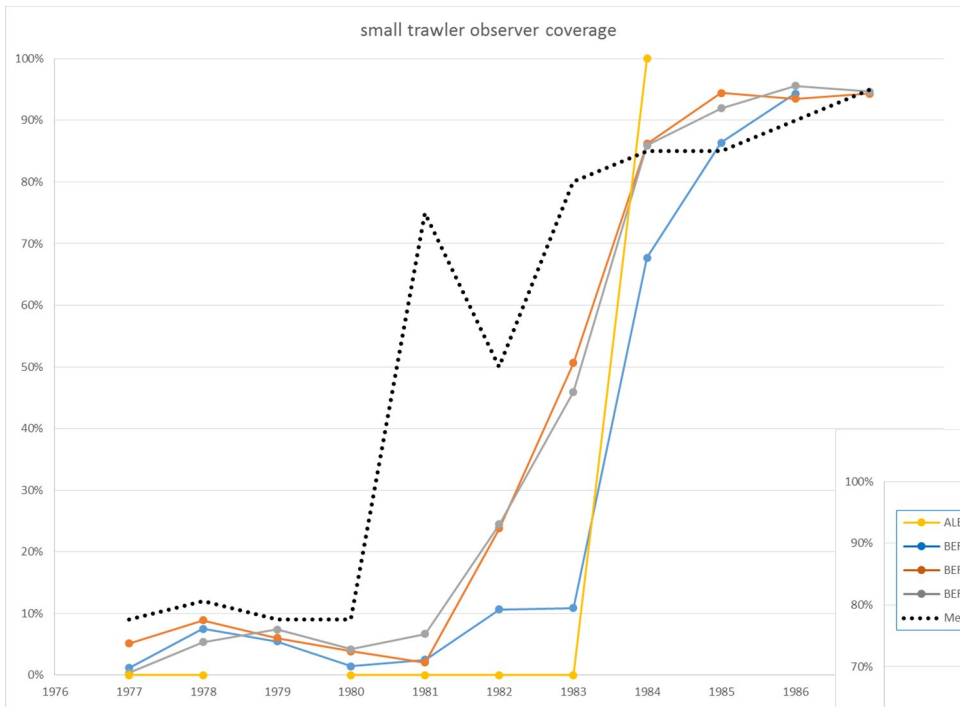
foreign BSAI squid catch by vessel type



foreign BSAI catch composition by vessel type



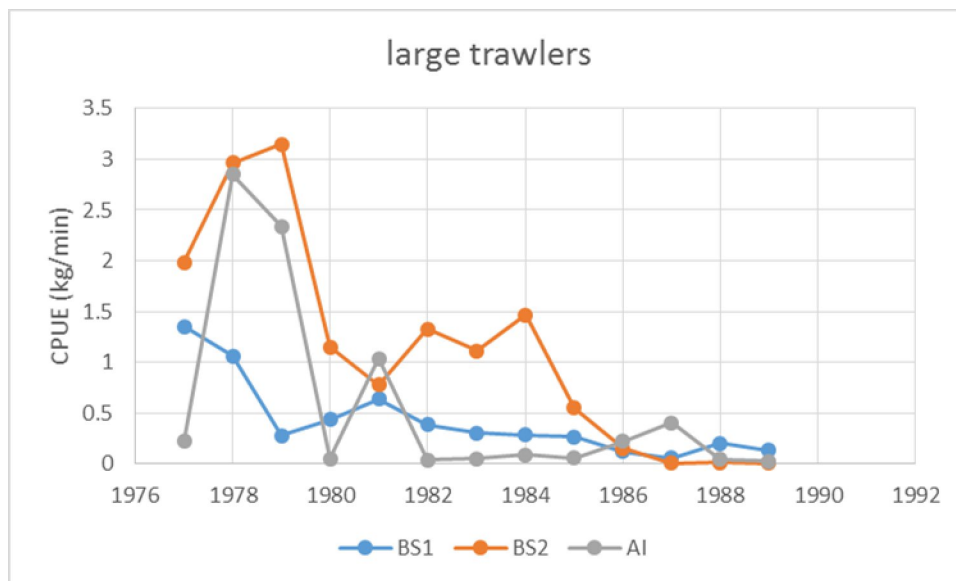
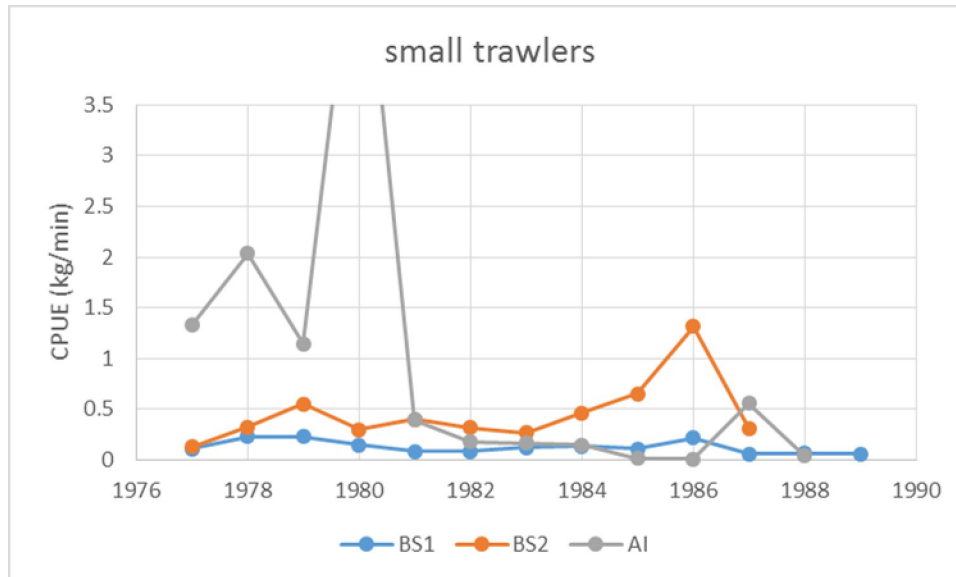
foreign vessel observer coverage



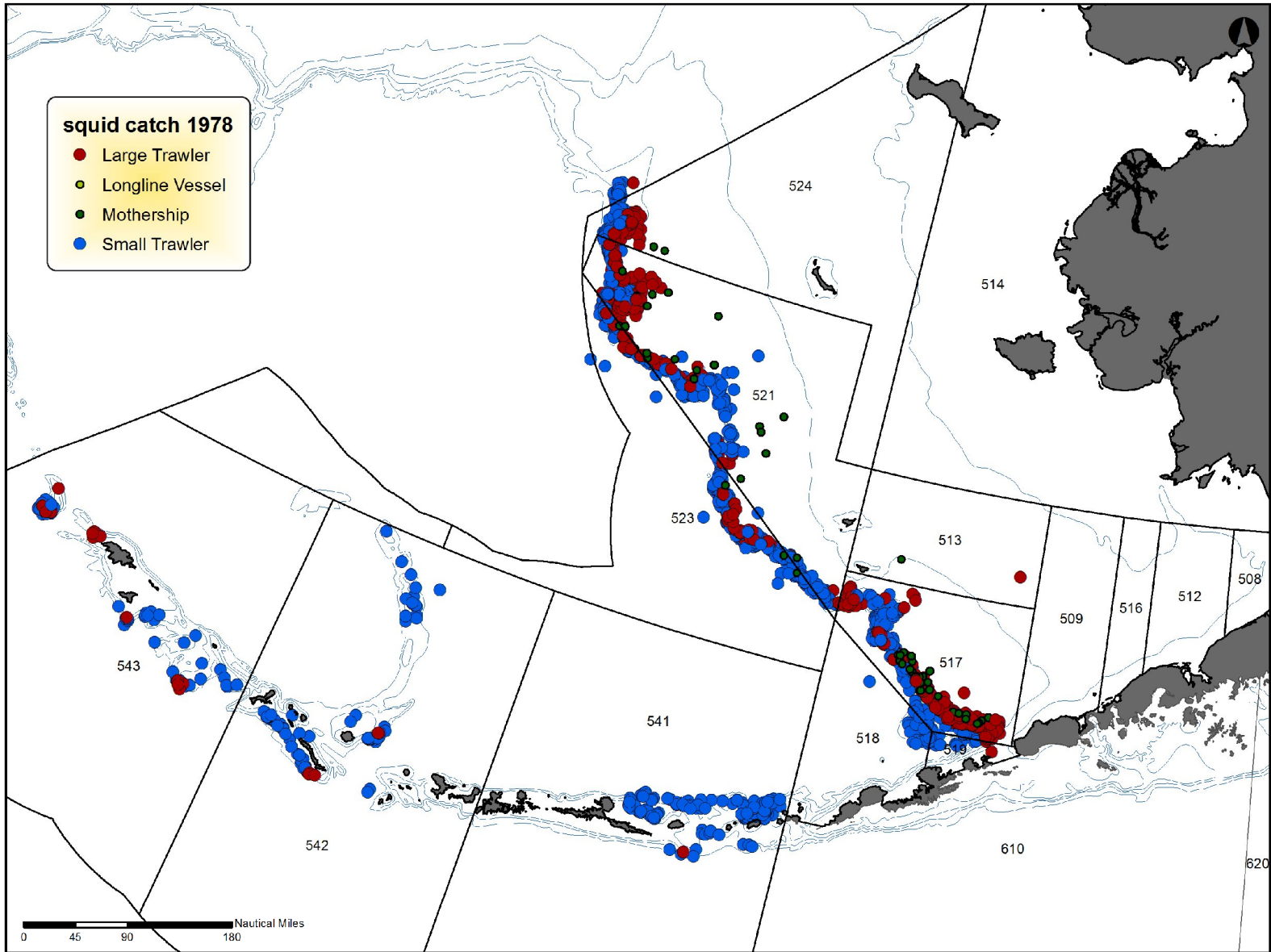
2 ways of looking at effort

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

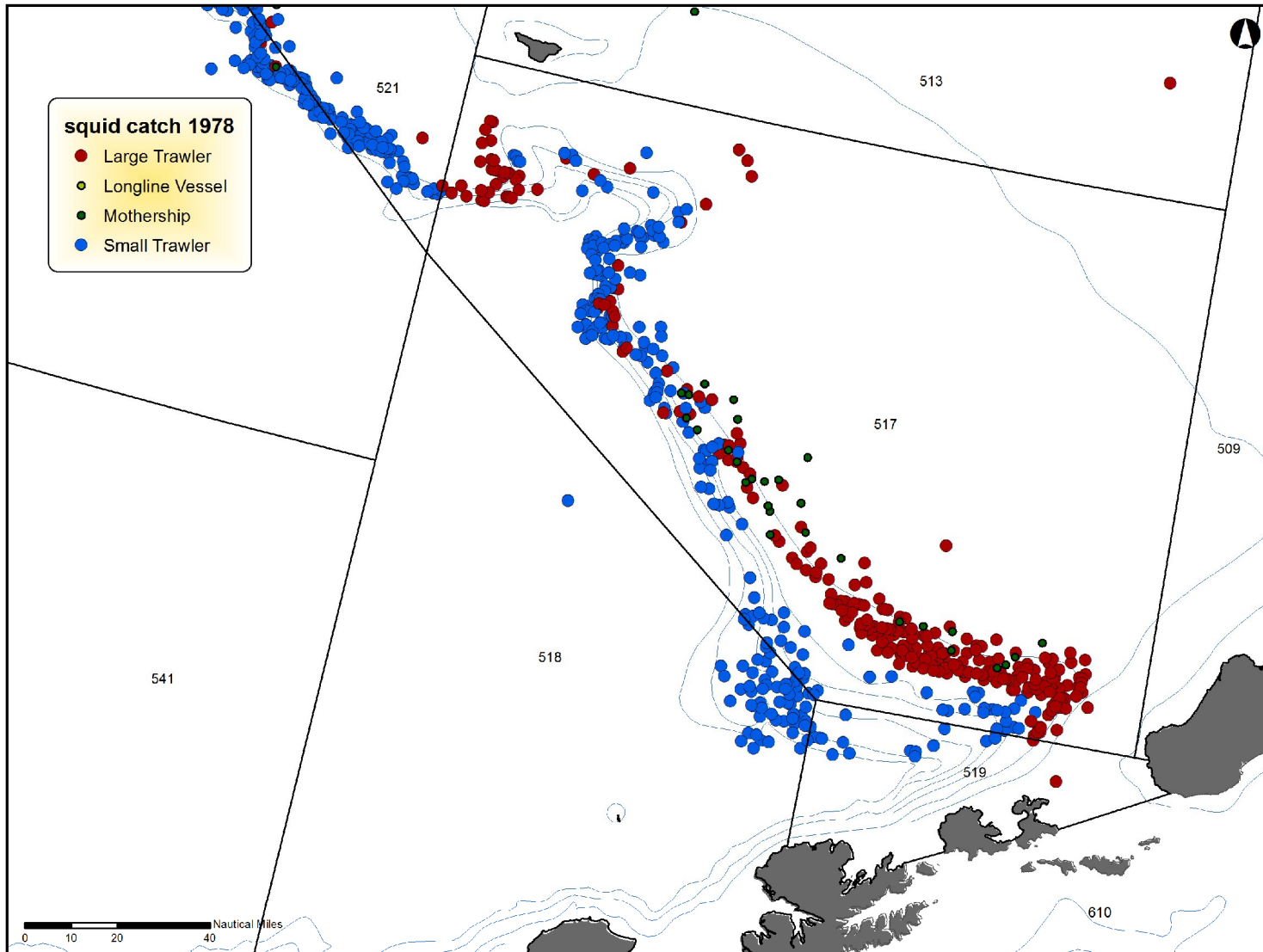
area-specific CPUE by vessel type



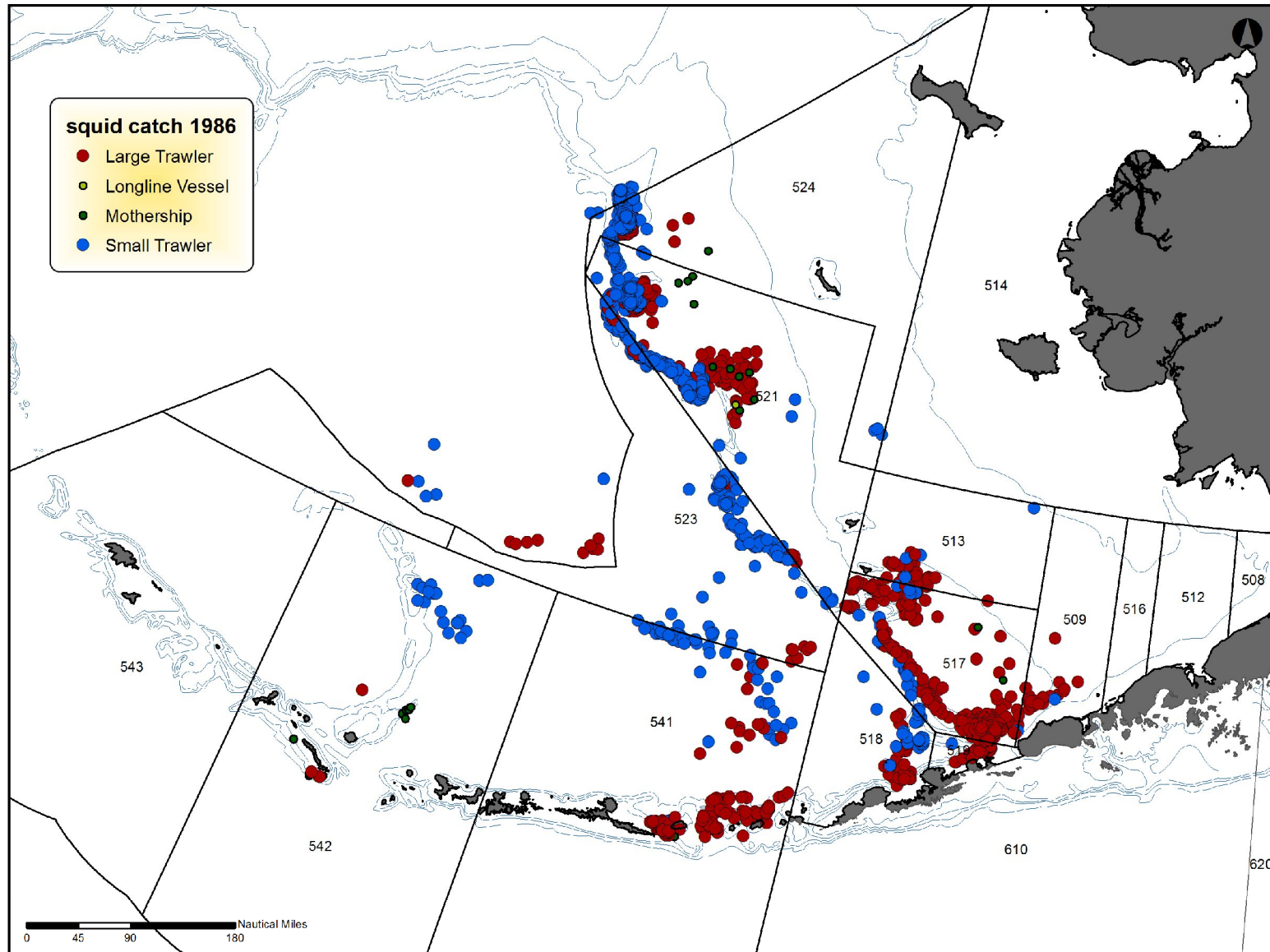
squid catch locations by vessel type



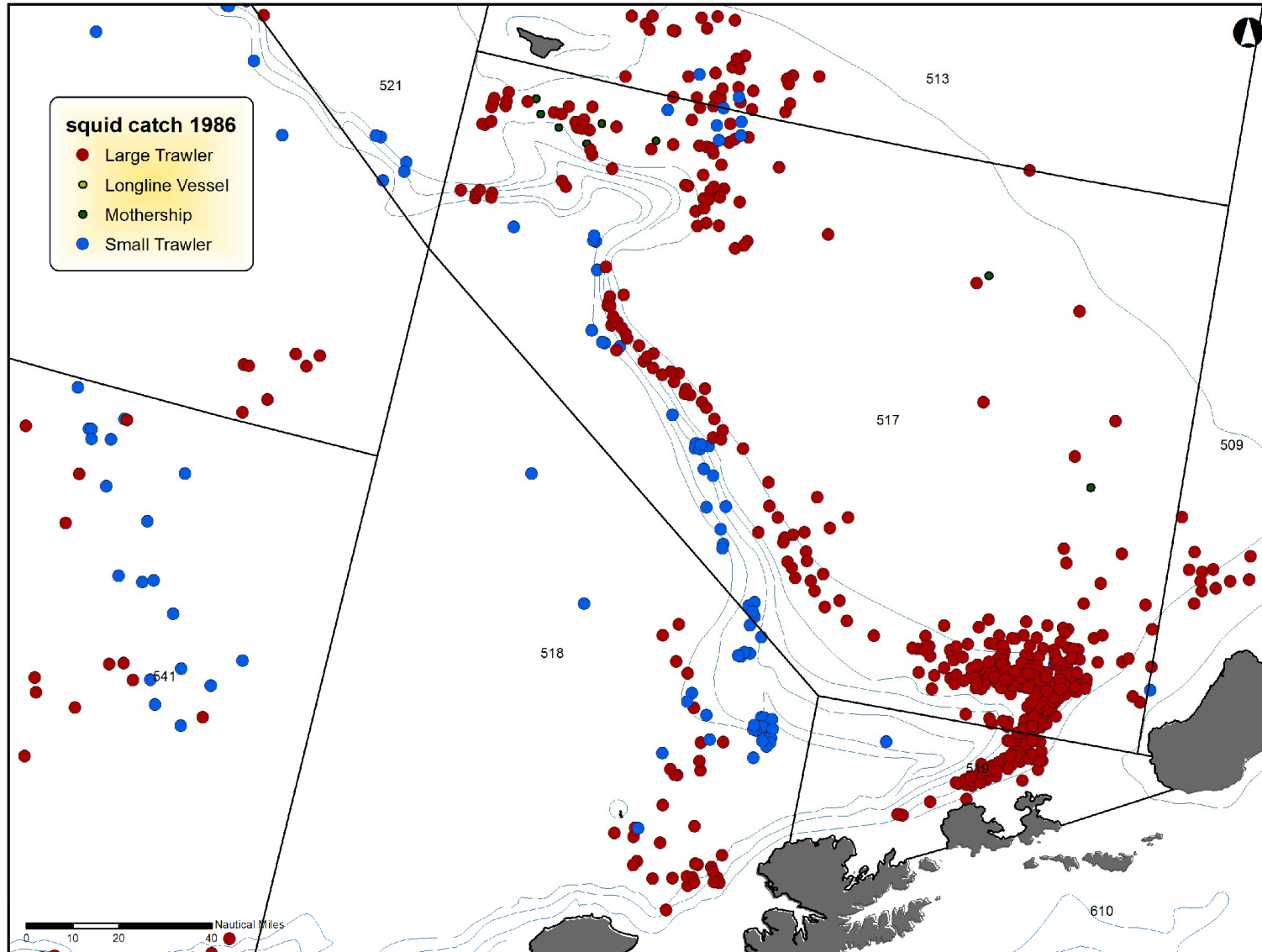
squid catch locations by vessel type



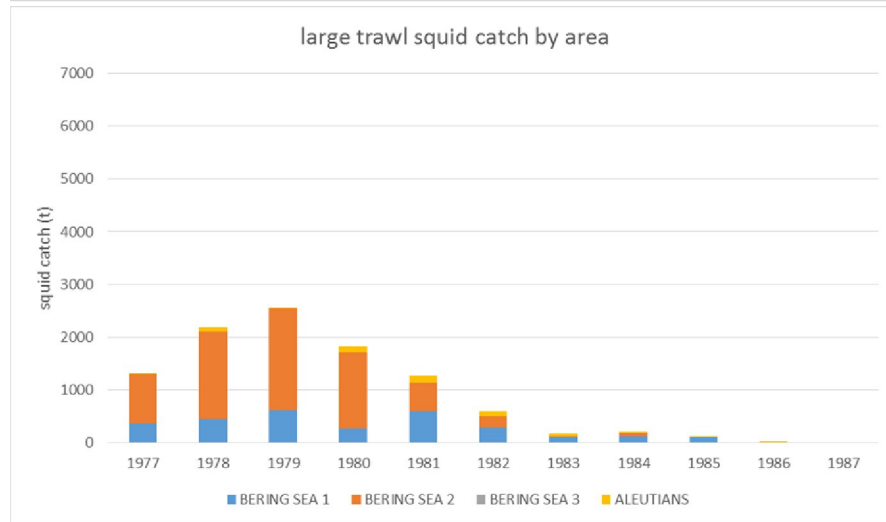
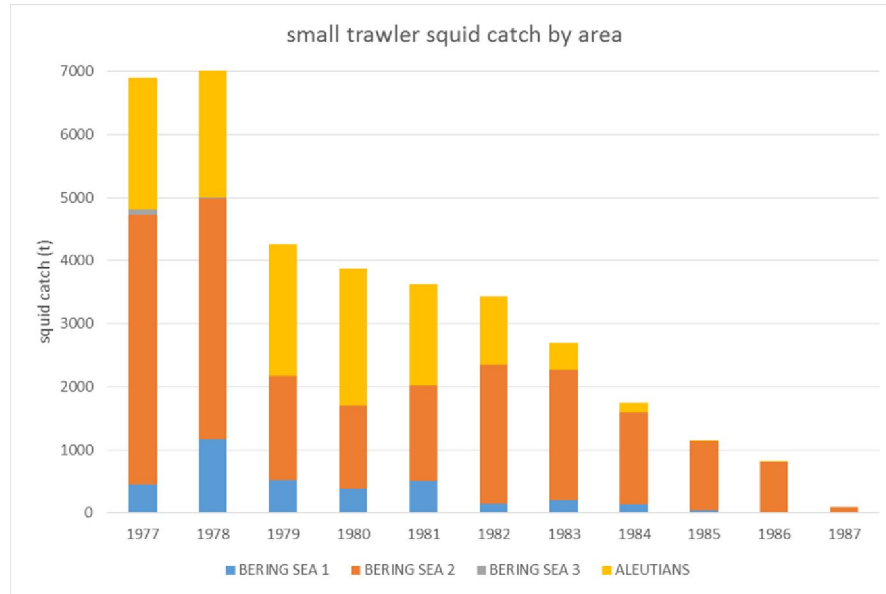
squid catch locations by vessel type



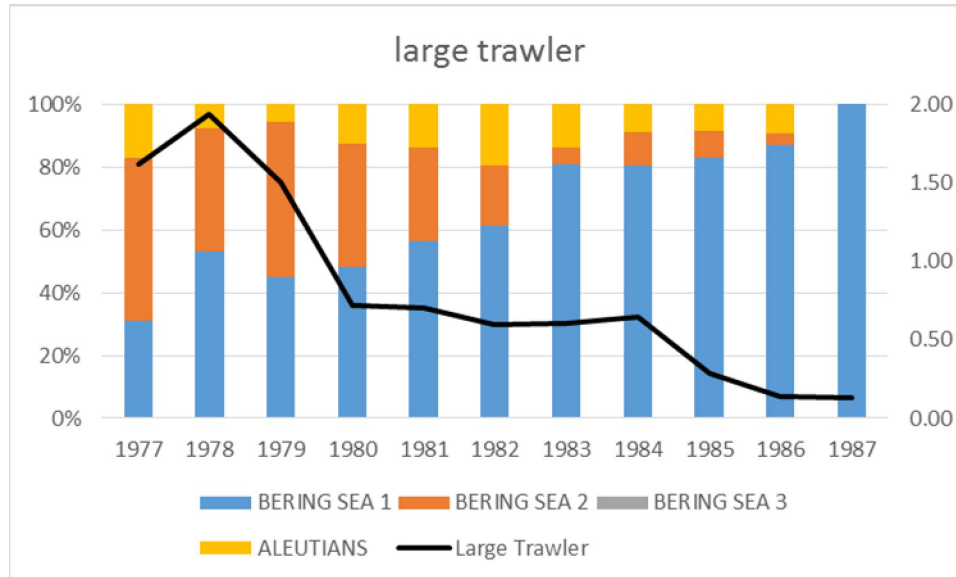
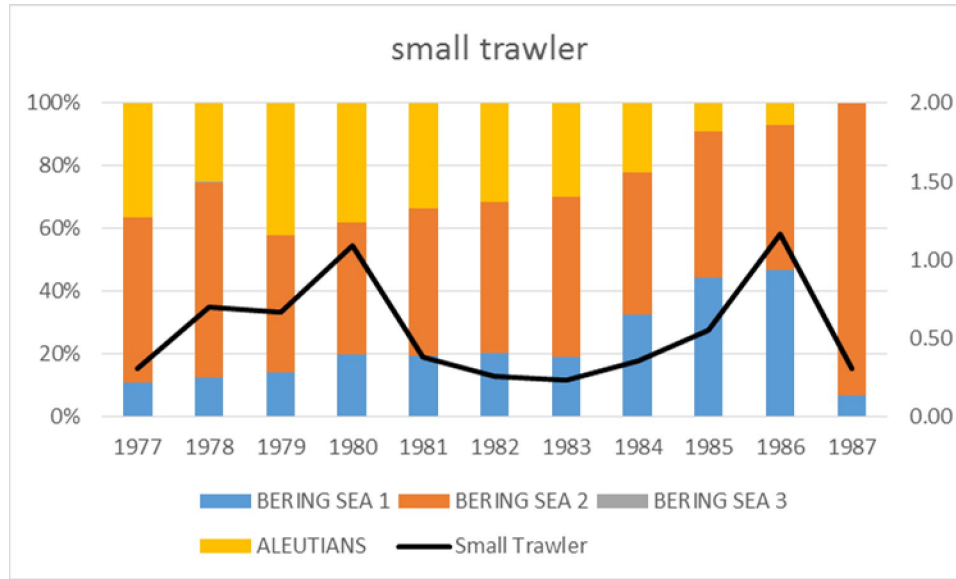
squid catch locations by vessel type



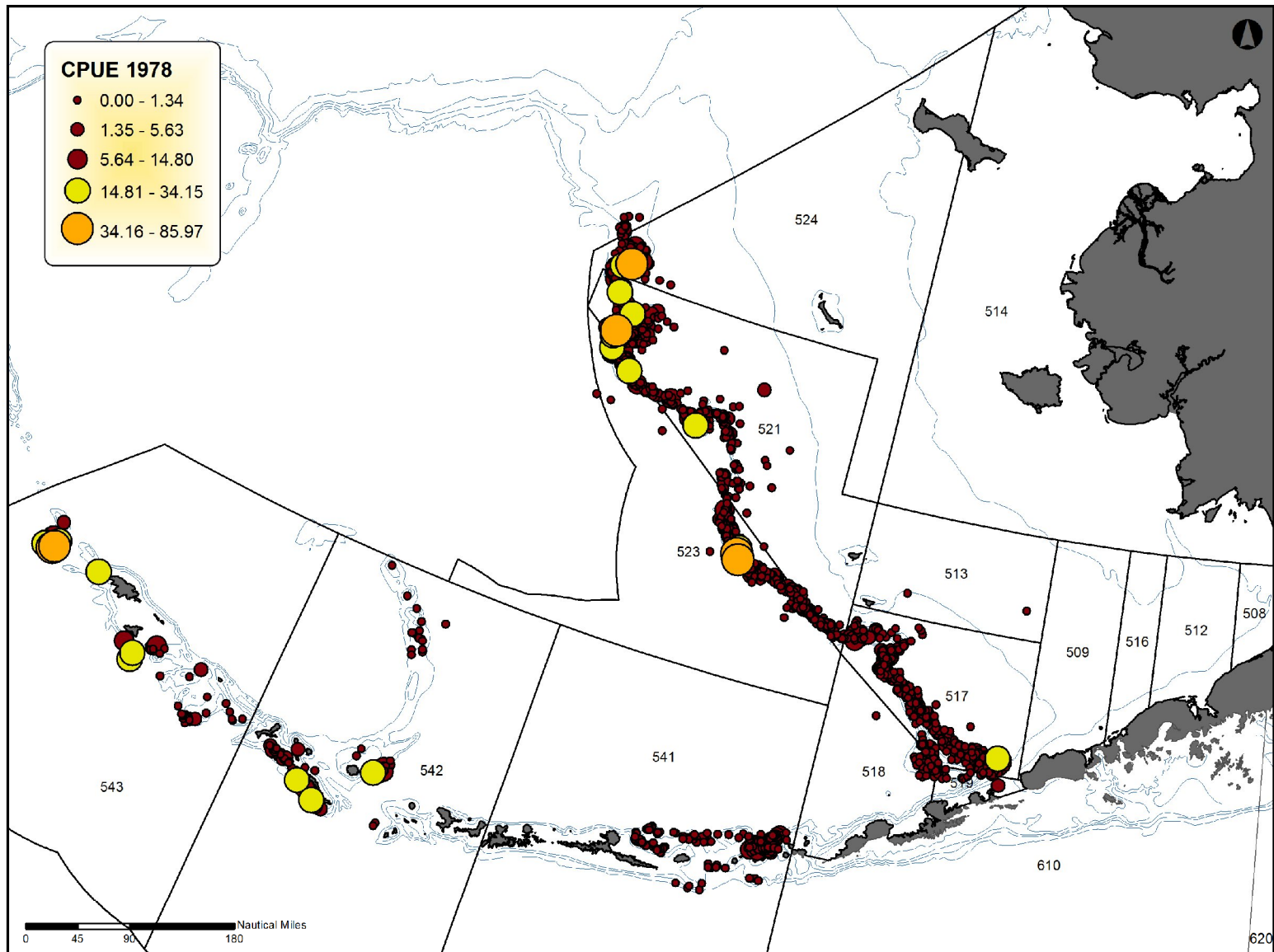
area-specific catch by vessel type



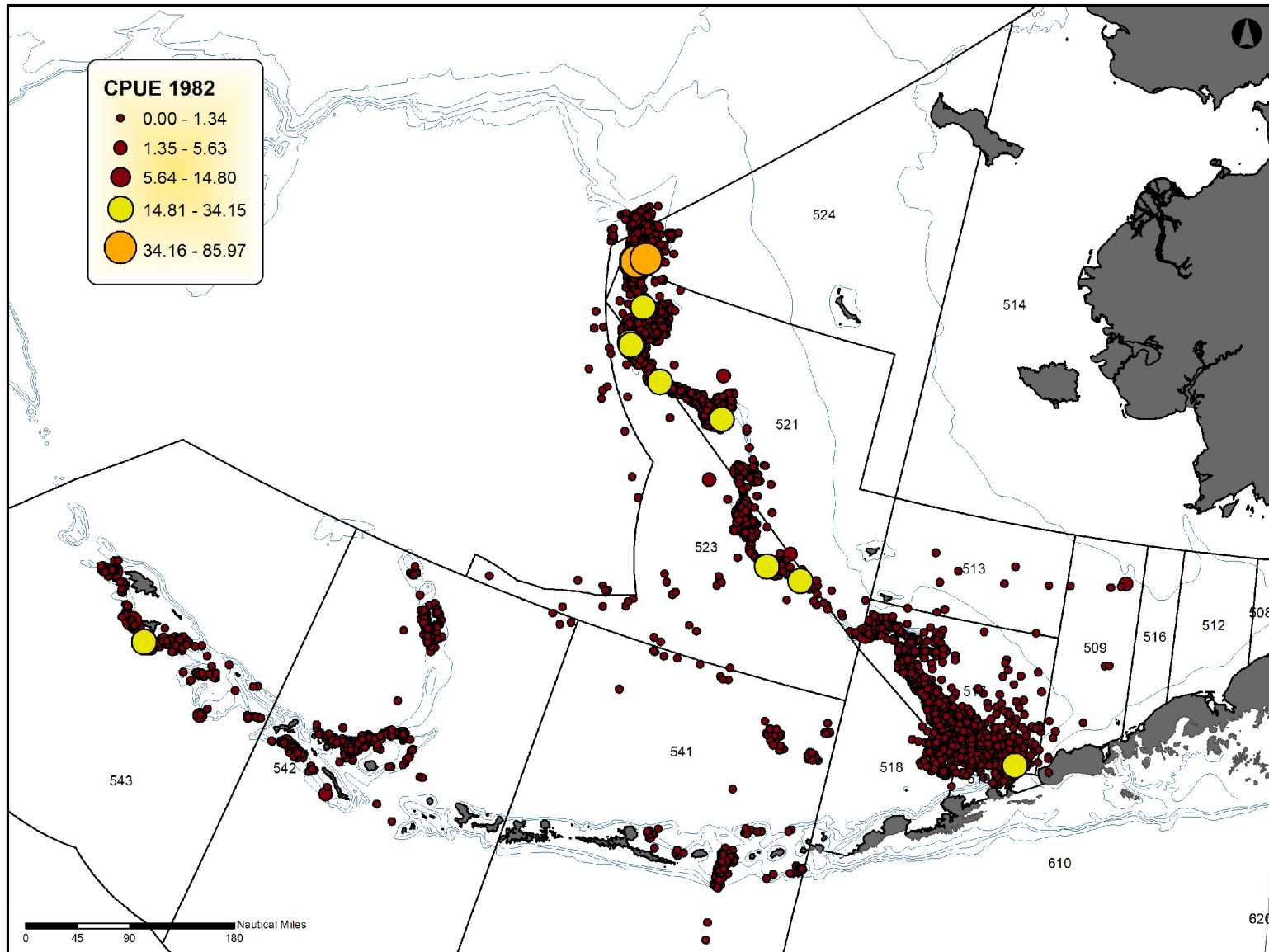
area-specific effort and CPUE



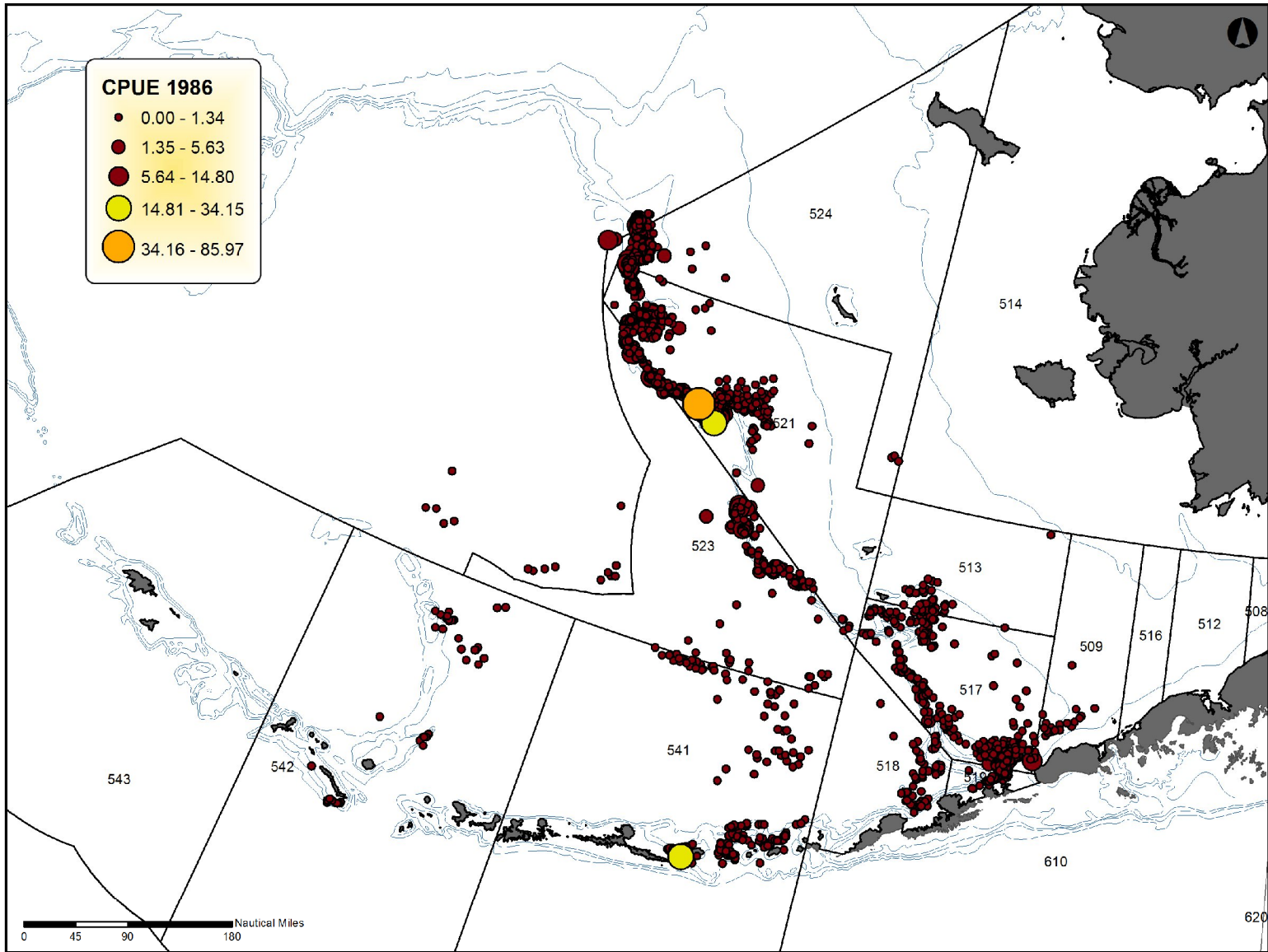
squid CPUE patterns



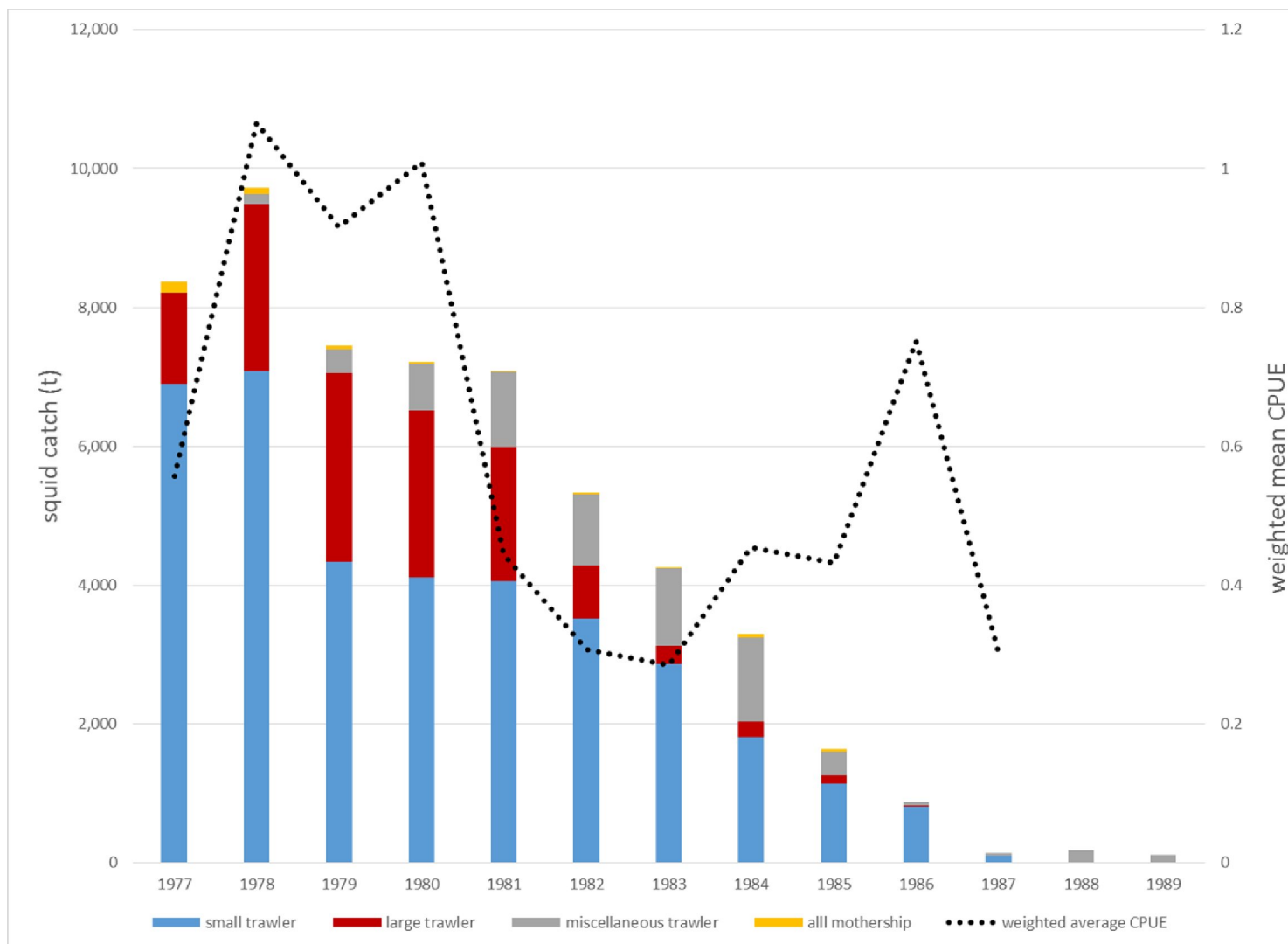
squid CPUE patterns



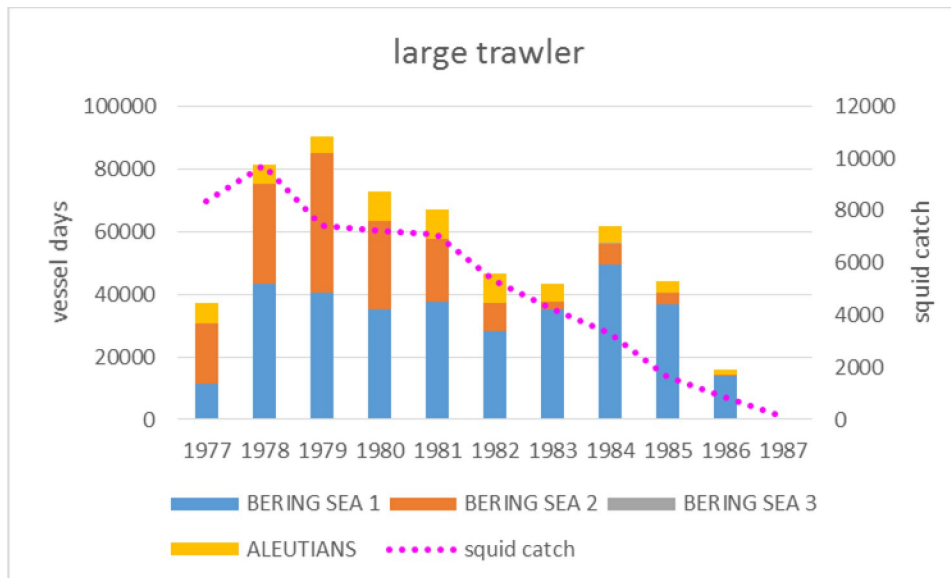
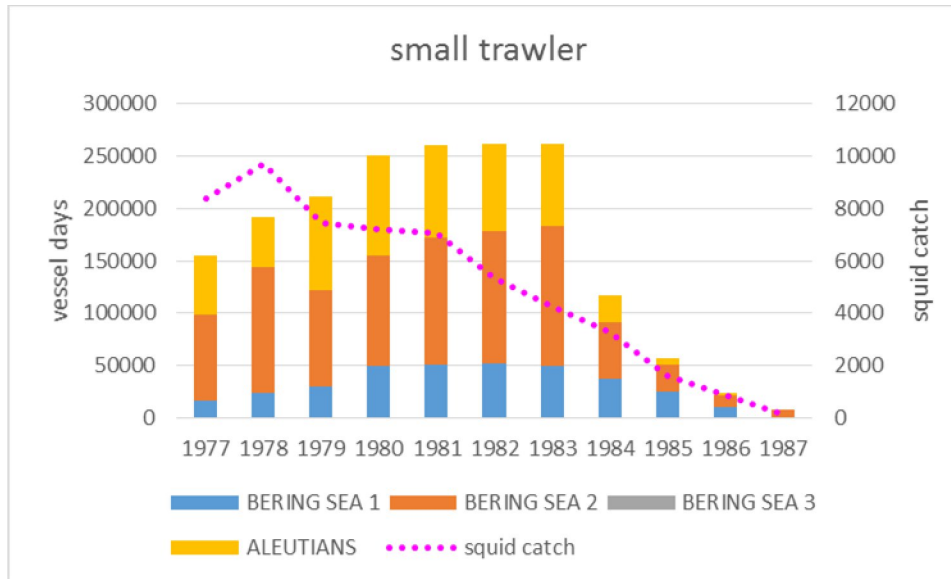
squid CPUE patterns



catch vs weighted mean CPUE



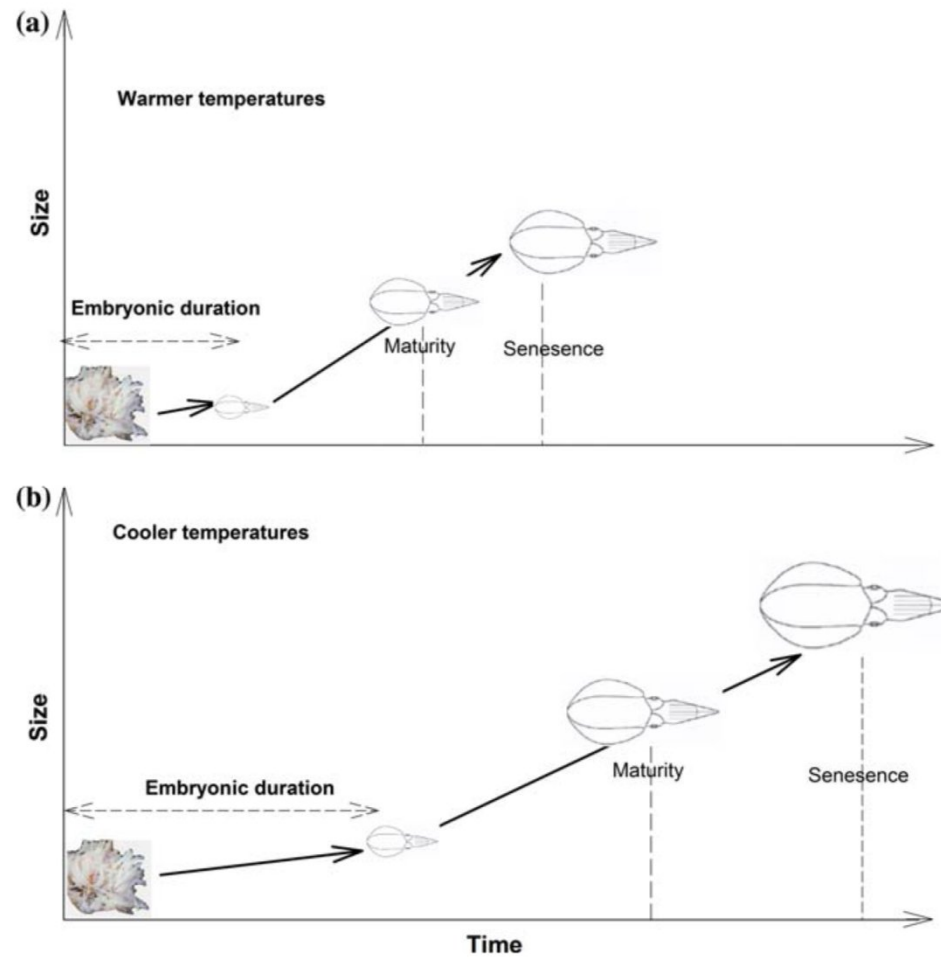
vessel days and total catch



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