**Data based Question – Galapagos Finches - Answers**

 **1. a)** increases to a peak of 300 birds in 2003; decline after 2003 to very low population size;

**b)** both have population peak in 2003, followed by a decline; *G. fortis* reaches a much higher level of population; *G. fortis* pattern appears cyclical/has two instances of a peak and decline in the same period that *G. magnirostris* has one peak and decline; 2

**2.** minimum: presuming 100 birds per 0.34 km2, the density is 294 birds per km2; maximum: 1,500 birds per 0.34 km2, density is 4,411 birds per km2;

**3. a)** *G. magnirostris* feeds on all three seeds with a preference for large seeds; *G. fortis* feeds on all three seeds with a preference for small seeds; *G. scandens* feeds on only small and medium seeds with a preference for small seeds;

**b)** *G. magnirostris* and *G. scandens* ate more medium sized seeds after the drought; *G. fortis* ate fewer large seeds;

**4. a)** 1977 to 1978 and 2004 to 2005;

**b)** less food, so more deaths during a drought; selection can be more intense; distribution of seed sizes different from non-drought periods, so different individuals have a selective advantage;

**c)** shortage of small seeds during the first drought; so selection favours birds with larger beaks; *G. magnirostris* also present during the second drought; competition for larger seeds so *G. fortis* beak size did not increase;

**5.** small population size / small island size; large fluctuations in abiotic factors due to El Nino and La Nina; high death rates during droughts; geographic isolation, so little immigration or emigration; short generation time in birds;

**6.** long studies can reveal smaller / more gradual evolutionary trends; funding for scientific research often favours short projects with fast results; scientists may not want / be able to continue with long term research; methods / research priorities change over time;