Supporting Information

Pinsky et al. 10.1073/pnas.1015313108

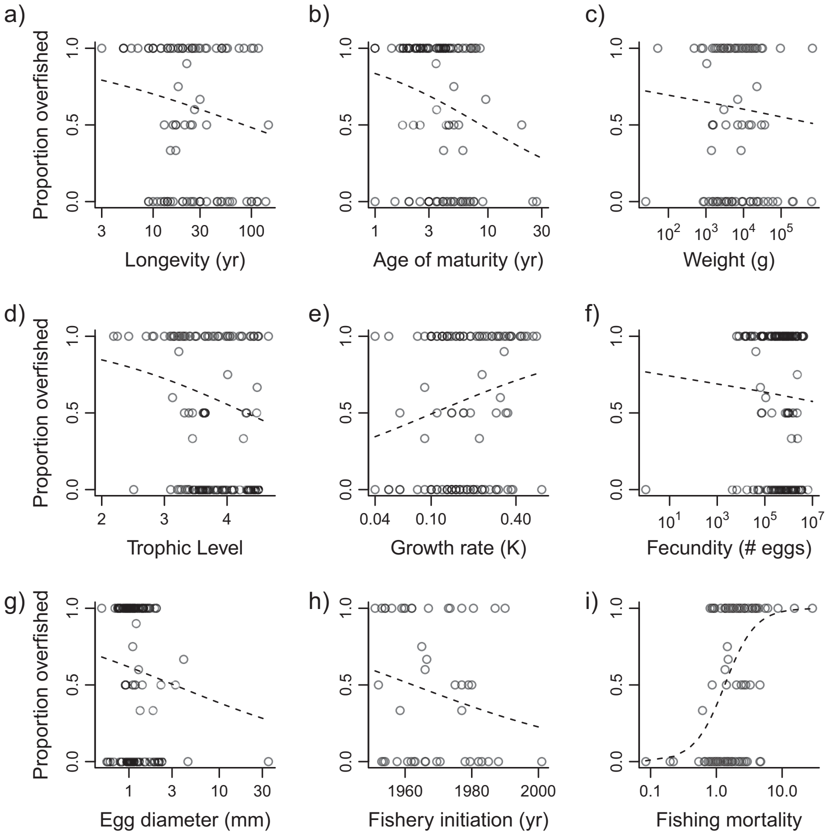

Fig. S1. Life-history trends in the proportion of overfished stocks ($B_{MIN}/B_{MSY} < 50\%$) from the assessment data. Compare with Fig. 2. Life history characteristics include (*A*) lifespan ($P = 0.064$, $n = 97$), (*B*) age of maturity ($P = 0.0095$, $n = 96$), (*C*) maximum weight ($P = 0.27$, $n = 93$), (*D*) trophic level ($P = 0.0042$, $n = 120$), (*E*) growth rate ($P = 0.010$, $n = 120$), (*F*) fecundity ($P = 0.47$, $n = 93$), (*G*) investment in offspring (egg diameter, $P = 0.22$, $n = 97$), (*H*) year of fishery initiation ($P = 0.084$, $n = 46$), and (*I*) relative fishing mortality ($P = 4 \times 10^{-7}$, $n = 99$). All *x* axes are log-transformed except those for trophic level and fishery initiation. Each dot represents one species. Dashed line is the best fit from a generalized linear model.

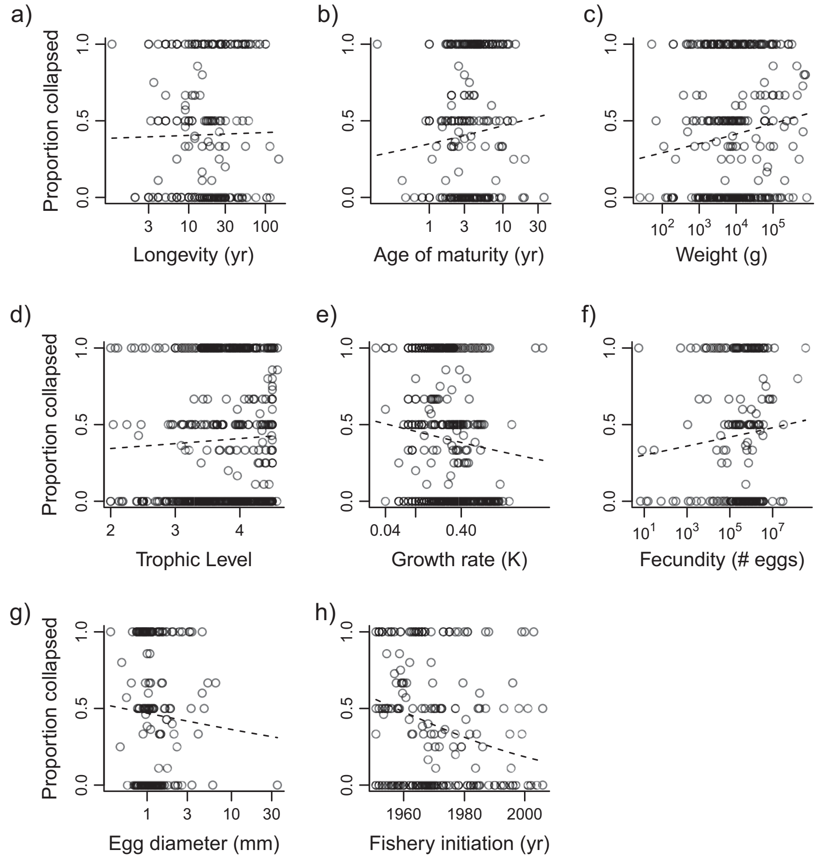

Fig. S2. Life-history patterns with an alternative definition of collapse for landings data. For this figure, a stock is considered collapsed if it falls below 10% of the maximum annual landings for a single year (our lax definition). Life history characteristics include (*A*) lifespan (P = 0.78, n = 206), (*B*) age of maturity (P = 0.087, n = 216), (*C*) maximum weight (P = 0.0020, n = 267), (*D*) trophic level (P = 0.23, n = 457), (*E*) growth rate (P = 0.025, n = 447), (*F*) fecundity (P = 0.13, n = 172, (*G*) investment in offspring (egg diameter, P = 0.29, n = 155), and (*H*) year of fishery initiation ($P = 3 \times 10^{-6}$, n = 208).

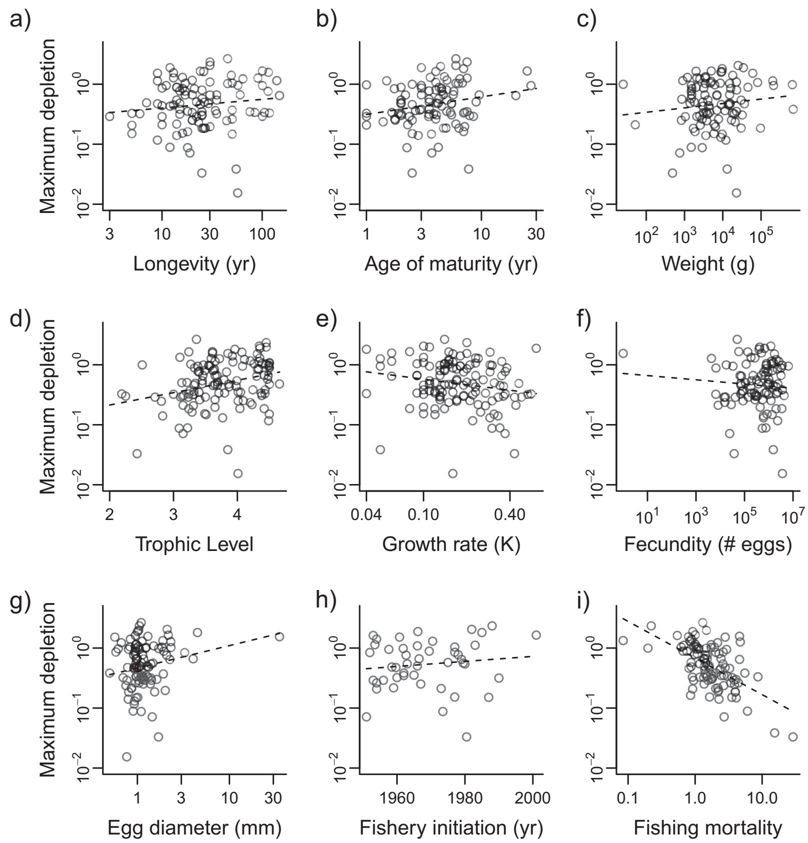

Fig. S3. Life history trends in the magnitude of decline (B_{MIN}/B_{MSY}). Small values represent a species that reached low abundance. Life history characteristics include (*A*) lifespan ($P = 0.22$, $n = 97$), (*B*) age of maturity ($P = 0.035$, $n = 96$), (*C*) maximum weight ($P = 0.24$, $n = 93$), (*D*) trophic level ($P = 0.0016$, $n = 120$), (*E*) growth rate ($P = 0.034$, $n = 120$), (*F*) fecundity ($P = 0.44$, $n = 93$), (*G*) investment in offspring (egg diameter, $P = 0.04$, $n = 97$), (*H*) year of fishery initiation ($P = 0.41$, $n = 46$), and (*I*) relative fishing mortality ($P = 5 \times 10^{-10}$, $n = 99$). Compare with Fig. 2. Each dot represents one species; *y* axes are log-transformed.

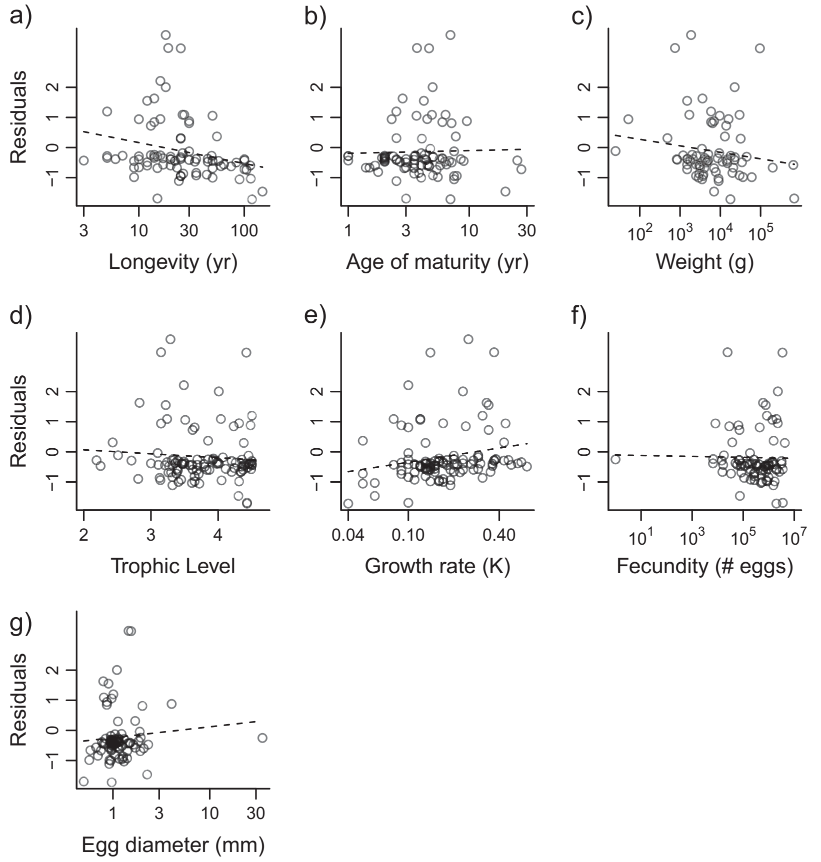

Fig. S4. Correcting for relative fishing mortality has little impact on the sign of the relationship between collapse probability and life history traits (assessment data). Life-history characteristics include (*A*) lifespan ($P = 0.025$, $n = 83$), (*B*) age of maturity ($P = 0.82$, $n = 82$), (*C*) maximum weight ($P = 0.21$, $n = 75$), (*D*) trophic level ($P = 0.45$, $n = 99$), (*E*) growth rate ($P = 0.039$, $n = 99$), (*F*) fecundity ($P = 0.89$, $n = 77$), and (*G*) investment in offspring (egg diameter, $P = 0.43$, $n = 78$). The *y* axes represent the residuals from a generalized linear model that predicted the proportion of stocks collapsed from relative fishing mortality. Positive values on the *y* axes represent species that are more collapsed than expected from fishery characteristics.

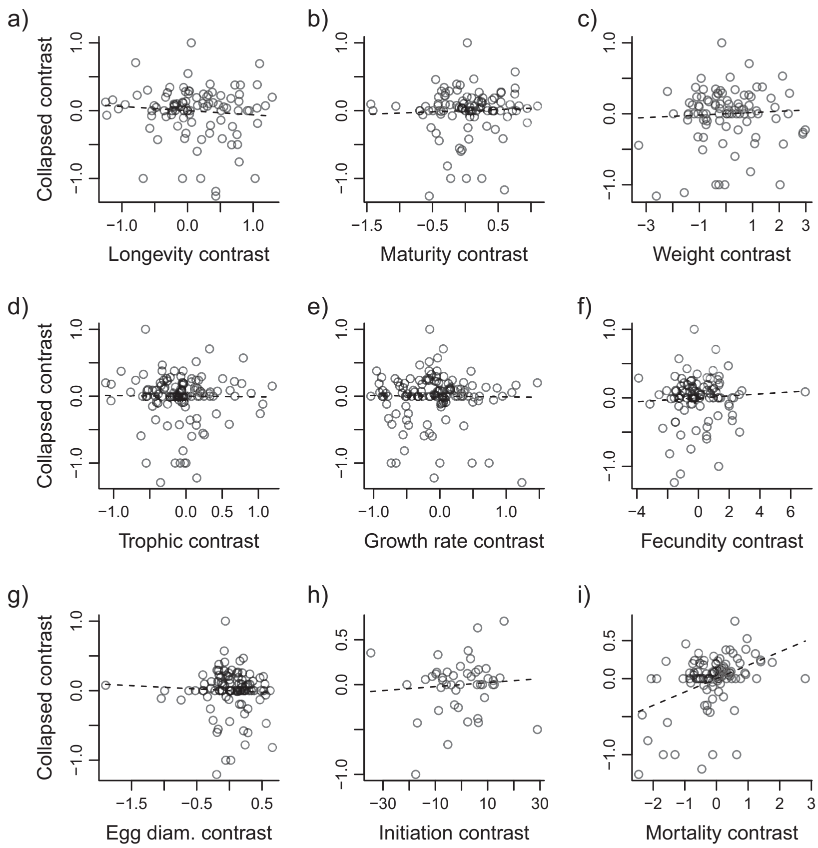

Fig. S5. Correcting for phylogeny with the assessment data also suggests that incidence of collapse does not increase with life-history traits, but does increase when overfishing occurs. The *y* axes are phylogenetically independent contrasts on the proportion of stocks collapsed. The *x* axes are contrasts on life-history traits, including (*A*) lifespan ($P = 0.37$, $n = 96$), (*B*) age of maturity ($P = 0.64$, $n = 95$), (*C*) maximum weight ($P = 0.60$, $n = 92$), (*D*) trophic level ($P = 0.90$, $n = 119$), (*E*) growth rate ($P = 0.88$, $n = 119$), (*F*) fecundity ($P = 0.55$, $n = 92$), (*G*) investment in offspring (egg diameter, $P = 0.60$, $n = 96$), (*H*) year of fishery initiation ($P = 0.59$, $n = 45$), and (*I*) relative fishing mortality ($P = 1.2 \times 10^{-5}$, $n = 98$). The dashed line is the best fit from a linear regression through the origin.

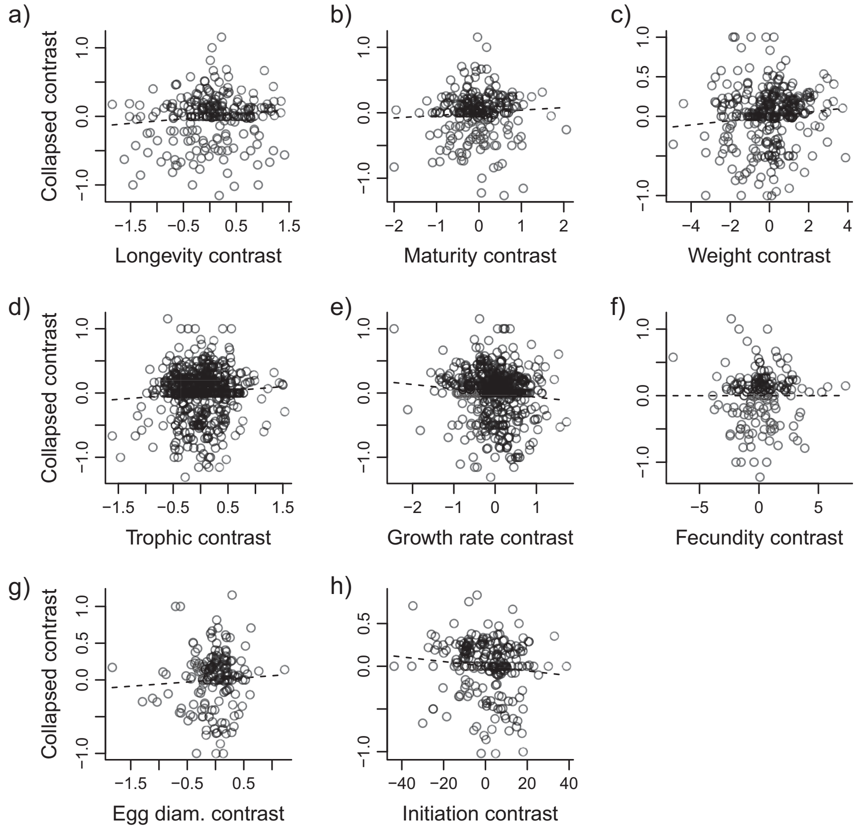

Fig. S6. Correcting for phylogeny with the landings data also suggests that incidence of collapse does not increase with life history traits. The *y* axes are phylogenetically independent contrasts on the proportion of stocks collapsed. The *x* axes are contrasts on life-history traits, including (*A*) lifespan ($P = 0.098$, $n = 205$), (*B*) age of maturity ($P = 0.36$, $n = 215$), (*C*) maximum weight ($P = 0.099$, $n = 266$), (*D*) trophic level ($P = 0.12$, $n = 456$), (*E*) growth rate ($P = 0.041$, $n = 446$), (*F*) fecundity ($P = 1.0$, $n = 171$), (*G*) investment in offspring (egg diameter, $P = 0.50$, $n = 154$), and (*H*) year of fishery initiation ($P = 0.13$, $n = 207$). The dashed line is the best fit from a linear regression through the origin.

Other Supporting Information Files

Table S1 (DOC)
Table S2 (DOC)
Table S3 (DOC)