Table 1 Distributions used for bootstrapping functional responses. Distributions are similar to those used by Koehn et *al.* (2017)

|  |  |  |
| --- | --- | --- |
| Parameter symbol | Description | Distribution |
| *γi* | Other mortality density-dependence for group *i* | Beta(3, 12) |
| *θij* | Prey dependence of predator *j* prey *i* functional response | Beta(12,3) |
| *εij* | Predator dependence of predator *j* prey *i* functional response | Beta(2,2) |

Table 2 Ecopath model summary. TL is trophic level, PB production to biomass ratio, QB consumption to biomass ratio, EE ecotrophic efficiency, GE gross efficiency (PB/QB).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Group | TL | Biomass | PB | QB | EE | GE | Removals |
| juv shark | 3.49 | 0.0844 | 2 | 18 | 0.00237 | 0.111 | 4.00E-04 |
| adu shark | 3.86 | 6.80E-07 | 0.51 | 3.91 | 0.288 | 0.13 | 1.00E-07 |
| juv r drum | 2.35 | 0.2 | 2.2 | 4.5 | 0.714 | 0.489 | 5.00E-04 |
| adu r drum | 3.18 | 0.00149 | 0.62 | 1.87 | 1.46E-05 | 0.332 | 0 |
| juv seatrout | 2.92 | 0.00275 | 3.7 | 29.1 | 0.882 | 0.127 | 0 |
| adu seatrout | 2.97 | 0.1 | 0.7 | 5.4 | 0.323 | 0.13 | 0.004 |
| juv b drum | 2.33 | 0.109 | 2 | 22.6 | 0.938 | 0.0883 | 0.033 |
| adu b drum | 2.69 | 0.00117 | 0.5 | 6.36 | 0.828 | 0.0786 | 0.00016 |
| juv catfish | 2.3 | 0.0175 | 2 | 10.8 | 0.824 | 0.185 | 0 |
| adu catfish | 2.76 | 0.156 | 0.8 | 3.3 | 0.92 | 0.242 | 0.02 |
| juv croaker spot perch | 2.74 | 0.33 | 2 | 20 | 0.982 | 0.0999 | 0 |
| adu croaker spot perch | 2.64 | 1.56 | 1.5 | 8.84 | 0.659 | 0.17 | 0.022 |
| juv sheepshead | 2.73 | 0.0975 | 2 | 14.6 | 0.802 | 0.137 | 0.001 |
| adu sheepshead | 3.11 | 0.05 | 0.42 | 5.9 | 0.847 | 0.0712 | 0.015 |
| juv flounder | 2.67 | 0.00647 | 2 | 13.3 | 0.869 | 0.15 | 2.00E-04 |
| adu flounder | 3.32 | 0.00581 | 0.42 | 4.51 | 0.792 | 0.0932 | 0.0018 |
| juv pinfish | 2.26 | 0.0818 | 2 | 19.8 | 0.993 | 0.101 | 0 |
| adu pinfish | 2.11 | 0.09 | 0.7 | 8 | 0.961 | 0.0875 | 0.002 |
| juv menhaden | 3 | 0.17 | 2.3 | 19.4 | 0.254 | 0.119 | 1.00E-04 |
| adu menhaden | 2.02 | 0.569 | 1.9 | 8.48 | 0.934 | 0.224 | 0.68 |
| juv mullet | 2.71 | 0.38 | 2.4 | 33 | 0.44 | 0.0728 | 0.002 |
| adu mullet | 2 | 1.44 | 0.8 | 12.3 | 0.172 | 0.0651 | 0 |
| anchovy silverside | 2.65 | 0.952 | 2.3 | 19.4 | 0.856 | 0.119 | 0.002 |
| gar | 3.34 | 0.04 | 0.48 | 2.25 | 0.104 | 0.213 | 0.002 |
| stingray | 3.17 | 0.16 | 0.48 | 1 | 0.197 | 0.48 | 0 |
| diving birds | 3.48 | 0.00147 | 0.1 | 50 | 0 | 0.002 | 0 |
| pelicans | 3.45 | 0.00747 | 0.1 | 17.7 | 5.41E-05 | 0.00565 | 0 |
| marsh birds | 3.36 | 0.00013 | 5.48 | 87.6 | 0 | 0.0625 | 0 |
| dolphins | 3.55 | 0.08 | 0.051 | 30 | 8.24E-05 | 0.0017 | 0 |
| killifishes | 2.72 | 0.215 | 2.53 | 19.4 | 0.966 | 0.13 | 0 |
| juv panaeids | 2.05 | 0.205 | 3 | 66.6 | 0.27 | 0.045 | 0 |
| adu panaeids | 2.16 | 15.5 | 2.4 | 19.2 | 0.0388 | 0.125 | 1.32 |
| juv blue crab | 2.37 | 0.443 | 3 | 17 | 0.205 | 0.176 | 0.002 |
| adu blue crab | 2.44 | 0.563 | 2.4 | 8.5 | 0.589 | 0.282 | 0.601 |
| carn insects | 2.68 | 0.0171 | 6 | 30 | 0.3 | 0.2 | 0 |
| grass shrimp | 2.05 | 0.446 | 4.5 | 18 | 0.902 | 0.25 | 0 |
| other crabs | 2 | 1 | 4.5 | 18 | 0.993 | 0.25 | 0 |
| herb insects | 2 | 0.174 | 6 | 30 | 0.3 | 0.2 | 0 |
| zooplankton | 2 | 4.12 | 28.8 | 84.9 | 0.489 | 0.339 | 0 |
| oyster spat | 2 | 0.0356 | 2 | 40 | 0.032 | 0.05 | 0 |
| seed oyster | 2.05 | 1.2 | 1.8 | 14.6 | 0.625 | 0.123 | 0 |
| sack oyster | 2.05 | 0.685 | 2.4 | 10 | 0.839 | 0.24 | 0.3 |
| oyster drill | 2.24 | 1.5 | 4.5 | 18 | 0.272 | 0.25 | 0.01 |
| mollusks | 2 | 4.03 | 3 | 15 | 0.743 | 0.2 | 0 |
| benthic inverts | 2.03 | 6 | 4.5 | 22 | 0.983 | 0.205 | 0 |
| juncus | 1 | 5 | 3 | 0 | 0.176 | 0 | 0 |
| spartina | 1 | 5 | 2.99 | 0 | 0.177 | 0 | 0 |
| SAV | 1 | 9.78 | 9.01 | 0 | 0.745 | 0 | 0 |
| benthic microalgae | 1 | 29.8 | 3.91 | 0 | 0.755 | 0 | 0 |
| phytoplankton | 1 | 12.8 | 102 | 0 | 0.31 | 0 | 0 |
| detritus | 1 | 100 | 0 | 0 | 0 | 0 | 0 |

Fig. 1 Map

Fig. ? Should I include some sort of food web representation?

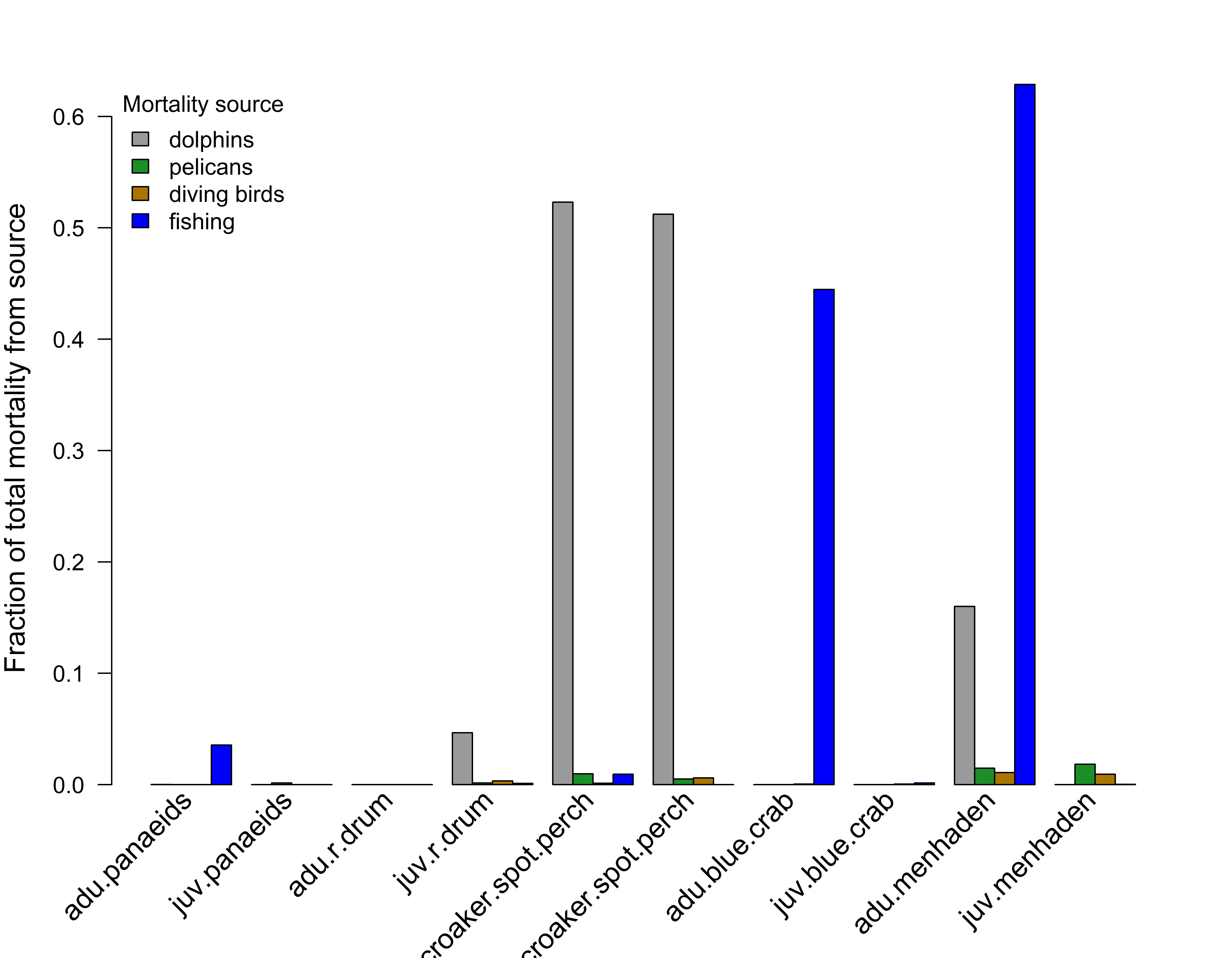


Fig. 2 Proportion of total mortality directly induced by predators and fishing on juvenile and adult stanzas of five key fish and invertebrate functional groups.

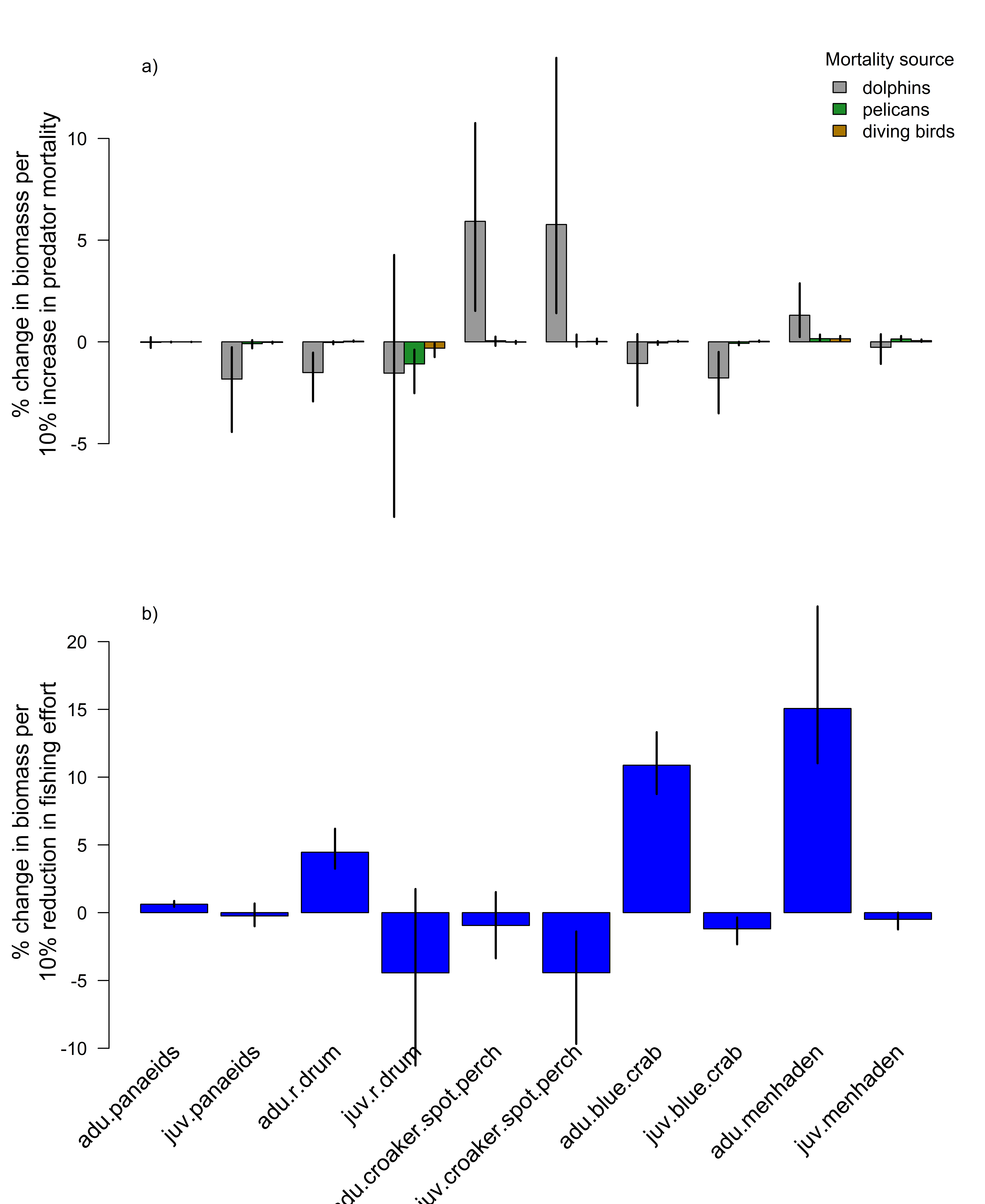


Fig. 3 Integrated indirect and direct response of fish and invertebrate biomass to changes in (a) predator productivity and (b) fishing effort. Bars are at median of the Monte Carlo simulations and error lines represent 50% simulation intervals.