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Appendix from B. O. Brilot et al., "When Is General Wariness Favored in Avoiding Multiple Predator Types?"

(Am. Nat., vol. 179, no. 6, p. 000)

Supplementary Figures

In this appendix we present additional figures that complement the main model results and show that the model can predict specific empirical results.

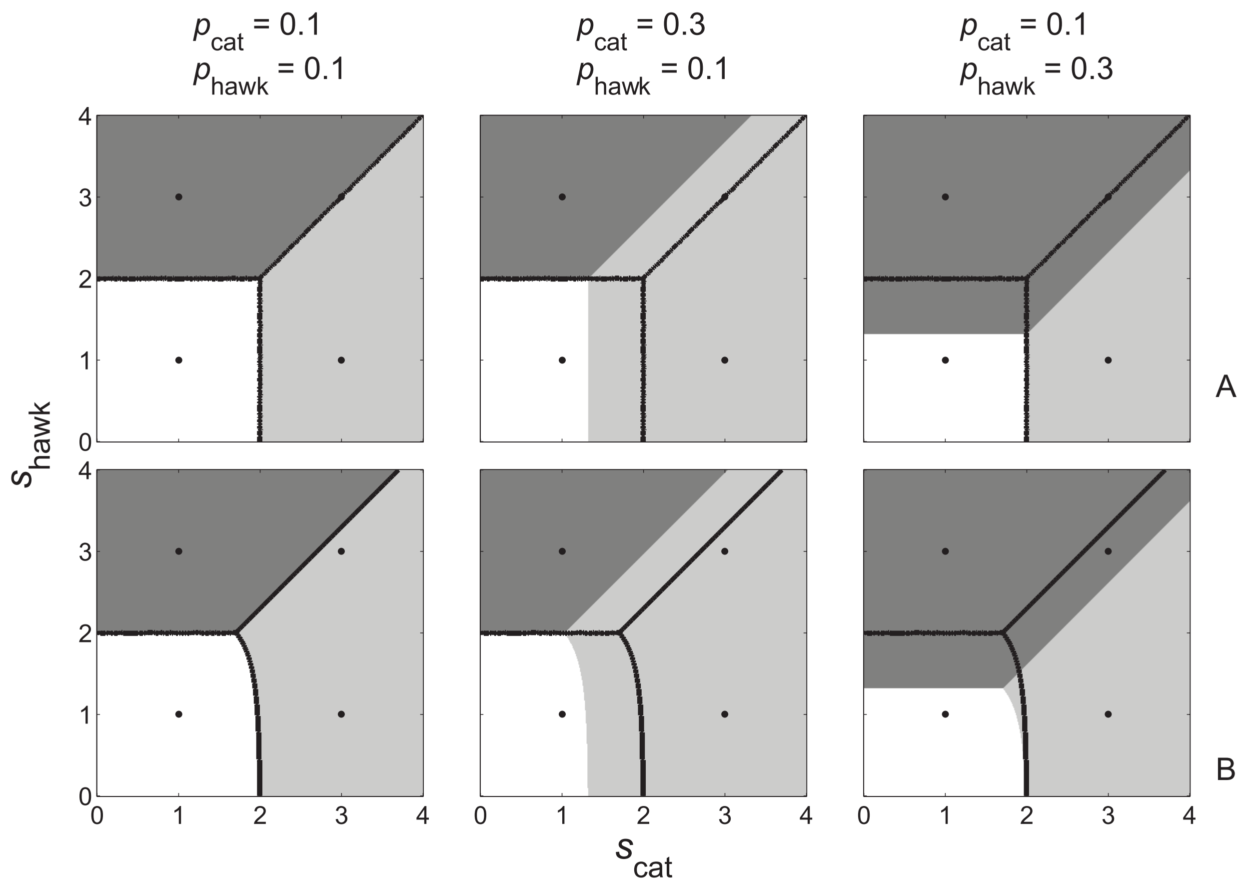

Figure A1: *A*, Parameter set where specific responsiveness is optimal (the default values from table 1): the decision threshold between *none* and *hawk* corresponds to a constant ratio of $P(\text{NONE}|s)/P(\text{HAWK}|s)$ for the *hawk* behavior (and correspondingly $P(\text{NONE}|s)/P(\text{CAT}|s)$ for the *cat* behavior). Each threshold is unaltered by changes in the prior probability of the alternate predator (as per the values given above each column). *B*, Parameter set where general wariness is optimal when employing the *cat* response but specific responsiveness is optimal for the *hawk* response as revealed by the nature (curved/linear) of the decision threshold ($w(cat|\text{HAWK}) = -6$ is the only parameter changed from *A*). Changes in the prior probability of cats occurring (p_{cat})

do not influence the location of the *none*/*hawk* decision threshold, but changes in the prior probability of hawks occurring (p_{hawk}) do influence the location of the *none*/*cat* decision threshold.

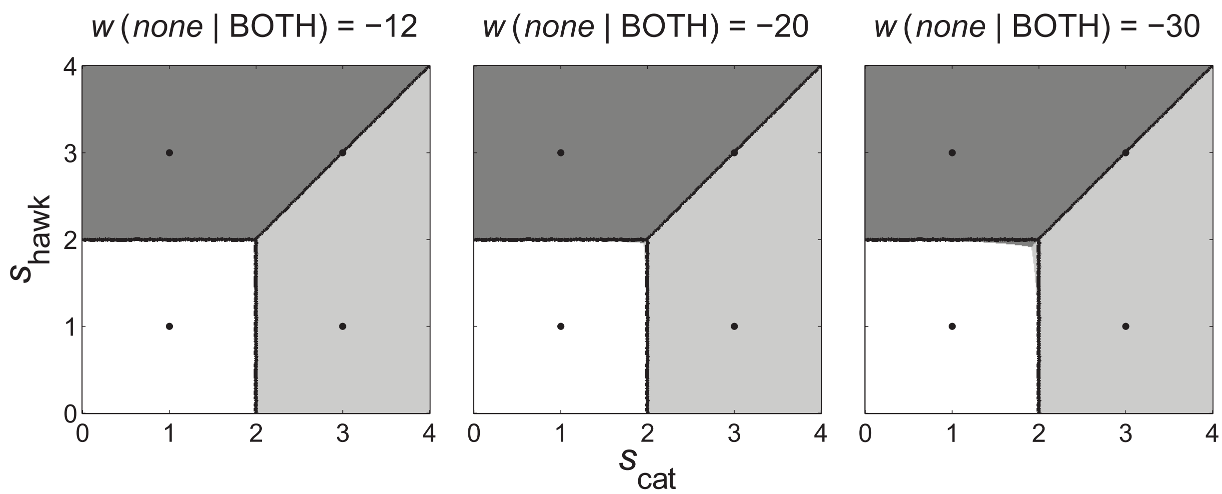

Figure A2: Increasing the cost of attack by both predators when the prey does nothing, relative to the cost of doing at least something in the same circumstance, reveals a very small favoring of general wariness as the optimal strategy. The cost of doing nothing when faced with multiple attack is increasing in accelerating fashion, from being only a little worse than attack from one predator; to being additive (i.e., the same cost as if both had attacked sequentially); to being synergistic (attack by both is worse than simply the additive cost of attack by either individually). The model parameter values are as per table 1 except for those indicated above each panel.

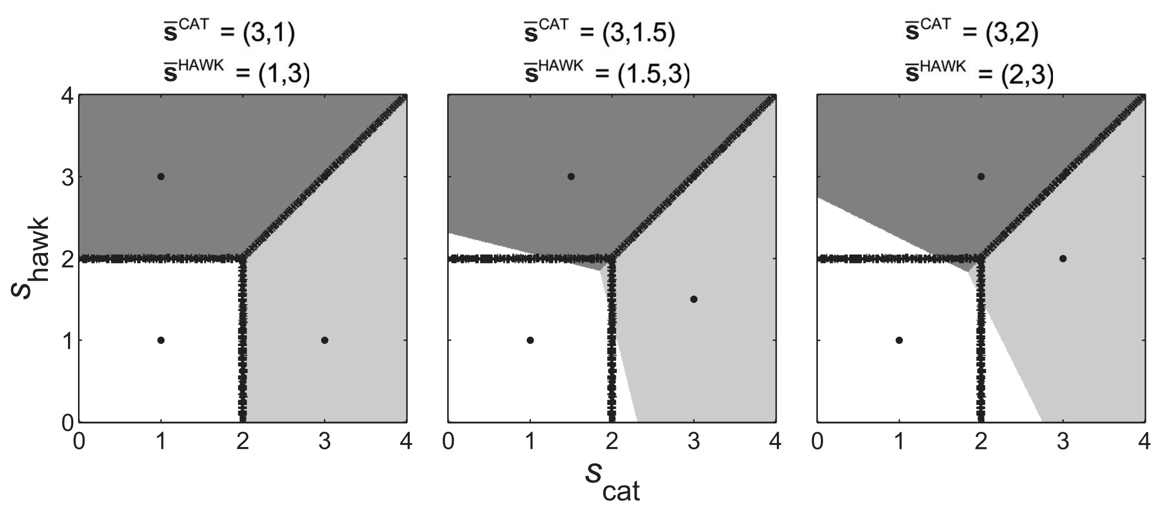

Figure A3: Increasing the ambiguity of predator cues does not change the optimality of specific responsiveness as a defensive strategy. Black dots indicate $\bar{\mathbf{s}}^{NONE}$ (*bottom left*), $\bar{\mathbf{s}}^{HAWK}$ (*top left*), $\bar{\mathbf{s}}^{CAT}$ (*bottom right*), and $\bar{\mathbf{s}}^{BOTH}$ (*top right*), but distributions specified by these means overlap increasingly from the left to the right panel. The model parameter values are as per table 1 except for those indicated above each panel. Equations (11a)–(11d) are all still satisfied, and so the prey continues to respond to each threat specifically.

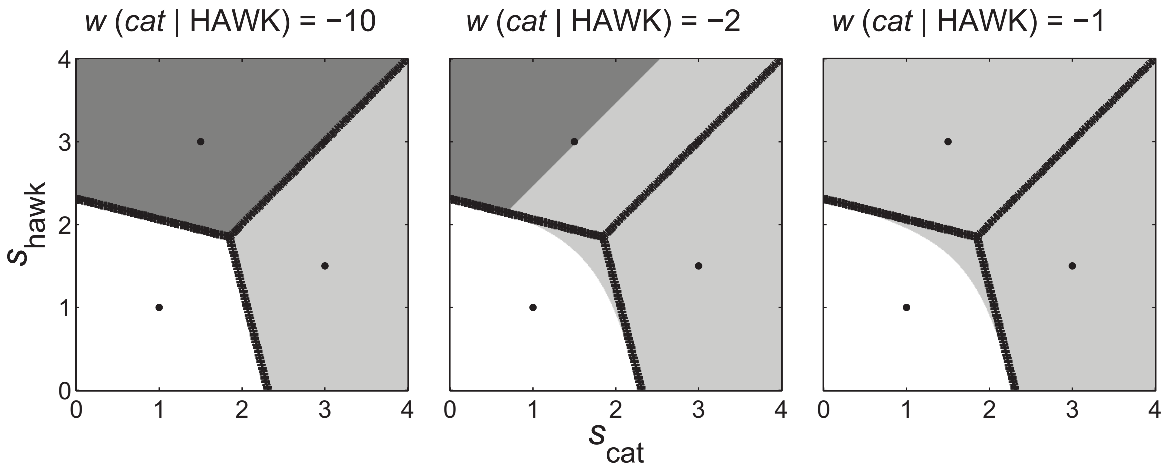

Figure A4: Ambiguous predator cues are not a sufficient condition for general wariness to be optimal. However, they do not block general wariness from emerging when combined with factors that favor it, in this case a reduced inappropriate action cost for the anticat responses. The ambiguity of predator cues is constant for all figures ($\bar{\mathbf{s}}^{\mathrm{CAT}} = (3, 1.5)$, $\bar{\mathbf{s}}^{\mathrm{HAWK}} = (1.5, 3)$). The remaining model parameter values are as per table 1 except for those indicated above each panel.

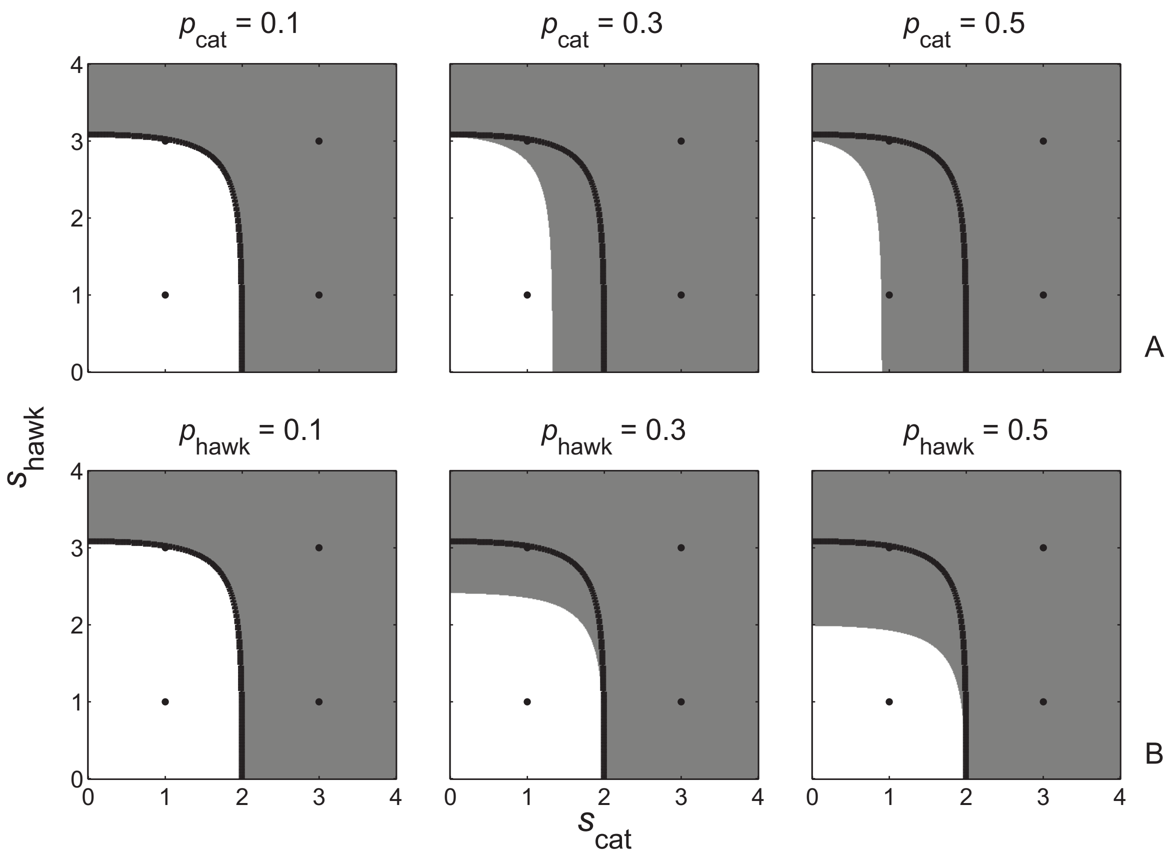

Figure A5: Differential effect of increasing predator prior probabilities on the level of active responding to differentially dangerous predators with one generally appropriate defensive response. *A*, Increase in the prior probability of the more dangerous predator (the cat) causes active responding to be favored over a greater range of cue values than in *B*, the equivalent increase in the prior probability of the less dangerous predator (the hawk). The parameter values specifying differentially dangerous predators are $w(none|\text{CAT}) = -10$, $w(none|\text{HAWK}) = -2$. The parameter value specifying one generally appropriate defensive response is $w(cat|\text{HAWK}) = -1$. The remaining model parameter values are as per table 1 except for those indicated above each panel.