

EFFECT OF MASS EXTINCTION ON PREY SELECTIVITY BY DRILLING NATICID GASTROPODS

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Escalation between drilling naticid gastropods and their mollusc prey was punctuated by mass extinctions, as indicated by an episodic history of drilling from the Cretaceous to Recent of the U.S. Coastal Plain. We explored the role of mass extinctions by examining patterns of prey selectivity before and after 3 extinction events. Selectivity of prey size, species and drillhole site was examined for the Eocene-Oligocene (Moody's Branch and Red Bluff formations), middle Miocene (Calvert and Choptank formations) and Pliocene-Pleistocene (Chowan River and James City formations) extinctions.

We predicted that selectivity by predators would be relaxed in the wake of mass extinctions. This prediction is not supported by the results. Cost-benefit analyses comparing prey profitability to actual prey preferences showed poorly developed prey selectivity both before and after the E-O extinction. Drillhole site selectivity increased in the Oligocene, however.

Prey selectivity in the middle Miocene generally conformed to the prey preferences predicted by cost-benefit analysis, both before and after the extinction. Selectivity of prey size and drillhole site also was high for most taxa studied in both the Miocene Calvert and Choptank formations. No significant differences were observed in prey selectivity between the Pliocene Chowan River and Pleistocene James City formations.

Thus mass extinctions had no discernible effect on patterns of naticid prey selectivity. However, a pattern of increased prey selectivity was observed between the Paleogene and Neogene consistent with the hypothesis of escalation.