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First report of sublethal breakage-induced predation on Devonian bivalves

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ABSTRACT

Here we report on the frequency, shape, and position of sublethal, predatory-induced breakage on shells of the common pterineid bivalve genus *Ptychopteria* from the Middle Devonian of New York. Twenty-six of the 115 well-preserved shells of *Ptychopteria* examined displayed evidence of at least one repair scar. The capacity to retract the vulnerable mantle deep within the shell and squeeze the valve margins together tightly to seal the shell enabled *Ptychopteria* to sustain marginal shell damage that was often severe. Repair scars resemble traces made by modern shell-breaking predators, especially decapod arthropods. Stereotyped positioning of the repair scars on the posterior portion of the valve also suggests active selection of an attack site by unknown shell-breaking predators. The relatively high repair frequency for *Ptychopteria* supports a growing body of evidence that suggests predation pressure intensified in the middle Paleozoic.