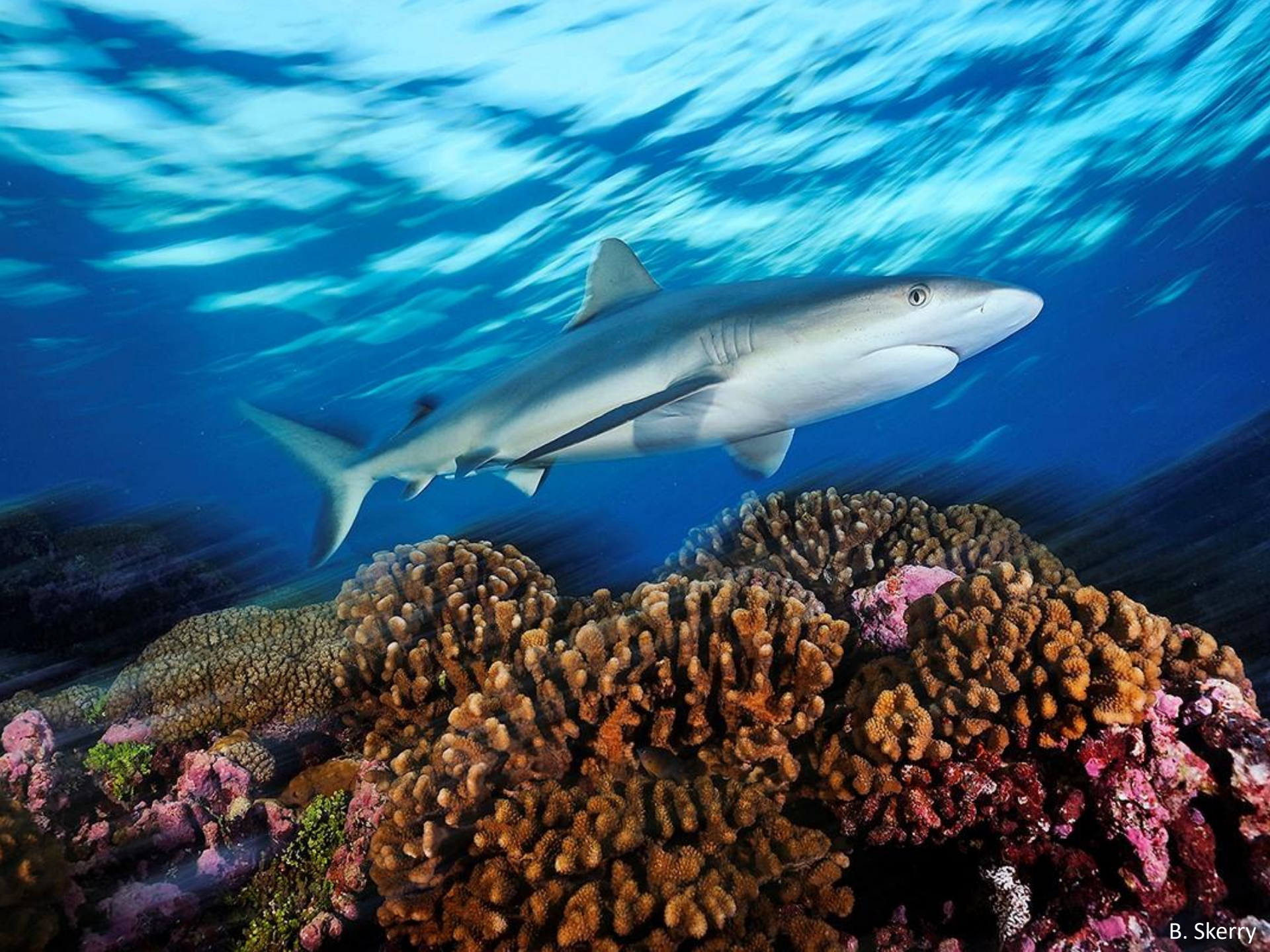
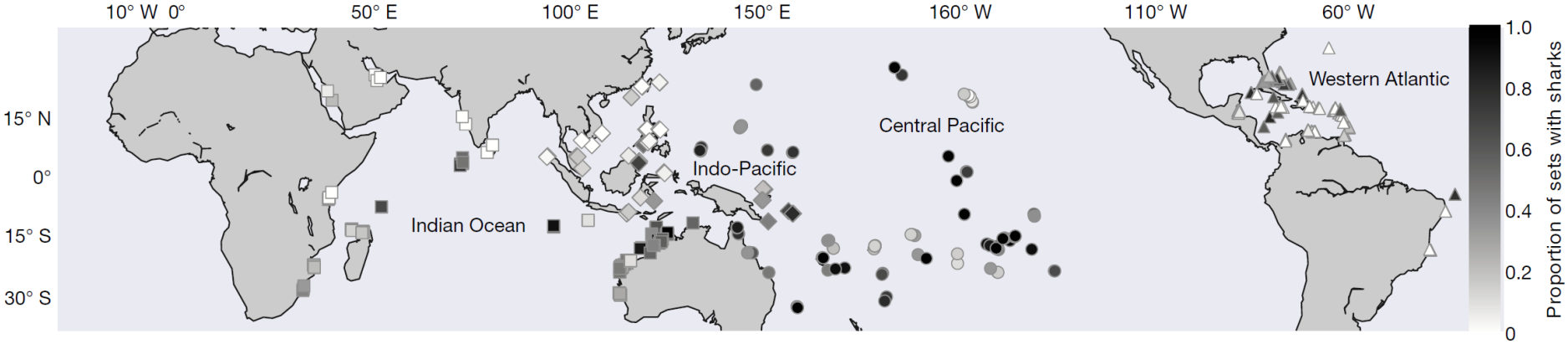
Using dermal denticle assemblages to reconstruct shark communities on coral reefs over millennia

Erin Dillon

Q-MARE Meeting

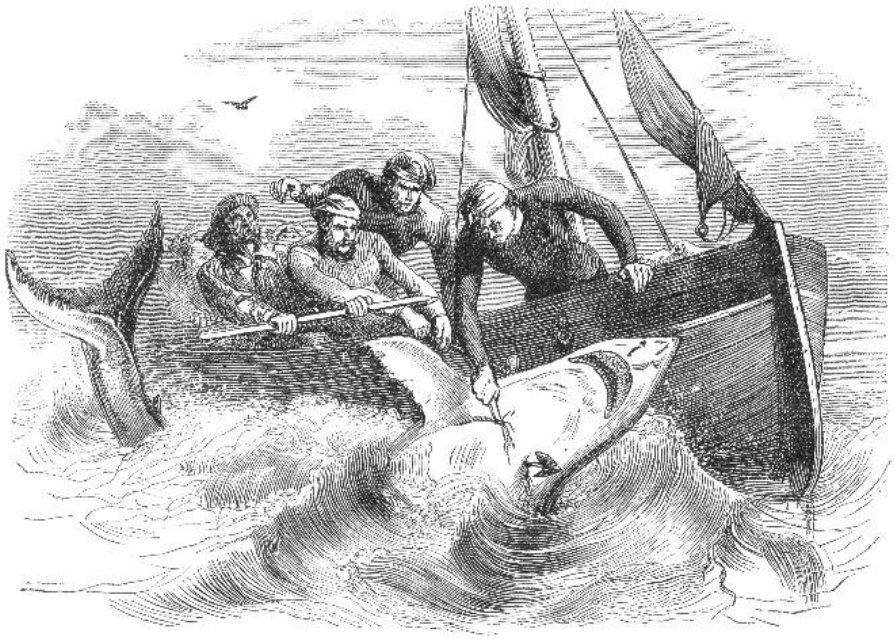
January 2022

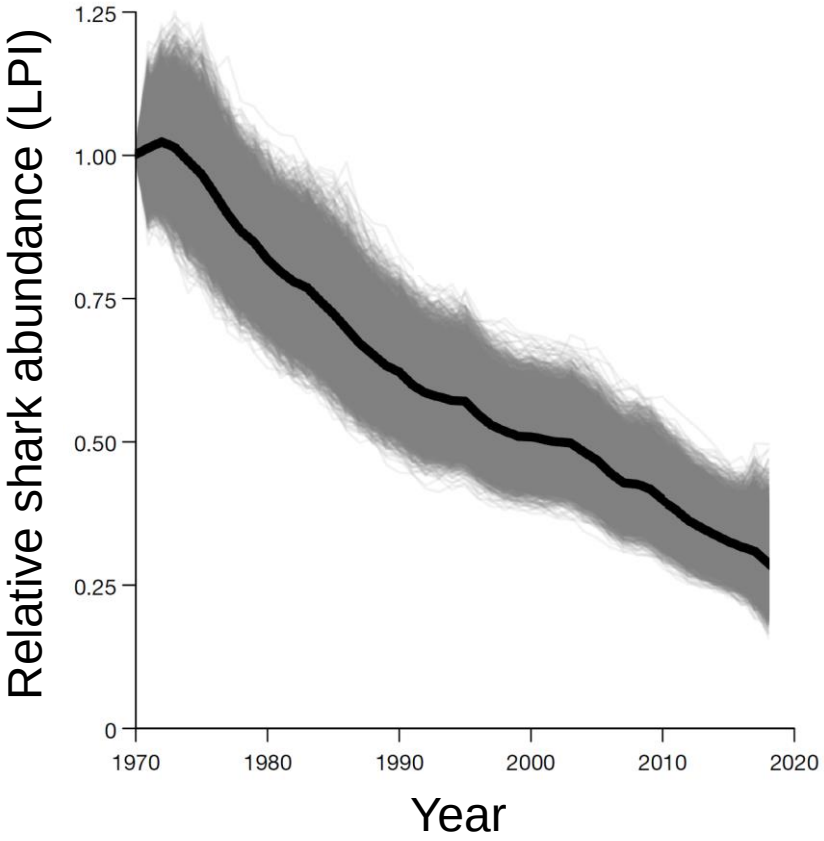

B. Skerry



MacNeil et al. 2020

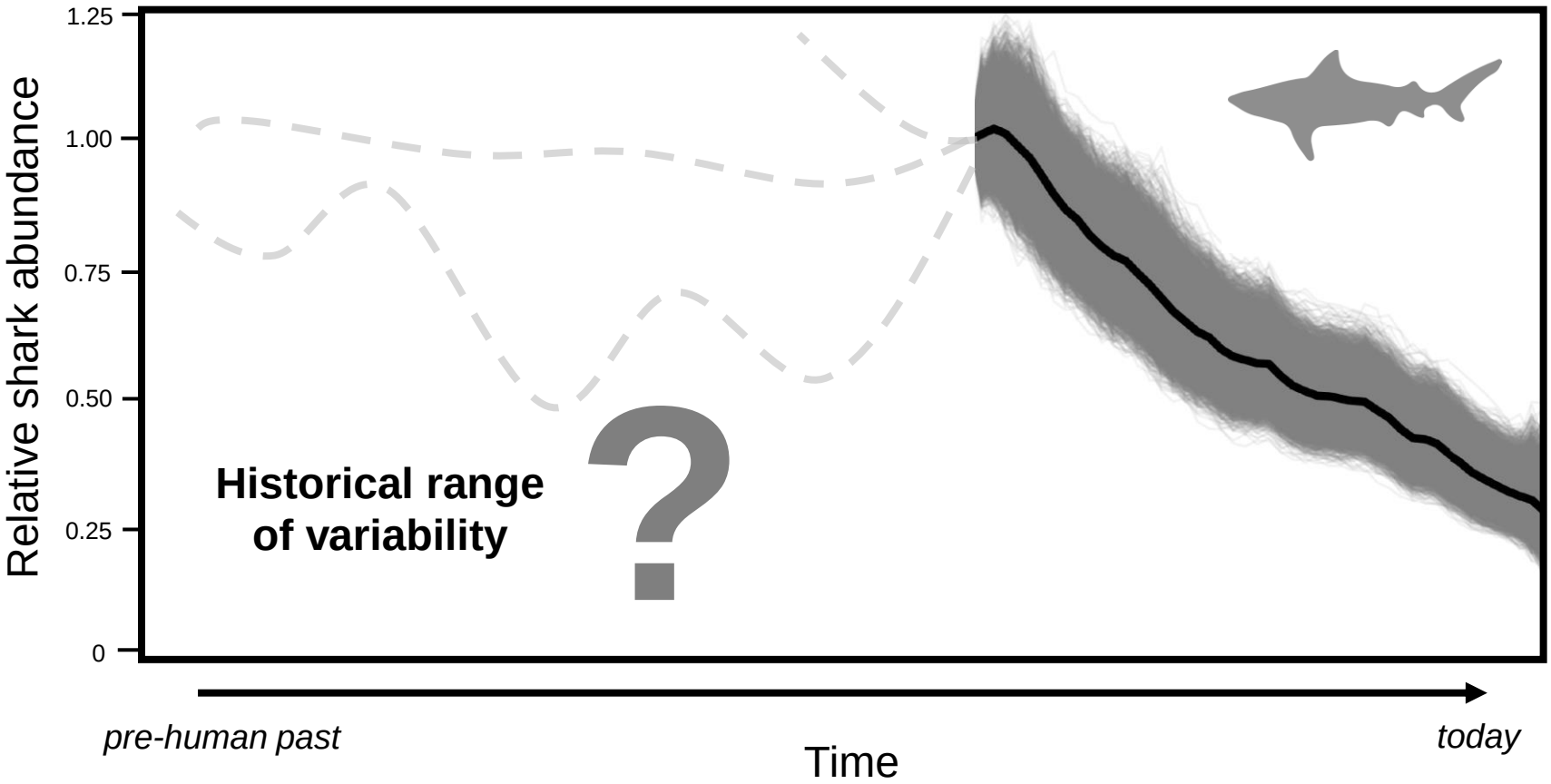
Many shark populations have declined over the last several decades



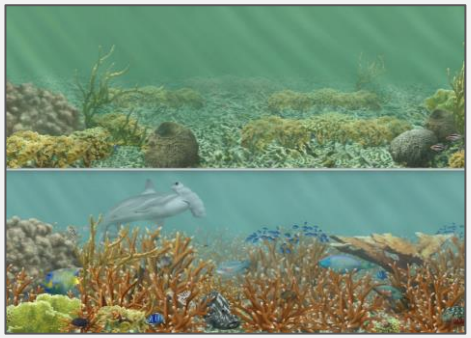


Pacoureau et al. 2021

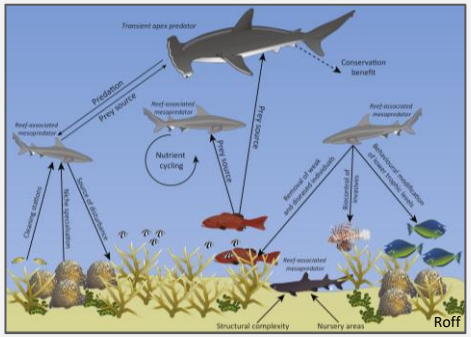
Long-term trends of change in shark abundance are largely unknown



How abundant were sharks on coral reefs before humans? Why do some reefs support more sharks?



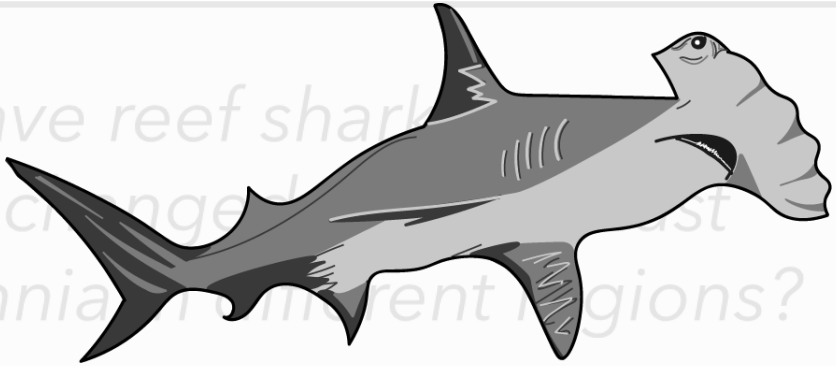
How much have reef shark communities changed over the last several millennia in different regions?



What are the ecological consequences of these changes?

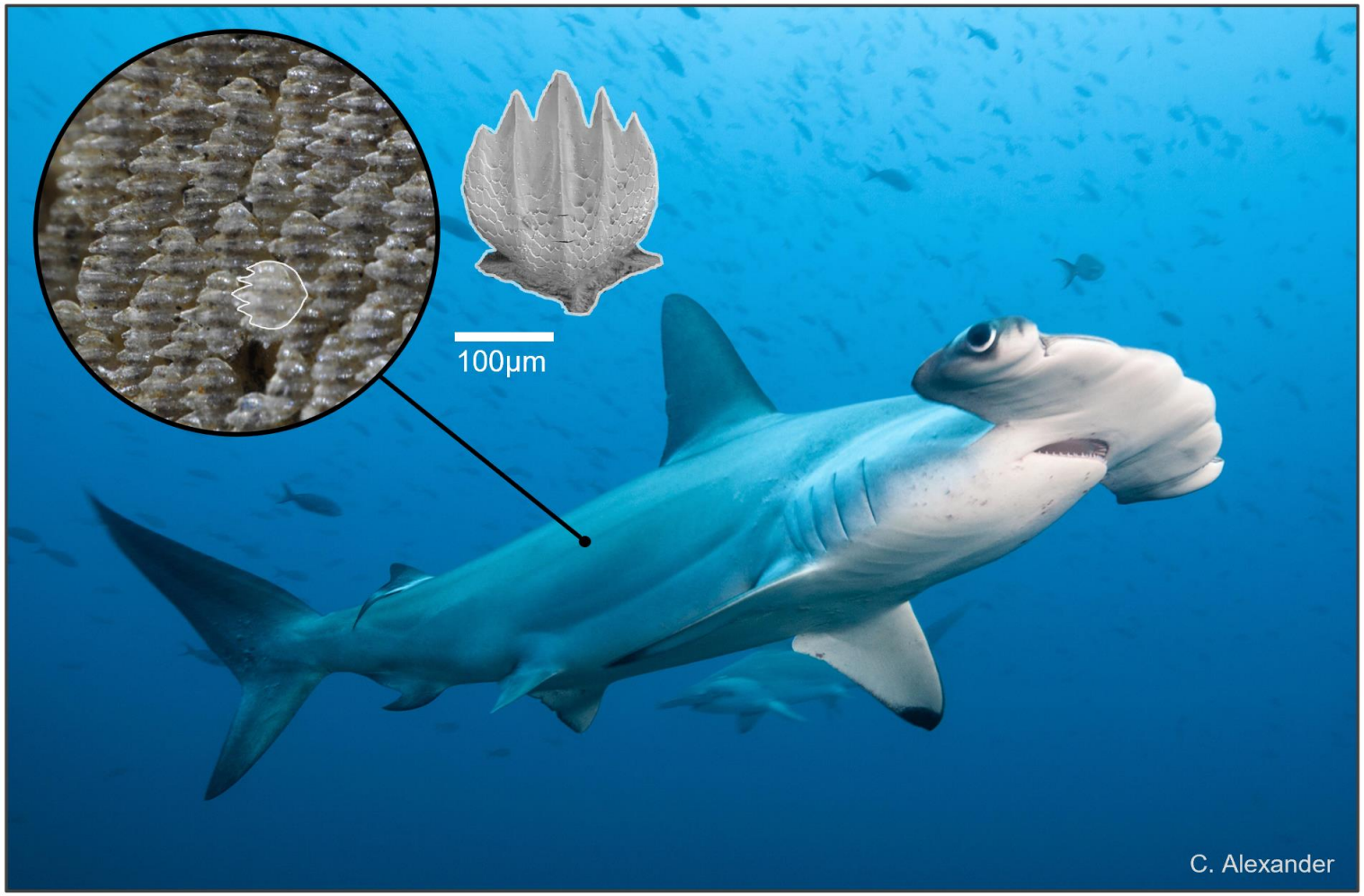
How abundant were sharks on coral reefs before humans? Why do some reefs support more sharks?

How much have reef sharks abundances changed over the past several millennia in different regions?

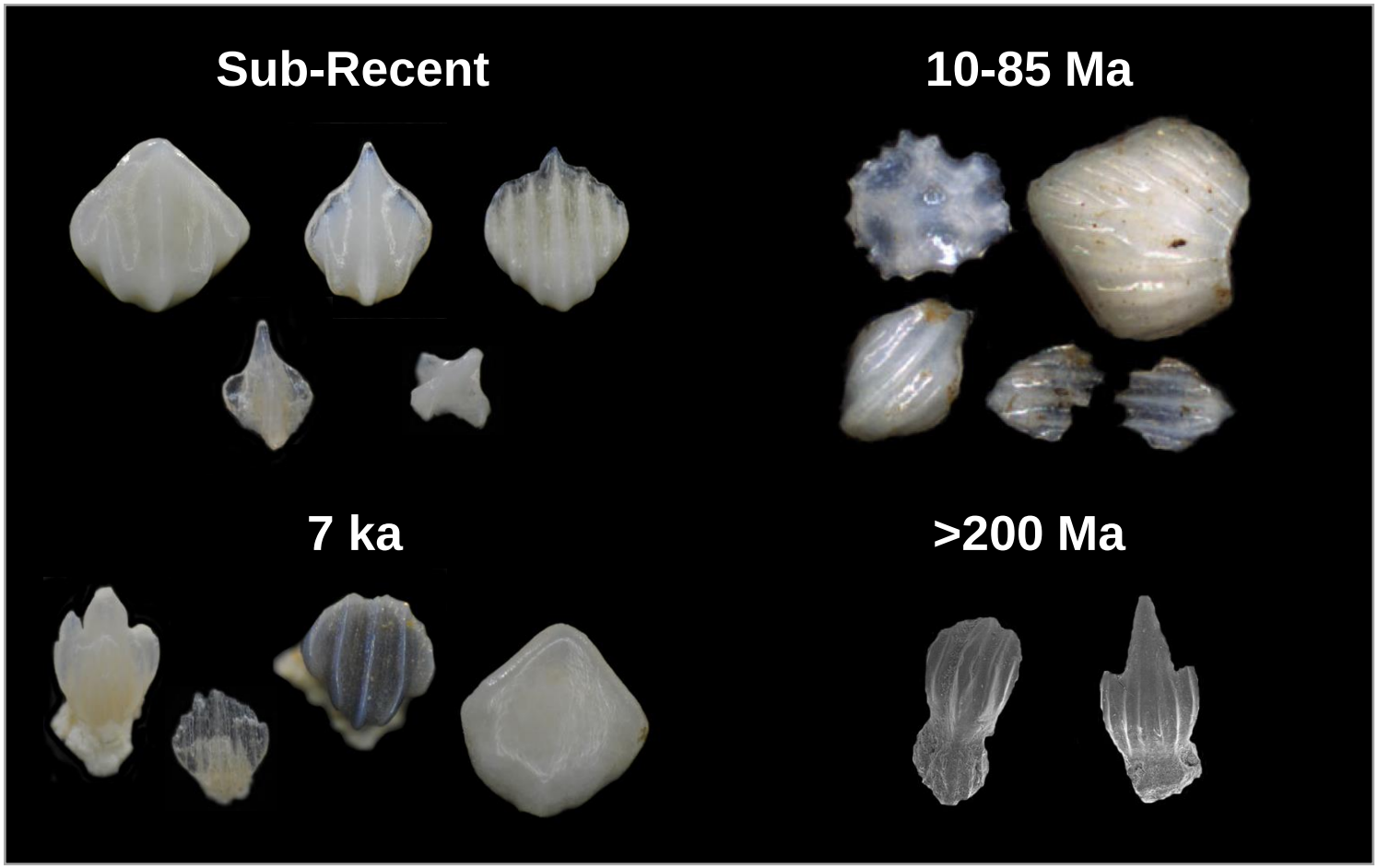


What are the ecological consequences of those changes?

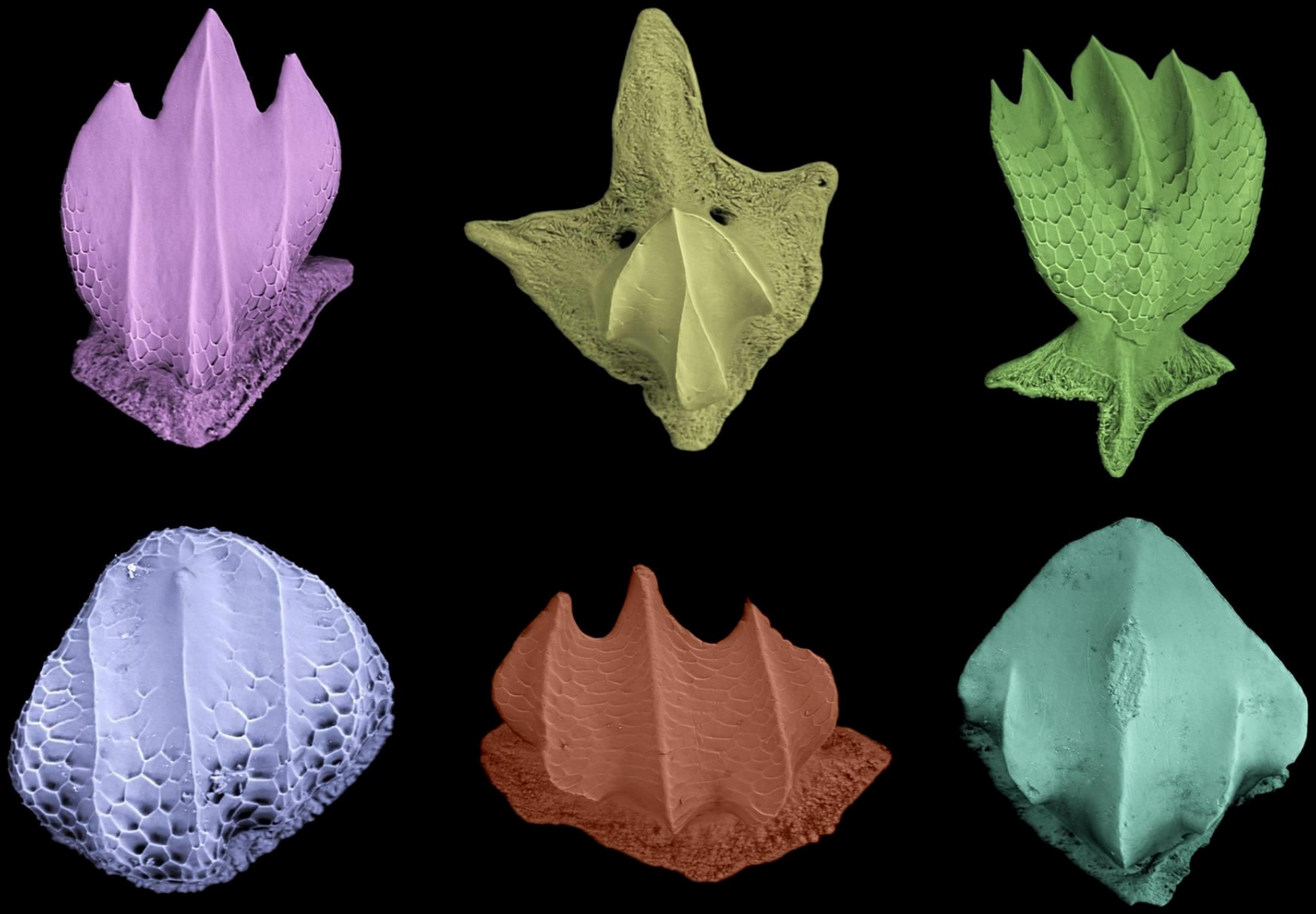
The fossil record of shark “skin teeth”

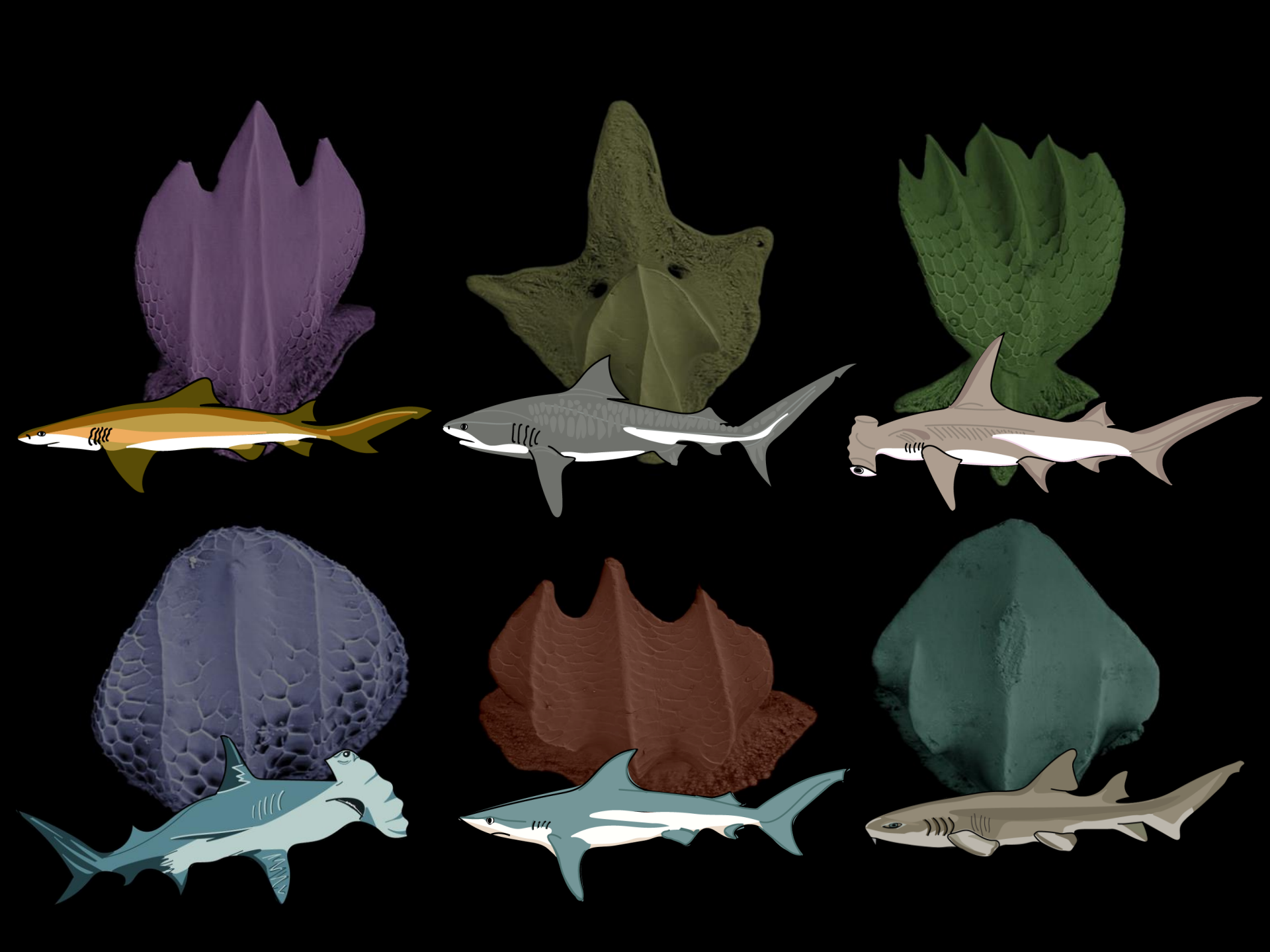


The fossil record of shark “skin teeth”

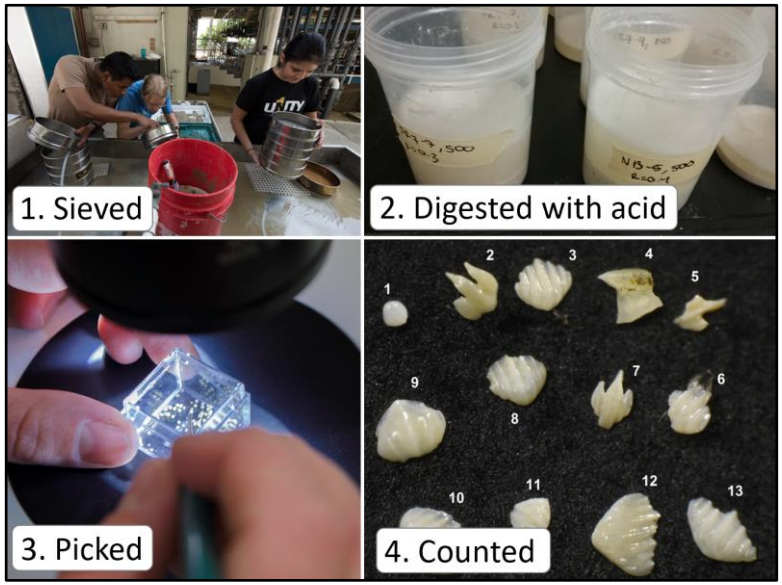


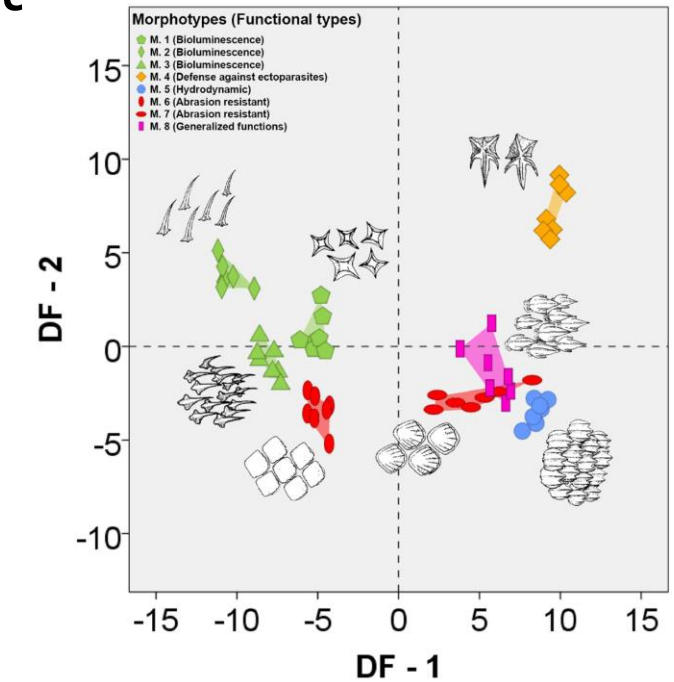
Ferrón et al. 2014, Sibert et al. 2017, Dillon et al. 2021

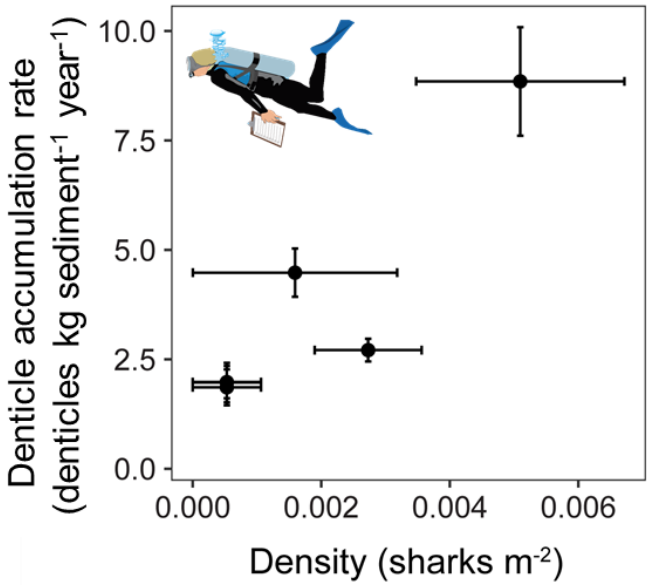




Methods development



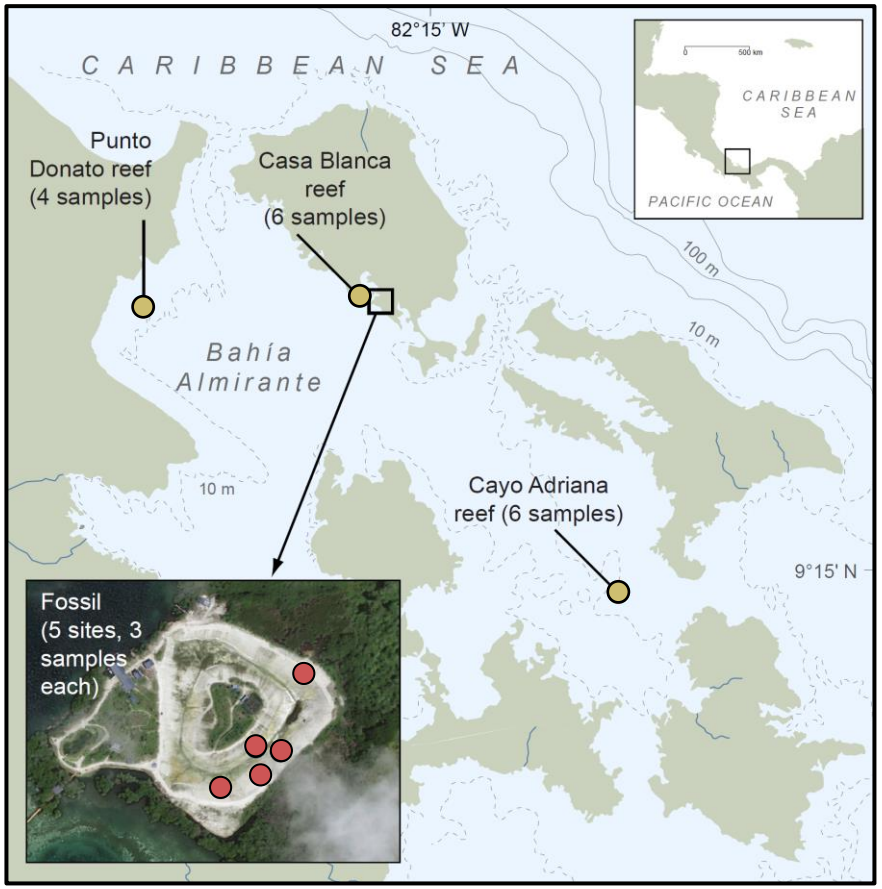




Dillon et al. 2017, Sibert et al. 2017, Ferrón & Botella 2017, Dillon et al. 2020, Dillon et al. in press

Application: quantify a pre-exploitation shark baseline in Caribbean Panama

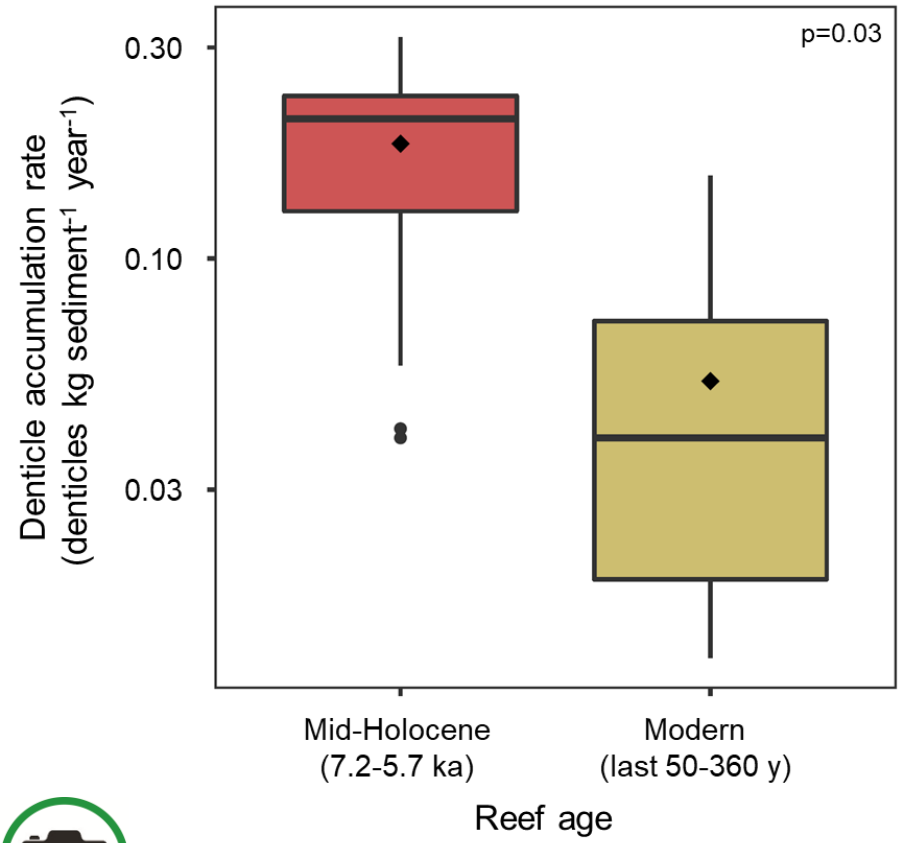
Bocas del Toro, Panama



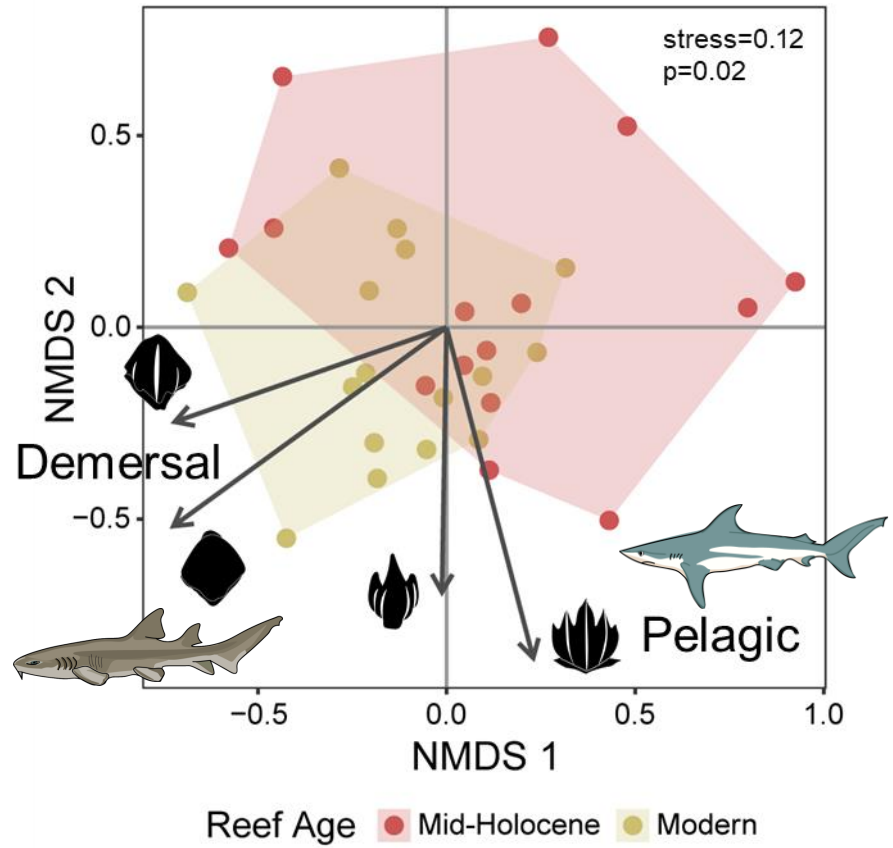
Mid-Holocene reef Modern reef

Application: quantify a pre-exploitation shark baseline in Caribbean Panama

~71% decline in abundance



shift in functional composition



Dillon et al. 2021

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