



The Ruination of the Ship: Shipworms and their Impact of Human Maritime Travel

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Marine Science Honor's Thesis



Abstract:

Shipworms, family *Teredinidae*, are woodboring mollusks that have evolved specialized feeding strategies to glean nutrients from the consumption of wood. Historically, this wood consumption has proved disastrous for human seafaring efforts.

Feeding Biology:

- Shipworms settle into wood as larvae
- Organism uses specialized shell and anatomy to rasp into wood
- Symbiotic *Teredinbacter* bacteria in gut secrete degradation enzymes to break down the eaten ridged wood
- Shipworms nutritional need further supplement by filter feeding and nitrogen fixation of bacterium

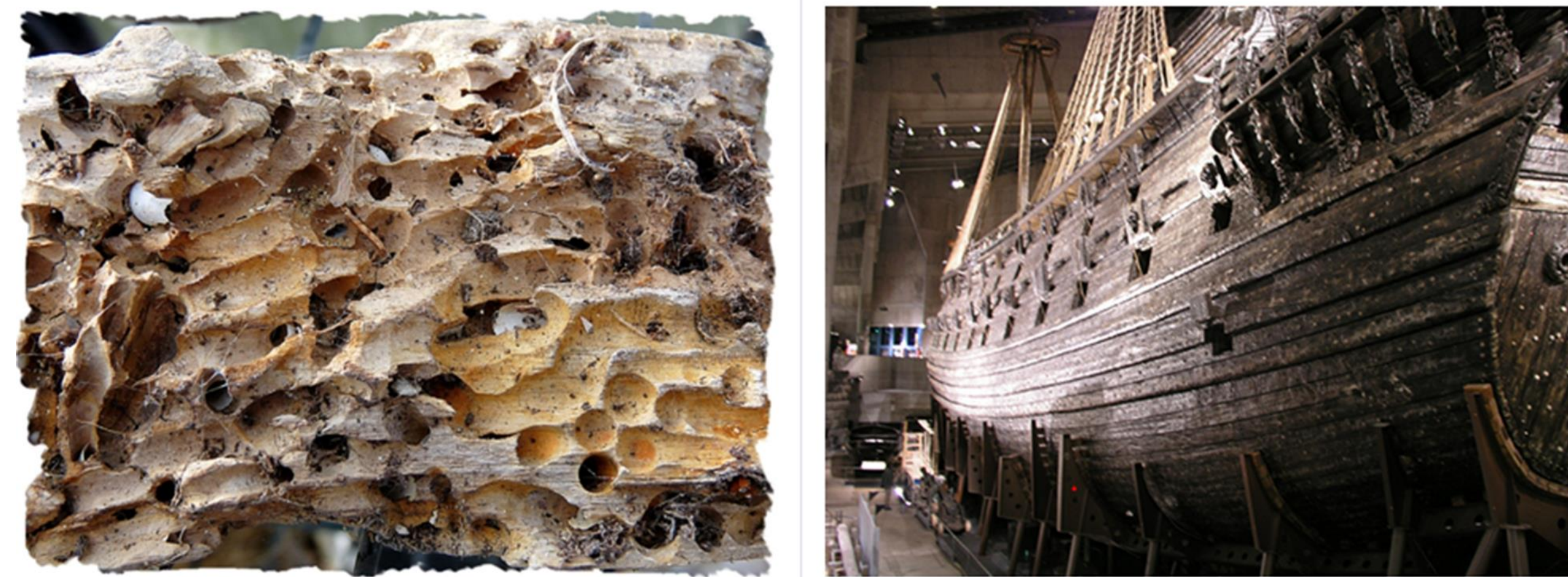


Figure 2: Shipworm burrows in driftwood (Left); Scandinavian ship exhibiting shipworm damage (Right). [Photo Credit: C. Skauge, X-Ray Mag]

Historical Implications:

- Seafaring humans have long attempted to stop shipworm destruction
- Sailor since ancient times have covered ship bottoms with protective materials
 - Ranging from wax to copper sheathing
- Beaching regiment on land often followed to kill off settled shipworm
- Skilled seamen Christopher Columbus, Francis Drake, James Cook all lost ships to shipworm feeding
- Shipworms ravaged the coastal waters of the American continents during late 19th century
 - Impact so widespread "Teredo" (genus of shipworm) became a common insult

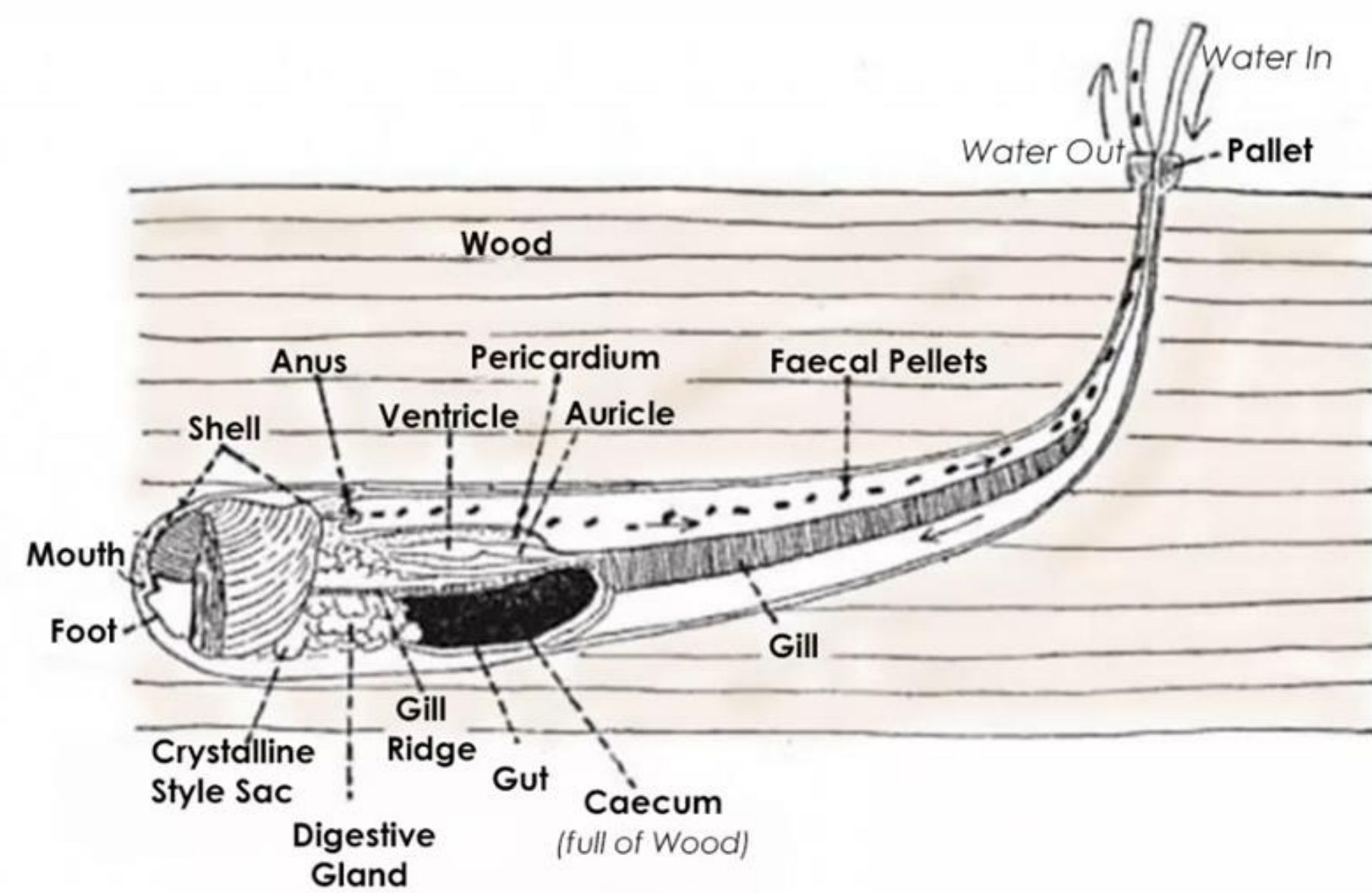


Figure 1: Shipworm anatomy and feeding methodology in wood substate [Photo Credit: PQI Australia]

Shipworms Today:

- Shipworms still cause an annual \$1 Billion in damages
- New non-wood building technologies lessened the impact of shipworms in modern era
- Shipworms and *Teredinbacter* still subject of ongoing research
 - Topics range from Biofuel to Antibiotic production



Figure 3: Advertisement for plastic boat highlighting modern movement away from shipworm susceptible materials [Nelson]

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