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## ICE WORMS

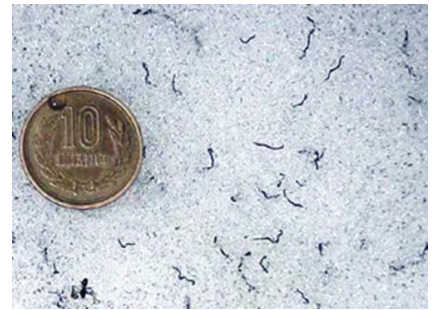
We are continually discovering that life can exist in conditions once thought impossible. In the 1970s, scientists discovered thriving communities living around hydrothermal vents at great depths along the mid-ocean ridges. These organisms exist in the complete absence of sunlight, which was once thought to be the sole source of energy for all forms of life.

The species in these ecosystems depend on bacteria that synthesize organic material from the vent chemicals. In addition, they live in temperatures that would cook most other creatures.

According to Heraclitus of Ephesus in his Theory of Opposites, everything has an opposite and therefore, if there are organisms that survive in great heat, there must be others that survive in great cold.

Thus, we present the ice worm. Ice worms are annelids (segmented worms) belonging to the genus *Mesenchytraeus*. This genus contains 77 species, the majority of which live in gravel beds, or in riverine habitats. However, the best known members are found living in glacial ice.

*Mesenchytraeus solifugus* spends its entire life in coastal glaciers from Alaska to northern Washington state. They tunnel through the ice eating snow algae and pollen. Counts reveal between 30 and 300 worms per square meter. This makes the total quantity of worms in all the coastal glaciers greater than Earth's entire human population. They are dark brown and measure only 15 mm (0.6 in) in length. Scientists believe their life span is five to ten years.



Ice worms are the only worms known to spend their entire life in temperatures near the freezing point of water. They have a very narrow acceptable temperature range. They will freeze at about  $-6.8\text{ C}$  ( $19.8^{\circ}\text{F}$ ) and their bodies literally melt at temperatures above  $5\text{ C}$  ( $41^{\circ}\text{F}$ ).

Researchers are now investigating what prevents the worm from freezing at  $0\text{ C}$  ( $32^{\circ}\text{F}$ ). Understanding the ice worm's secret could help preserve vital organs for transplant, and could aid in understanding possible life forms on cold planets. Unfortunately, there is yet to be a stamp depicting these creatures.