Why Backward in Hunting? A Comprehensive Study of Antlions

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The antlions (larvae) are common insects living in sands, digging pits to trap passing preys. Their backward movement to seize the preys to the bottom of pits is unique, which, however, has not been fully studied previously. In this project, a series of experiments have been performed, such as field studies in the wild, laboratory monitoring, microscopic observation and experiments. The purpose of these studies is to observe antlions' crawl, both forward and backward, and to explore mechanisms behind their unique moving pattern. Following is what we conclude from our study: 1.The antlions can move both forward and backward. However, they are observed to move backward more often. 2).Bristles at the tail of abdomen play a critical role in the backward movement, especially for sensing the surroundings and directions. 3. The antlions hunt regularly with a clear pattern - waiting at the bottom of traps in the daytime and venturing out to hunt or migrate at night. 4. Most importantly, it is proved by experiments that backward movement is more energy efficient and makes hunting easier. The way to exert force dragging preys backward is similar to that moving backward. The paper provides reliable data and resources for further research on antlions' behavior.

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