



Open a unit — or the whole school year — with living curiosity. This hands-on lesson uses live antlions to build students' observation, questioning, and hypothesis-making skills across two class periods.

Grade band: Upper elementary to middle school (grades 3–8)

Time: Two 50-minute class periods (set habitats up ~24 hours ahead)

Standards: Supports NGSS science & engineering practices — asking questions, planning investigations, analyzing data — and life-science units on structure, function, and survival (3-LS3, 4-LS1-1, MS-LS1).

LEARNING OBJECTIVES

- Make and record both qualitative and quantitative observations.
- Turn observations into testable, falsifiable questions and hypotheses.
- Explain how an antlion builds and uses its pit-trap to catch prey.
- Practice scientific note-keeping in a lab notebook.

KEY VOCABULARY

- Qualitative observation — describes qualities like shape, color, or texture ("the pit is a smooth, funnel-shaped cone").
- Quantitative observation — measured or counted ("the pit is 3 cm wide and 2 cm deep").
- Hypothesis — a testable, falsifiable explanation for what you observe.

MATERIALS (PER GROUP OF 3)

- 1 live antlion in a cup of fine, dry sand (set up a day ahead)
- Ruler and a hand lens or magnifier
- Day 2: a small fine-mesh screen and a second cup (to gently sift)
- Day 2: a petri dish or shallow lid, and one small ant or other prey
- Observation worksheets and pencils; newspaper to keep the area tidy

DAY 1 — OBSERVE & QUESTION (50 MIN)

1. Warm-up, "question storm" (15 min): show an everyday photo; teams race to write as many questions as they can (who/what/when/where/why/how). Debrief — questions are where science starts.
2. Mini-lesson (10 min): introduce qualitative vs. quantitative observations, and what makes a good hypothesis (testable and falsifiable).
3. Mystery cups (20 min): give each group a "mystery" cup of sand with a small cone in it. Rule: don't bump or touch it. Students record detailed observations (qualities and measurements), sketch what they see, and write two hypotheses for how the cone formed.



4. Wrap-up (5 min): groups share one observation and one hypothesis; collect worksheets.

DAY 2 — INVESTIGATE & EXPLAIN (50 MIN)

1. Recap (5 min): return to Day 1 notes in the same groups.
2. The ambush (15 min): gently place one ant near the pit and observe. Record what happens; write two hypotheses about how the antlion catches prey.
3. Discovery (15 min): carefully sift the sand through the mesh into the second cup, then move the "mystery" creature to a petri dish and observe it with a hand lens. Sketch and describe it.
4. Behavior (10 min): return the antlion to its sand and watch it rebuild. Revise the earlier hypothesis using the new evidence.
5. Clean-up & share (5 min).

ASSESSMENT

- Collect the Day 1 and Day 2 worksheets; look for detailed observations, real measurements, and testable hypotheses.
- Exit ticket: a labeled sketch of the pit and one sentence on how the trap works.

TAKE IT FURTHER

Assign each student an antlion to care for and investigate a question of their own — does grain size change the pit? Does a bigger antlion dig a bigger pit? See the companion Antlion Experiment Notes.

TEACHER NOTES

- Set habitats up ~24 hours ahead in an undisturbed spot, away from direct sun.
- Move slowly — vibrations make antlions freeze and stop building.
- Care during the unit: feed about once a week, keep the sand dry; antlions get most — often all — of their moisture from their prey, so they need very little water. it's fine to mist lightly around the pit about once every two weeks if you like, but keep the sand relatively dry: if it gets damp, the pit-trap won't work.