

■ FISH TRAPS

Developed in
collaboration with

**DEADLY
SCIENCE**

STUDENT QUICK-START

SCENARIO

Aboriginal and Torres Strait Islander people have engineered, after careful consideration, various types of fishing techniques, including fish traps, to sustainably harvest different species of fish. These factors relate to the environment of individual species, including freshwater or saltwater, seasonal migration, environment flooding of river systems, and most importantly appropriate fishing techniques specific to their culture and traditional practices to each geographical location of these tribes.

Fish traps are just one example of the engineering skills of First Nations people in Australia, for instance, the well-known fish trap located in Brewarrina, NSW. Some fish traps were permanent and still exist today, while others were temporary and seasonal. Harvesting for fish and other aquatic species creates an important site for gathering food for your community, spiritual, political, social and trade relationships. Sustainability was a vital part of using the fish traps, only taking as many fish as needed and not keeping undersized or breeding fish, to allow the population to reproduce and grow.



Image source: <https://www.dcceew.gov.au/parks-heritage/heritage/places/national/brewarrina>

AIM

The aim of this activity is to build structures using the 3D printed rocks and sticks to catch specific types and amounts of fish (marbles) as they swim along the river.

WHAT TO DO

- Your team will have a Fish Traps board, a selection of 3D printed rocks and sticks, and a set number of small, medium and large marbles to act as fish.
- You will work through a series of different scenarios, each one with a different catch goal and instructions of which marbles to use.
- Your team should trial the structures as many times as possible to see how many of each size fish are caught in order to adjust your traps before scoring.

Read the scenario carefully to find out which marbles will be used and what you are aiming to catch and avoid catching. Marbles will be released one size at a time in a specific order. Refer to the scenario sheet.

To build your fish trap structures, place 3D printed rocks, sticks and shapes onto the metal plate on the Fish Traps board. The structure should not overhang the metal plate. Pour the marbles into the correct place at the top of the board and watch carefully to see what happens in the fish traps. Count the number of each size of marble caught and adjust the fish traps to meet the catch goal for the scenario. Repeat this process several times before official scoring. When you are happy

with your fish trap structure, call one of the Event Staff over to complete official scoring for the scenario.

RULES

Teams work at their own pace. but must complete the scenarios in order, i.e. do not skip any scenarios. Teams can only attempt each scenario once. Make sure you raise your hand for the Event Staff to score each scenario, before moving on to the next one.

The number and type of 3D printed rocks, sticks and shapes is strictly limited. Do not swap or borrow materials from other groups.

All the marbles of the specified size must be poured in the correct order for each test to maintain accurate scoring. Ensure that all marbles are kept secure. If any drop onto the floor pick them up immediately to avoid tripping hazards.

Small	38
Medium	24
Large	5

During official scoring, students are not permitted to adjust rocks and will be penalised for touching the board. Students will collect and pour the marbles during the testing.

All 3D printed rocks and marbles must be returned at the end of the session. Points penalties will apply for missing items.

SCORING

In all scenarios the aim is get as close to the catch goal as possible, with maximum points for achieving the exact catch goal. The further away (on either side) you are from the goal the less points you will score.

In some scenarios there will also be penalties for catching the wrong size fish. This is to model the sustainable practices of First Nations fishers. If you catch too many small fish, they will not grow up to reproduce. If you catch too many large fish, they will not be able to breed to grow the population.

In all scenarios, the test will be completed 3 times with the average of the 3 scores kept as a final score. This is to test the reliability of your design.

Substantial bonus points will also be awarded for packing all equipment away, and ensuring that no marbles or 3D printed shapes are missing.

 **At the end, ensure your team’s score sheet is with the Activity Personnel.**

TIPS

Build something quickly and begin trialling as soon as possible. Make adjustments to your design based on your trials.

Keep checking that both ends of the Fish Traps board are level using the spirit level provided. Make adjustments where necessary.

Timetable

Half-Day Activity	
Session (1hr 45min)	Following a 5-minute briefing by your Activity Personnel, your team will work through the scenarios. The last 10 minutes are reserved for completing the scenario you are working on and packing up.