

# Teacher Guide: Reef Transect

## Phase of learning

Senior Secondary (Years 11-12)

## WA Curriculum

SS Biology – ATAR, SS Integrated Science – ATAR, SS Marine and Maritime Studies – ATAR

## Region

West Coast

## Summary

Come and discover what is found on Perth's limestone reef and conduct an ecosystem survey using transects and quadrats.

## Outcomes

- Students will identify organisms inhabiting a limestone reef platform.
- Students will be able to describe adaptations of intertidal organisms.
- Students will conduct a transect along a limestone reef platform.
- Students will be able to describe the change in species and composition from the upper intertidal zone to the lower intertidal zone.

## Duration

1 hour 30 minutes - 2 hours

## Preparation

This is a field based activity that requires students to work in small groups whilst standing in shallow water. As such, it is deemed a water-based excursion. It is the organising teachers responsibility to ensure that the appropriate number of qualified staff accompany your excursion. Departmental Community & Education staff can not be included in your total number of supervisory staff.

All resources referred to in the Activity Outline (below) will be provided on the day – this does not include resources referred to in the Pre- and Post- excursion sections.

Unless otherwise notified, your excursion will be carried out on the reef platform to the south of Mettams Pool – see [Teacher Resource Sheet: Preparing for your reef transect](#).

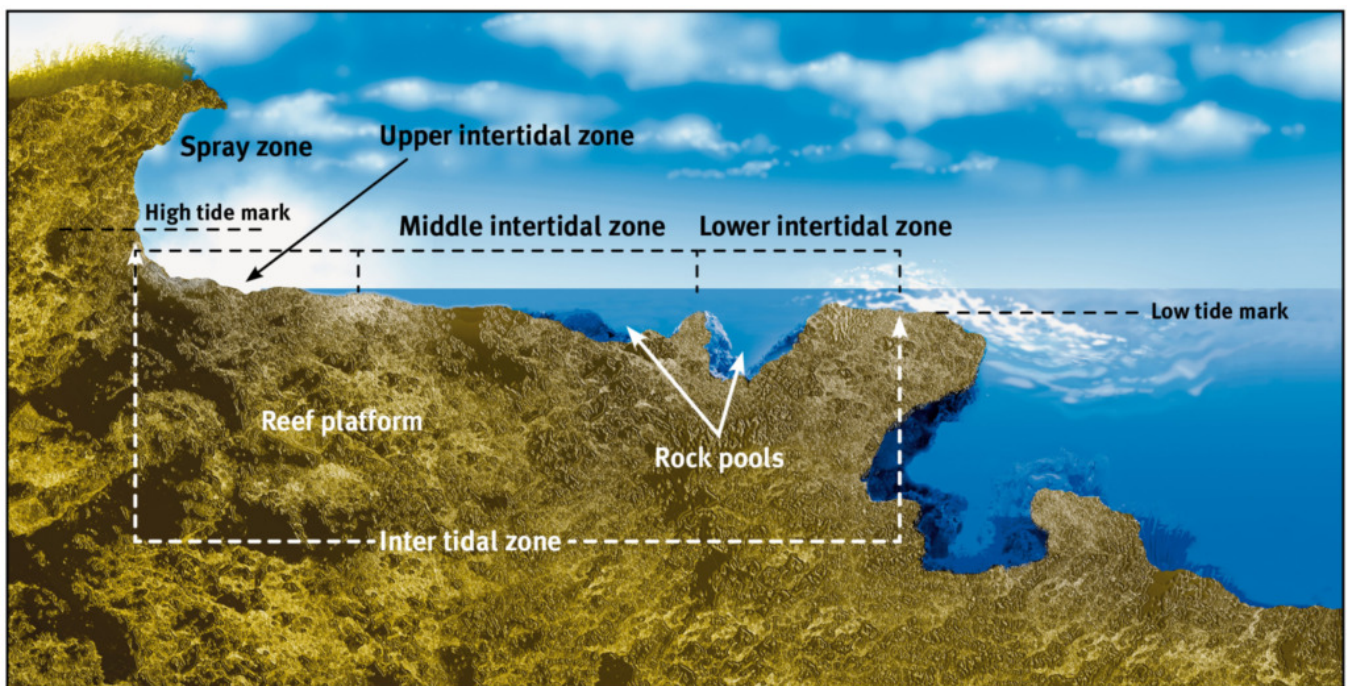
This activity is best carried out at low tide and in the morning as even at low tide in the afternoon, the sea breeze (Fremantle Doctor) can make the conditions challenging and potentially unsafe. For these reasons, we will not book this activity from April to October. Please note that even bookings made during preferable times of the year may be cancelled at short notice, should the weather conditions be unsuitable.

We refer to the Department of Transport's [Tide Predictions](#) for Hillarys when booking this activity.

For a complete list of resources for this activity, refer to the Unit: [Reef Transect](#).

## Activity outline

The activity begins with a discussion about the [Marmion Marine Park](#) and Mettams Pool – the area in which your field trip is taking place. We will also discuss the layout of the reef platform that we will be working on and some organisms that we may encounter whilst out on the reef platform.



Prior to beginning the transect, students will be taken on a guided walk around the reef platform to familiarise them with the organisms and how to move around the platform safely. Students will have access to viewing buckets and identification guides to assist them viewing and identifying organisms attached to the platform and in reef holes.

Upon completion of the guided reef walk, we will engage students in a short discussion about the species observed on the platform and which of these species we may want to sample (Roe's

abalone).

Students will break into groups to complete their transect. Each group will be provided with a 60m tape to run from the high tide mark to the seaward edge of the platform (or as close to the edge of the platform as safely possible – this will depend on the conditions on the day). Groups will move along their transect line noting features of interest along their line – e.g. reef hole, a paddleweed ‘meadow’, a limestone boulder – Student Worksheet: [Features along the transect](#).

They will then complete three quadrats along their transect line – one in each of the upper, middle and lower intertidal zones. For each quadrat completed, they will be asked to identify the different organisms found in their quadrat and also estimate the number of species or percentage cover, completing either Student Worksheet: [Reef transect – species record sheet](#) or Student Worksheet: [Species composition](#) (a more generic version that may be used in other areas of the state). If students have access to underwater cameras they may also wish to photograph each of their quadrats.

Upon all groups completing their three quadrats we will discuss what changes they observed between their quadrats across the three zones and the potential reasoning for this.

Students should keep their data collection sheets for follow-up discussion back at school.

## **Pre-excursion**

Background information on intertidal reef platforms may be found in the Fact Sheet: [Intertidal rocky shores](#).

It is expected that prior to attending this excursion you will have had a discussion with your students about working safely in the field, and in particular in the marine environment.

It is also expected that students will have some knowledge of the intertidal zone and the organisms that may inhabit this zone; the challenges that these organisms face as well as some basic marine classification. The Presentation: [The intertidal zone – a reef platform](#) will assist in facilitating this discussion in the classroom. Ask students to consider how they would map a reef platform and sample the species composition across the platform. You want to know if the composition changes between the landward and seaward ends of the platform, and also if there is variation across the platform (parallel to the shoreline). Introduce (if necessary) the concept of a transect.

You may wish to share this short [video](#) with your students about the history behind Mettams Pool – the area to which they will be working adjacent to.

Other points for class discussion may include –

- why study this area?
- what is significant about the area?
- is it protected in any way?
- which council manages the adjacent area?
- is there a sand dune present?
- what is the built infrastructure close by?
- who are the main users of the area?

## Post-excursion

Students should complete Student Worksheet: [Comparing quadrats](#)

Engage students in a class discussion about their findings. Points for consideration:

- Does the species composition change along the transect line?
- Compare a sample from the first few metres of the transect line with a sample from the seaward end of the transect line. Was the composition of organisms similar or different? Why?
- Compare groups that sampled similar areas along the transect line, but were on opposite sides of the reef platform. Was the composition the same or different?
- Why were some species present in some areas, but not others?
- What adaptations were observed amongst organisms?

You will find some additional discussion points in the Teacher Resource Sheet: [Comparing quadrats](#)

## Related resources

[Reef Transect](#)

[Hillarys School Excursion: Reef Transect](#)

[Fact Sheet: Intertidal rocky shores](#)

[Presentation: The Intertidal Zone - a reef platform](#)

[Teacher Resource Sheet: Preparing for your reef transect](#)

[Teacher Resource Sheet: Excursion Management Plan - Hillarys](#)

[Student Worksheet: Features along the transect](#)

[Student Worksheet: Species composition](#)

[Student Worksheet: Reef transect - species record sheet](#)

[Student Worksheet: Comparing quadrats](#)

[Teacher Resource Sheet: Comparing quadrats](#)

## **Linked External Resources**

[Department of Transport Tide Predictions](#)

## **Keywords**

limestone reef, quadrat, survey, intertidal, ecosystem, fieldwork, investigation, intertidal, species composition, percentage cover