

AS7 - Habitat Assessment

This activity is performed as part of AS6 A catchment study.

The site description is easy to do and consists of observing and noting the main features of your site. It is useful for

- learning about the aquatic environment and
- identifying grossly degraded sites.

Things to do at the site

Take a walk.

Determine the extent of the area to be assessed. Pace 10m upstream and 10m downstream from a point of reference such as a tree or rock. Walk the 20m area along the stream bank and become familiar with the features of the site and surrounding land.

2. Fill in the details of the top portion of the Site Description Sheets.

You must give a name to the waterway, preferably as it appears on the map. If it is a stream but does not have a name then record which water body it flows into. Indicate the type of water body, its elevation from the map and the name of the nearest town. The brief description of the site must include precise details of access and location.

Make a Sketch

Make a sketch of the area on your Site Description Sheet. Sketches are a useful means of keeping a visual record of your stream. Drawing the site will help you to 'see' the landscape and features of the site, and provide a record for future school visits.

Draw the shape of the stream channel from a 'birds-eye' view, looking down from above.

Note on the sketch features such as:

- tributaries, dams, roads, etc;
- direction of true north;
- direction of water flow;
- riffles, logs and log jams, vegetation
- photo sites and direction of photo;
- any important features outside of the 20m area which may affect the site, for example a recently burnt area.

Filling out the details of your Site Description Sheets

Appearance of the water. Pay particular attention to the appearance of the water as this can indicate pollution.

The smell of water can also indicate pollution.

Rating the Health of the Site Habitat

This section describes how you can rate the health of the habitat on a scale of excellent, good, fair or poor. This survey is designed for assessing the health of stream habitats but can be used for wetlands, lakes and ponds. Simply ignore the rating for riffles pools and bends when completing the survey.

How to carry out the survey.

To assess the health of the habitat around the stream you are monitoring, you will need to consider four indicators described below. For each indicator, survey a total distance of 20m on both banks (if possible). Riparian vegetation and instream cover are more important in determining the health of the habitat than either bank erosion and stability or riffles, pools and bends. This is reflected in the weighting of scores given in the table.

Riparian vegetation. The riparian zone is an area up to about 30m wide directly adjoining the waterway and can include vegetation such as trees, shrubs and grasses.

In-stream Cover. In-stream cover includes overhanging banks and aquatic vegetation, snags, fallen trees, logs and rocks. Streams with a rich diversity of in-stream cover allow fish and macro-invertebrates to shelter from the current, feed and reproduce. Aquatic plants provide food and oxygen, and protruding snags provide roosting and preening sites for birds.

Bank Erosion and Stability. Streams naturally erode on the outside of bends (meanders) and deposit sediment on the inside of the bend. However, changes in nearby land uses can cause a stream to become unstable, resulting in continuous erosion along its channel. You may find steep walled gullies, bank collapse, slumping and hanging roots from riparian vegetation. If the stream has been channelled or stabilised with concrete banks, it will obviously be stable with little erosion, but has little or no vegetation cover and few habitats needed by macroinvertebrates to live.

Riffles, Pools and Bends. A riffle is a section of a river or stream where shallow water flows over rocks in rapid turbulent flow. As the water flows downstream the stream bed may deepen and form a quiet pool. Larger, slow-flowing rivers may not have any riffles or pools but bends will be present. As water flows around the outside of bends it cuts into the bank deepening the bed.

Streams that have a number of pools and riffles are able to support a greater variety of species than those that do not vary in character at all.

Instructions

Read the descriptions above and become familiar with the terms used and how to distinguish between them.

Examine 20m length of waterway on both banks at your site.

Go to table 1 and select a category (excellent', 'good', 'fair' or 'poor) that is most like your habitat. If the information does not match, try another category.

A score is given for each category. The scores are higher for the more important conditions affecting stream health. Record your score on the 'Stream habitat rating sheet'.

To obtain an overall assessment of the site, add up each score to obtain a total. The total gives an overall indication of habitat condition.

Table 1 Description of Habitat Ratings

Habitat	Excellent	Good	Fair	Poor
Riparian Vegetation (Examine vegetation from the water to about 30 m back)	8 Mainly undisturbed native plants on both sides of river. Introduced species are absent or insignificant. Riparian zone up to 30m wide.	6 Native vegetation on both sides of river in generally good condition. Some intrusion of introduced species. Wide riparian zone.	4 Mixture of native and exotic species on both banks, or one side may be cleared and the other side undisturbed native plants or narrow corridor of native plants on both sides. Other impacts may be present eg fire, stock grazing in riparian zone	2 Any native vegetation present is severely modified on both sides by grazing or human access. Cleared land both sides (eg agriculture, housing). Species present are virtually all exotics (willow, pines, introduced grass).
In-stream cover (aquatic plants, snags logs, bank overhangs and overhanging vegetation)	8 High cover on banks. Abundant in-stream, and overhanging vegetation. Abundant snags and logs or boulders. Bank overhangs present.	6 Good cover on the banks, moderate areas of in-stream and overhanging vegetation. Some snags, logs or boulders.	4 Some cover. Some areas of in-stream or overhanging vegetation. Invasion of bank vegetation by terrestrial grasses. Few snags, logs or boulders.	2 Little or no cover. No overhanging vegetation or in-stream plants. The stream is largely cleared with rare or no snags, logs. Any boulders present are submerged. Site may have rock or concrete lining.
Bank erosion & stability (roots, bare soil, slumping, erosion, fall-ins, cracking of bank)	4 Stable. No erosion or deposition evident. No slumping of banks. Lower banks completely covered with root mat, grasses, reeds or shrubs.	3 Very occasional and very localised erosion. Little slumping or undercutting of bank. No significant damage to bank. Good vegetation cover.	2 Some erosion evident but localised. No continuous damage to bank structure. Moderate vegetation cover.	1 Extensive areas of erosion. Unstable, extensive areas of bare ground, bank failure such as cracks and fall-ins. Little vegetation cover. <i>Despite stability of concrete channels they score only 1.</i>
Riffles pools & bends.	4 Wide variety of habitats. Riffles and pools of varying depths present. Bends present.	3 Good variety of habitat eg. riffles and pool or bend and pool. Variations in depth of riffle and pool.	2 Some variety of habitats eg. occasional riffle or bend. Some variation in depth.	1 Uniform or only slight variety of habitat. All riffles or pools with uniform or only slight variation in depth eg. channelled stream.

General features of waterway

1. Appearance of the water

- clear muddy milky stained green
 foamy / frothy oily sheen stained brown reddish

Other (describe) _____

2. Smell of water

- sewage fishy chlorine rotten eggs
 none

Other (describe) _____

Stream Habitat Rating

Circle the appropriate score for each part of the habitat below:

Habitat Rating	Riparian Vegetation	In-stream Cover	Erosion & Stability	Pools, Riffles & Bends
Excellent	8	8	4	4
Good	6	6	3	3
Fair	4	4	2	2
Poor	2	2	1	1

How to get an overall assessment of the site.

If you wish to get a general rating for the site then add up all the numbers you circled for a total score. The minimum total score is 6 and the maximum is 24. Compare the total score with the range of scores below to find a description of the general condition of your stream habitat

Stream Habitat Rating

Total Score	Rating	Condition of habitat
21 - 24	Excellent	Site in natural or virtually natural condition; excellent habitat condition.
16 -20	Good	Some alteration from natural state; good habitat conditions.
11 -15	Fair	Significant alterations from the natural state but still offering moderate habitat; stable.
6 - 10	Poor	Significant alterations from the natural state to very degraded. May have moderate to severe erosion or sedimentation problems .

Stream Habitat Rating:

Total Score: