



## Australian Speleological Federation Inc.

# Minimal Impact Caving Code (MICC)

Adopted 1995, amended 2010, amended 2021

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## Introduction

The presence of people in a karst area has diverse impacts. On the surface, tracks are made, vegetation is damaged, animal life is affected, and ecosystems are altered. Underground, tracks are made, rocks are worn, formations and sediments are damaged, cave biota are disturbed, and ecosystems are altered. Most caving impacts are minor in themselves, but over time these small impacts accumulate to create more substantial impacts. The intention of this code is to assist cave users to minimise these impacts.

This code should be followed by all cave users, regardless of the group or the purpose of their visit. This includes surveyors, photographers, scientists and other researchers, explorers, cave guides, land managers and management staff, rescue personnel, commercial operators and their clients, recreational groups, scouting organisations, church groups, school groups, social groups and cavers.

This code should be used in conjunction with the ASF Code of Ethics, the ASF Minimal Impact Code for Scientific Investigation in Caves and Karst, the ASF Minimal Impact Rescue Code, the ASF Safety Guidelines, and the ASF Risk Management Guidelines.

## General Principles

This code is divided into two sections: the first relating to general cave visits and the second relating to the exploration of a newly discovered cave or section of cave.

A practice listed in one section may be applicable to the other section.

A given practice may be modified, depending on the nature of the cave. Different caves or parts of caves have different degrees of vulnerability to cave user impact. At one extreme are rocky stream passages that carry high energy floodwaters and which are minimally affected by cave users. At the other extreme are fragile caves where cave users may have a substantial impact simply by entering.

Competing with cave protection may be other matters, such as the goal of the trip, and the skills of the cave users. In principle, priority should be given to cave protection when resolving these, unless significant impacts cannot be mitigated safely. In the latter case not undertaking the trip at all would be advised.

Finally, it is important to recognise that this code cannot anticipate all situations where potential exists to create impacts, nor can it prescribe a response that is appropriate in every case. Thus, minimal impact caving is best approached as a state of mind rather than a set of prescriptions. In practice, this means every caver needs to be aware of their impact on the environment whilst caving and to be thinking and doing whatever they can to reduce this impact.

## General Cave Visits

1. Cave softly:
  - Take care in the placement of hands and feet throughout the cave – look for footholds and handholds which have been used by previous parties and use these if they are suitable.
  - Do not touch speleothems or other sensitive features unless doing so is part of a clearly established route.
  - Do not collect or souvenir things you find in caves.
  - Don't rush. You will see and enjoy more, and there will be less chance of damage to the cave and to yourself. This especially applies when you are tired and exiting a cave.
  - Constantly watch your head placement and that of your party members. Let them know before they are likely to do any damage.
2. Remember that every caving trip has an impact and every caving trip should have a valid purpose. Consider whether the caving purpose can be achieved with lesser impact in a different cave, with fewer people or by following different routes.
3. If a cave, or section of a cave, is at high risk of damage it should only be visited under carefully considered and well-planned circumstances. All participants should be aware of agreed measures to reduce impacts. Consider leaving part of the party outside the fragile area when it is necessary to visit for an agreed purpose.
4. The skills and experience of the party should be suitable for the fragility of the cave. Caves that can be easily damaged should only be visited by people capable of avoiding damage. Novice cavers should develop their skills in robust caves, not in fragile caves.
5. Avoid large parties. A party size of up to four is often appropriate for more sensitive caves.
6. Before visiting a cave, seek information to assist minimal impact exploration, such as the cave's sensitive features, the need to remove dirty clothing and footwear, and the best anchor points. Let all the party members know this. All party members, even beginners, share responsibility to protect the cave.
7. If there are beginners on a trip, make sure that they are directly supervised by an experienced caver to help them cave softly. Do not pressure slower members to move too fast to care for the cave.
8. Keep caving packs as small as possible so they do minimal damage.
9. Lighting must not involve naked flames. This includes carbide lights and candles.
10. When moving through a cave:

- Follow the person in front of you and guide the person behind you. Do not go another way just because it looks easier or shorter.
  - Ensure that party members do not wander about the cave unnecessarily.
  - Stay on all marked or obvious paths.
  - If a route crosses an area that is obviously being degraded or damaged examine the site carefully to determine if an alternative route is possible. Any alternative route must not cause the same or greater degradation than the currently used route.
  - In some caves, there may be a marked track through a sensitive area to avoid the spread of clay or mud or sand to other sensitive sections. It may be necessary to clean boots at a boot wash station, or to change to soft soled footwear and clean overalls before entering these areas.
  - Consider carrying track marking materials to restore any missing markers.
  - If the only route involves walking on sensitive floor areas (such as flowstone), wash boots in a wash station or remove muddied boots or clothing before proceeding. Rather than causing irreparable damage, it is better to return later with the appropriate equipment.
11. When you enter a cave, your gear should be clean and dry. This reduces the spread of bacteria and fungi. It is good practice to decontaminate gear before moving to a different karst area.
  12. Learn to recognise cave deposits or features and cave biota and their habitats that may be damaged by touching or walking or crawling on them. Examples include but are not limited to:
    - Speleothems, helictites & crystals
    - Drip holes
    - Soil and sand cones
    - Tree roots
    - Flowstone
    - Calcite crusts
    - Stream passage sediments
    - Bone material
    - Palaeo (fossil) soils or undisturbed sediments
    - Moonmilk
    - Cave pearls and pisolites
    - Potential archaeological sites
    - Indigenous artifacts
    - Cave fauna and their habitats.
  13. Avoid disturbing substrates in natural condition, including 'ordinary' mud, sand or gravel. Undisturbed substrate contributes to the overall naturalness of a cave and helps maintain its quality as underground wilderness. It is also of particular interest for further research by speleologists and karst specialists.

14. Treat the cave biota (living things) with respect, watch out for them, and avoid damaging them and their snares, webs and habitats, including sediments, roots, organic debris and guano. Try not to shine lights on cave animals (including bats).
  - No disturbance should be caused to maternity or over-wintering roosts of bats.
  - Cave entrance zones are often biologically rich or otherwise critical for cave animals living deeper underground. Special care should be taken to minimise disturbance to soil cones and slopes leading into cave entrances.
15. If bone material is found, the bones and surrounding area should not be disturbed, but should be taped off pending consultation with the landowner or land manager (management authority) and scientific specialist (e.g. palaeontologist or archaeologist). Do not remove such material without permission.
16. If you eat food in a cave ensure that all food fragments are not dropped as this may impact the cave ecology. One way to do this is to carry a plastic bag to eat over and to catch the food fragments. This can then be folded up and taken from the cave.
17. Remove with care all foreign matter brought into the cave, except for track marking materials and approved experimental apparatus. This includes liquid and solid human waste. Containers will be needed for this. Remove rubbish left by other parties.
18. When rigging on natural anchors, ensure that minimal damage occurs by protecting the anchor, e.g. with rope protectors, carpet, packs, or cloth. Rigging bolts may be considered where they are necessary for safety and comply with relevant best practice guidelines for bolting.
19. All caves are of value. It is best to regard severely impacted caves not as “sacrificial caves”, where MIC practices are no longer necessary, but rather as appropriate venues to teach all aspects of caving. Such caves provide opportunities for education on the nature and consequences of cave user impact, and opportunities for restoration and conservation work.
20. Sampling, removal or relocation of any cave contents should only be undertaken for a valid scientific or conservation purpose and with permission from the management authority and in accordance with any permit conditions or legislation. Refer to the “Minimum Impact Code for Scientific Investigation in Caves and Karst”. If possible, initial expert evaluation of items should be made *in situ*.
21. Understand the possible consequences of a rescue. In a rescue, human life will take priority over conservation of the cave environment. See ASF Safety Guidelines, ASF Risk Management Guidelines and ASF Minimal Impact Rescue Code (MIRC) practices.
  - Self-rescue should be considered before making a call-out for assistance. This reduces the risk of damage to the cave by additional rescuers.
  - Rescues should ideally be conducted by experienced, trained rescue cavers who understand Minimal Impact Caving Code (MICC) and ASF Minimal Impact Rescue Code (MIRC) practices.

- During cave rescues, emergency personnel from other organisations may be unfamiliar with minimum impact caving. They should be supervised by experienced cavers.
  - Intentional damage to the cave to make the rescue possible, or to hasten it, can be reduced by prior rescue planning, developing the caving skills of rescue personnel, and by cavers participating in rescues.
22. Cave Search and Rescue Exercise parties must be briefed on the ASF Minimal Impact Rescue Code (MIRC) and Minimal Impact Caving Code (MICC).
  23. Cave users should only camp in a cave when this has a clear speleological purpose and can be done without unacceptable environmental impact. Convenience or novelty are not sufficient justifications. Recognised codes for minimum impact camping will be observed with particular emphasis on complete removal of rubbish and human waste, and careful selection of the camping site. This also applies to above ground camping.
  24. Mud-throwing, mud modelling, graffiti and similar activities are totally unacceptable.
  25. Cavers will not smoke in any cave.
  26. Caves must not be disfigured by unnecessary marking (including 'direction arrows'). Entrance tags and survey marks should be small, inconspicuous and removeable with minimal impact.
  27. Competitions should not be held in caves. Participants focus on the event can too easily override care for the cave.
  28. Cave entrances and passages should not be excavated/enlarged, water levels in sumps should not be modified, and stream flows should not be diverted, until all possible alternatives have been considered and potential effects are assessed. Any modification must be the minimum required.
  29. Capping (or other explosives) should only be used when carefully planned and performed by experienced and skilled individuals.
  30. The caching or installation of items in caves should be avoided unless the timeframe and purpose are clearly documented. Materials must be selected for stability in the cave environment and maintained as appropriate or removed on completion of the project.
  31. Geocaching in caves is not acceptable.

## **New Cave or Extension**

1. Exploring new caves and passages entails the greatest relative impact on the environment which those caves and passages will experience, especially to sediments and cave formations. The existing biology of a new cave, including its microbiology of fungi, bacteria, and protozoa, will almost certainly be altered on the first trip into the cave. Participants are responsible for rigorously following the minimal impact caving code and otherwise making best endeavours to preserve the cave environment in near-pristine condition.
2. Cave exploration involves route choices which create precedents other parties will follow. The choices are sometimes complex and require careful thought. As a general guide, give priority to minimising disturbance to sensitive features and undisturbed substrates generally.

3. Tracking marking across sensitive substrates is the responsibility of the first party. Plan an early return trip for track marking if needed.
4. In sensitive new caves, the minimal activity should be surveying and (where required) track marking, not purely exploration. Consider deferring exploration if you do not carry the necessary equipment or materials.
5. Before crossing sensitive areas, ensure that all alternative routes are examined by completing as much of the cave survey as practicable. It may not be necessary to enter some areas if they can be by-passed.
6. In-cave marking refers to the use of a variety of materials to define tracks, routes and “no go” areas in a cave. This is done to protect sensitive areas, confine cave user foot damage and make cave users aware that a sensitive area exists.
  - Discuss in-cave marking within the party and ensure that all ideas are evaluated before marking is undertaken.
  - Sometimes, it may be decided not to cross a sensitive area just to see where a passage may lead. The area can be marked “no go”.
  - Enticing but dead-end leads can be marked “dead-end” and closed off.
  - If a sensitive area is to be crossed it should always be marked. In some cases where immediate, critical protection measures are necessary, the minimum necessary marking should be done.
  - Make a narrow, clearly-defined track in situations where a defined route will confine the unnecessary spread of impacts. This can be best done with string lines (e.g. parallel lines on both sides of the route). Small reflective markers may be useful in some cases, or using synthetic matting laid across sensitive surfaces.
7. Where exploration is extended by excavation permanent impacts on the cave will occur. These should be carefully considered before excavation commences.
8. When exploring vertical caves, where possible natural anchors should be used. If artificial anchors are needed, removable anchors should be used. Later, these can be removed or replaced with permanent anchors. Installation of permanent anchors may be appropriate where there is a demonstrable speleological purpose and conforms to current best practice.
9. Water flow-tracing experiments should be permitted by land managers and done in a manner to minimise environmental impact.