

Protect That Hearing!

Exposing yourself to a small-bore/ centrefire rifle without ear protection will slowly but surely make you one of my clients. As an audiologist, I have seen hundreds of shooters whose hearing ability has been markedly impaired by shooting. Noise damage is frustrating- speech is still plenty loud enough but everyone sounds like they're mumbling. It makes you look stupid from incorrectly guessing. It annoys others when they can't get your attention or have to tolerate the TV volume way up. It also makes you antisocial by choosing to avoid noisy places like family groups, restaurants and clubrooms. While there are some useful hearing aids now to help high frequency loss from noise, there is still no substitute for the original.

Given that protection from rifles is a must, what are your options? Factors to consider are effectiveness, comfort, cost and practicality. With the large variety of options out there, it can be confusing. Most shooters use "passive" devices, ie muffs or plugs, that simply act as a mechanical sound-attenuating barrier. Their effectiveness depends on a variety of factors- the report level, the number of shots fired and the device's ability to prevent sound energy entering the ear canal by the usual air conduction pathway. Sound entry by bone conduction through the skull is occasionally mentioned but this is only of relevance to large artillery.

As a generalisation, small-bore or high powered rifles don't require the extreme grades of protection that some shooters choose. Grade 5 or even 6 muffs are often expensive, tend to be heavy, have high clamping force and can cut you off unnecessarily from useful sound. A well fitting Grade 3 device is all that is necessary for the vast majority of shooters. By "well fitting", I mean that the device delivers expected levels of attenuation (noise reduction) on your individual ears. Some people for example have an unusually deep jawline groove under their ear that makes it near impossible to attain a seal from the muff's cup against the skin. Even a slight leakage here can dramatically lower the effectiveness of the device. If you're in the market for muffs, I'd suggest you try on various muffs to see which both feel comfortable and noticeably shut out external sound. The better muffs usually have oil-filled cushions which are more tolerant of anatomical variations.

Ear plugs are appealing to many as they are well clear of the stock. If you choose an off-the-shelf closed-cell foam type, make sure they end up deeply inserted so that only a small portion is visible when in place. If you can view half the plug, chances are it's providing little protection. Be careful of multi-flange flexible plastic designs as these often seal poorly in twisty or oval canals. As with any type of device, if the rifle report isn't reduced to an easily tolerable level, you need to look at other options. You will find many plugs are only rated as Grade 2 and poor insertion technique plays a large part here. Despite their generally-lower official rating, they are an effective option for most forms of shooting.

Custom-moulded plugs are an option shooters are turning to more often. These require an accurate ear impression by a qualified person, preferably an NZAS audiologist. The ear canal needs examining with a proper light source before the impression is taken, firstly to rule out wax build-up. Never let anyone take your ear impression unless they have looked in- occasionally you run into ear canals that have nasty bulges and recesses that make impression removal difficult or uncomfortable.

The impressions are sent away to have the proper plugs made, generally from a flexible silicon rubber. You have two options in terms of sound design- either a solid type for maximum noise exclusion or a “non-linear filter” version. The best known latter type is the Paterson *Ear Defender* made in Melbourne which allows a lot of useful lower-level sound through but becomes increasingly effective at blocking loud sound impulses.



Electronic Plug (*Starkey Sportsmaster*)



Paterson NLF silicon plug

Target shooters are generally okay with passive devices, ie non-electronic types, as their protected hearing level is not critical. As long as they can hear range officer's commands and maybe a coach next to them, that is sufficient. Coaches can prefer better hearing than this- it is useful to be able to overhear comments from further down the mound with NRA shooting. If this is considered worthwhile, only an electronic type will meet your needs as these allow amplification of low-level sound while still taking out the damaging peaks of gunfire. Electronic devices are available as either muffs or custom in-the-ear plugs. The latter, while not cheap, are great while hunting or duck shooting as they allow near-normal awareness of low level sounds. I own the full range of custom devices including electronic versions but almost invariably use an in-the-ear electronic type. For situations where you don't want to hear much at all, these can be turned off to become a standard plug. Custom electronic plugs aren't cheap however and in reality, passive options are quite adequate for most applications.

Chances are some of you reading this will already have suffered noticeable hearing loss from unprotected shooting. If so, I suggest a hearing assessment by an audiologist who can advise you in detail on the state of your hearing and treatment options. Be aware ACC largely only covers hearing loss from occupational noise, including professional shooting. Gradual hearing damage from recreational shooting isn't covered as it's not an “accident”. The only accident covered is if you suffer permanent damage from a one-off event, eg your mate letting one loose right near your ear.

While my own hearing isn't measurably impaired by shooting, I know I struggle more than I should to understand in noisy restaurants, parties and social events. Specialised

tests have revealed subtle damage from noise over the years, damage that isn't apparent on routine tests. I find it amusing how some shooters ask me if my hearing is impaired when they simply see me wearing electronic plugs. Maybe my reply should be "No mate, it's still pretty normal *because* I'm wearing these".

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N.B, Chris is a full bore shooter, Thank to Chris for writing this article