LTU AEC Guide for Fin Clipping

Preamble

Fin clipping is a procedure performed in finfish typically for the purpose of collecting cells to analyse genetic material (e.g. DNA/deoxyribonucleic acid). It involves removal of a small amount of fin tissue from the fish (usually less than 20%, noting that no more than 50% of the fin should be taken). The appropriate site to sample is species specific; different species rely on their fins to different degrees. For example, some fish are more sedentary, compared with others that are more active hence the impact (i.e. risk) of sampling these body parts can vary. Furthermore, different fins can have different rates at which they grow back.

Image 1. Fin clipping being performed in the field (*Image from FWC Fish and Wildlife Research Group*).

There is a growing body of scientific evidence that fish experience negative affective states such as physical pain (Sloman et al 2019., Dunlop et al 2006., Reilly et 2008., Sneddon 2019, Sneddon, 2023). Published literature supports the notion that fin clipping is a painful procedure in fish (Roques et al 2010, Jaźwińska et al 2016).

Responsibilities under The Australian Code

Investigators are obligated under *The Australian code for the care and use of animals for scientific purposes (8th edition)* to use steps that safeguard the welfare of animals.

Clause 2.4.18 (steps i, iii and x)

(i) using methods that cause the least harm, including pain and distress

(iii) implementing and reviewing strategies to detect, avoid and minimise any pain and distress in the animals (see chapter 3.1)

(x) ensuring the appropriate use of pharmacological and non-pharmacological means to minimise pain and distress (see Clauses 3.3.8–3.3.15). Use of pharmacological agents such as anaesthetics, analgesics and sedatives must be appropriate to the species, the individual animal (e.g. age, physiological status) and the scientific aims, and must be consistent with current veterinary or medical practice. Anaesthesia must be used for procedures that are likely to cause pain of a kind and degree for which anaesthesia would normally be used in veterinary or medical practice.

RECOMMENDATIONS

Where fin clipping is deemed necessary and justified, it is the view of the La Trobe Animal Ethics Committee that the procedure is performed under an adequate plane (level) of general anaesthesia (see Image 3). There are several well-established anaesthetic agents and protocols for use in zebrafish. For other species of finfish, anaesthetic regimes are available in the literature for a variety of species. The La Trobe University Animal Research and Teaching Facility has registered veterinarians on staff available for technical advice, guidance, and support.

Level	Description	Signs displayed
0	Normal behaviour	Reactive to stimuli. Good muscle tone, normal equilibrium and operculum rate.
1	Sedation	Equilibrium maintained. At lighter levels there is some reaction to external stimuli and normal opercular rates. Deeper levels show no reactivity to mild external stimuli and reduced opercular rates.
2	Light anaesthesia	Opercular rate increases initially, then decreases as anaesthesia deepens. Progressive loss of equilibrium. Reacts to only deep pressure stimuli. Colour changes may be seen.
3	Surgical anaesthesia	No reaction to any stimuli. Slow opercular rate, with operculum spread. No muscle tone, no equilibrium control.
4	Medullary collapse	Cessation of operculum movements, followed some time later by cardiac arrest.

Image 2. Levels of general anaesthesia in fish (*NSW DPI, 2015*)

When fin clipping is performed in the field, investigators must be aware of, and adhere to any withdrawal periods associated with aquatic anaesthetic drugs. Aqui-S (active ingredient isoeugenol) is currently the only anaesthetic approved for use in salmonids (or for use on other species under direction of a registered veterinarian) with no withdrawal period and is thus suitable for same day release.

Less invasive alternatives to fin clipping that achieve the same objective must always be considered before a decision to fin clip is made (clause 3.3.6 iii of the Australian Code). Skin swabbing (see Image 3) shows promising results for the purpose of genetic analysis and should be considered as an alternative (Tilley et al 2021, Tilley et al 2020, Venta 2020, Breaker 2017 and Le Vin et al 2010). In zebrafish, extraction of genetic material from embryos of larvae for genotyping should be considered (Lambert CJ, 2018).

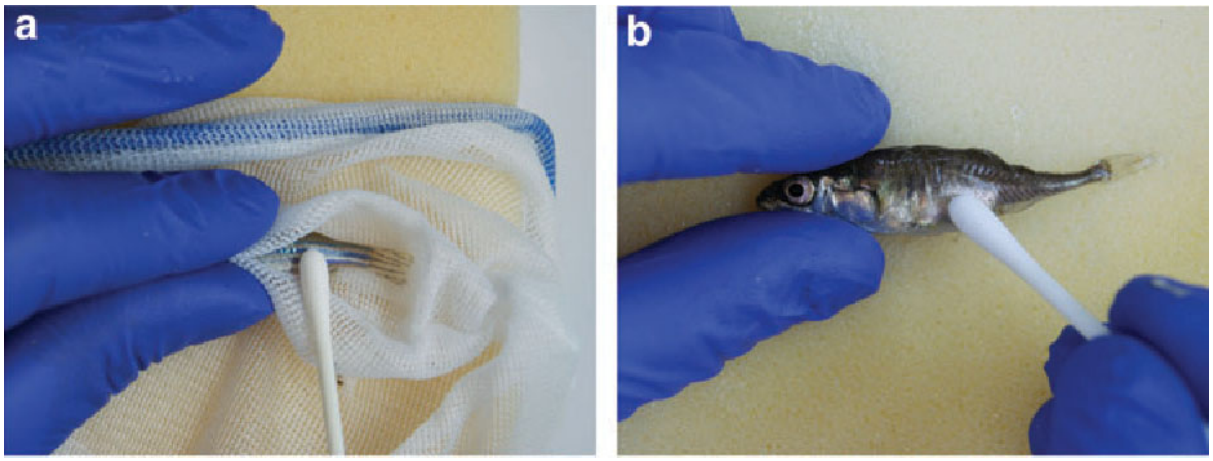

Image 3. Skin swabbing being performed using different handling approaches. (Breacker C, 2017 February).

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