SAIAB ANIMAL ETHICS POLICY
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1. General Collections Policy and Ethics

1.1. SAIAB collections include the Margaret Smith Library\(^1\), all biological collections (fishes, diatoms, amphibians, cephalopods and associated specialised tissues), the Art Collection, the Image Collection, research and employee archives.

1.2. Obligations to build collections: All research staff have an obligation to build the various collections of the Institute.

1.3. Collections ownership: All items and materials appropriate to the collections of SAIAB\(^2\), generated or derived from employment in SAIAB or from the use of physical (capital) or intellectual resources of SAIAB, are the property of SAIAB. Such items and materials must revert to, and be lodged and registered with SAIAB at the earliest convenient opportunity after being generated.

1.4. Private collections-conflict of interest: Employees with private collections in the areas of their professional responsibilities or in the activity collection areas covered by SAIAB must declare the existence of such collections and the inherent conflict of interest with SAIAB, in writing, and reach written agreement thereon, with the Managing Director.

1.5. Private gain: SAIAB employees shall not use SAIAB collections, equipment, facilities, or time, for activities that will result in private gain, without obtaining, in writing, prior permission from the Managing Director.

1.6. Unethical, illegal and irresponsible traffic: SAIAB employees may not perform identifications or otherwise authenticate natural history materials for persons or organizations under circumstances that could encourage or benefit illegal, unethical, or irresponsible traffic in such materials.

1.7. Storage and Security responsibilities: All collection materials shall be stored and maintained in such a manner at all times, as to reasonably prevent loss, deterioration, unauthorized access, or divulgence of confidential information.

1.8. Collection material on loan: Staff shall maintain all materials loaned from any collection in or beyond the SAIAB in such a manner as to honour fully the conditions of loan and to reasonably prevent loss, unauthorised access, or divulgence of confidential information. All loaned material shall be returned to the host collection at the earliest convenient opportunity.

2. Collection and Research involving Live Animals

Ethical clearance of research has become a fundamental requirement for institutions dealing directly with the collection or use of animals for scientific research. Animal research undertaken in SAIAB is complex and includes research on invertebrates, fishes, amphibians and occasionally reptiles, and includes:

- Collection of animals as museum specimens and for reference collections
- Collection of animals for biodiversity census
- Collection of animals for ecological studies including the subsequent examination of these animals whole or in part for biological analyses
- Experimentation on animals under laboratory conditions.

\(^1\) The Margaret Smith Library is jointly funded by SAIAB and Rhodes University. The arrangement between the two institutions is part of an MOU.

\(^2\) For the purpose of this clause ‘Institutional property’ includes all items bought with research funds, research files and all museum records, field notes, specimens, specimen records, databases, photographs, and all other products, in whatever form, resulting from employment activity in SAIAB
SAIAB is committed to ethical conduct with regards to the treatment of animals and the environment, and adheres to national standards\(^3\), stakeholder norms (e.g. see Rhodes University policy) as well as to international publishing requirements (see *Journal of Fish Biology* policy). Because of the complexity of the research undertaken by SAIAB, all research involving live animals requires clearance by an internal Animal Ethics Committee (AEC).

### 2.1. Animal Ethics Committee

2.1.1. In standing with SABS requirements SAIAB has appointed an internal Animal Ethics Committee (AEC).

2.1.2. The AEC comprises three members of the science staff, including the Chief Scientist, Collections Curator and one Senior Aquatic Biologist, one member that is not directly involved with fish research and one external member (i.e. not from SAIAB). The chair of the AEC is agreed upon by these five members and the position is reviewed annually. The chair may continue to serve for consecutive years if unanimously agreed by the members of the AEC and approved by the Managing Director.

2.1.3. The mandate of the AEC is to scrutinise research proposals in order to judge whether the proposed project research methods fall within accepted norms for ichthyological/animal research. The AEC is guided by literature on the ethical use of animals in research and may call on specialist help in the decision-making process.

2.1.4. The SAIAB Managing Director receives, scrutinises and approves AEC reviews and decisions on all projects.

2.1.5. The SAIAB Managing Director acts as chief arbitrator in the case of disputes or disagreements between the proposing scientist and the AEC.

2.1.6. All research protocols involving the use of live animals are subject to an ethical review process by the AEC.

2.1.7. For review purposes all research projects need to be submitted to the ethics committee using form SAIAB-ETHICS-01.

### 2.2. General Conduct during Research Expeditions

2.2.1. Collecting ethics: All collecting by SAIAB staff shall be conducted within the bounds and guidelines of local, national and international laws and treaties; and accepted ethical guidelines shall be followed at all times. In the case of collecting living organisms from the natural environment, all steps to avoid unnecessary stress, pain and suffering, or of excess kill, shall be taken. Damage to the environment should be minimised.

2.2.2. Collecting permits shall be obtained from the relevant authority prior to any collecting event and must be carried by SAIAB staff during the collection period. No living organisms shall be collected without permits issued by the relevant authority. If collections are made in partnership with conservation staff on their Permit, the details of that permit must be provided in the AEC application. In all cases permit requirements and stipulations need to be adhered to.

2.2.3. Collecting for purposes other than scientific research shall be conducted only with express prior permission, in writing, of the Managing Director.

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\(^3\) South African Bureau of Standards, Standard SANS 10386:2008
2.2.4. The care and use of experimental animals must comply with the **SANS 10386:2008 South African National Standard: The care and use of animals for scientific purposes.**

2.2.5. Wherever possible, sampling in a National Park\(^4\) or in other protected areas will not take place in areas accessible or visible to members of the public.

2.2.6. If approached by members of the public, SAIAB staff must inform them of their research activity in a transparent and courteous manner.

2.2.7. Areas zoned for swimming or areas used extensively for swimming will be avoided. Passive sampling equipment will not be left unattended in areas specifically zoned for use by powerboats, or in areas that are extensively used by people.

### 2.3. Field Collecting

2.3.1. In the case of collecting living organisms from the natural environment, all steps to avoid unnecessary stress, pain and suffering, or of excess kill, shall be taken.

2.3.2. The investigator has the responsibility of choosing an appropriate euthanasia method based on ethical grounds, the experimental data needs from post-mortem examinations, and the constraints of the sampling design.

2.3.3. Fishes collected as part of faunal surveys and other field work should be collected as humanely as possible.

2.3.4. Where feasible fishes should be killed rapidly. Acceptable methods of euthanasia are listed (Appendix 1), or held under aerated or natural conditions until released back into the wild.

2.3.5. Animals that are euthanized using toxic substances or drugs must not be disposed of in areas where they may become part of the natural food web.

2.3.6. Specimens intended for museum deposition should be killed before preservation by an acceptable means as listed in Appendix 1.

2.3.7. In the case of invasive procedures, evidence should be provided to show that any surgical procedure that could cause more than slight pain or distress has been performed with appropriate sedation, analgesia and anaesthesia, with appropriate post-operative care.

2.3.8. Unless in exceptional circumstances, tissues should be collected after fish have been appropriately anaesthetized, or euthanized. Exceptional circumstances might include a situation where anaesthesia may cause the loss of parasites from external surfaces or where the anaesthetic may influence with the scientific utility of the tissues.

### 2.4. For Laboratory Experiments

2.4.1. Animals must be kept under conditions outlined in the **SANS 10386:2008**

2.4.2. Humane endpoints that minimize any adverse effects should be used and be suitably described.

2.4.3. Experimental endpoints, other than death of the experimental subjects, should be developed, clearly outlined, and understood, unless death is required, and justified by an AEC approved protocol.

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\(^4\) SANParks Standard Operating Procedures for the capture, scientific manipulation and euthanasia of fish (pisces) in South African National Parks p.6
2.4.4. Any procedures that cause adverse effects or lasting harm to a sentient animal, particularly procedures that involve lethal endpoints, will need to be specifically justified and any harm caused will need to be justified against the benefit gained.

2.5. Field and Population Considerations

2.5.1. Irrespective of the purpose for which live fish are being collected, a strict ethic of habitat conservation and humane treatment of the animals shall be observed (see SABS for guidelines).

2.5.2. In all collections the conservation status of the population and species should be evaluated so that sampling and collecting wild animals avoids causing severe population and habitat disturbances.

2.5.3. The number of animal subjects required for an investigation will depend on the research questions being asked. Field and laboratory studies require very different experimental statistical designs. Field and early life stage studies sometimes require large numbers of specimens to be sampled. The use of adequate and appropriate numbers of animals to establish variance and assure reliability of results is essential to prevent needless repetition of studies or experiments, thus leading to animal over use. Whenever possible a statistician should be consulted to develop study designs that have the appropriate statistical power to accomplish sound objectives.

2.5.4. While the study design usually dictates the number of animals required, the principle of only taking the smallest number of animals required shall be observed.

2.5.5. Each animal collected should serve for as many types of study as possible to reduce the total numbers collected to a minimum.

2.5.6. Collection of large series of animals from breeding populations should be avoided, as well as unacceptable collection techniques and habitat destruction (see SABS for details).

2.5.7. The choice of collection method shall take into account the welfare of the animals, their habitat and worker safety, as well as the research objectives and seasonal conditions pertaining to the study (see SABS for details).

2.5.8. Sampling equipment and strategies should be designed to minimize “by-catch” and non-target species. For all sampling methods, by-catch of live individuals (excessive numbers of target species being captured, non-targeted fish species, or aquatic biota other than fish) will, as a matter of high priority during the sampling exercise, be returned to and released at the capture location in a manner that will maximise their probability of survival.

2.5.9. The use of piscicidal (ichthyocides) agents for capture shall take into account the effects on other species in the environment.

2.5.10. Conservation authority approval, as well as justification to the AEC has to be obtained for the use of ichthyocidal agents.

2.5.11. Ichthyocides will be used responsibly in small amounts (low concentrations for a particular water body) that will only affect a small area of the water body.

2.5.12. SAIAB has a separate policy statement on the use of rotenone that will be made available on request.

2.5.13. Seine nets or cast nets will not be grounded in areas where it will result in unacceptable levels of (a) damage of biota on or in the substratum, (b) damage of physical features of the substratum, or (c) result in the suspension of sediments which would in turn have negative, long-term effects on existing local biota.
2.5.14. Beaching (removal from water on sampling) of seine nets will be avoided when specimens will be released again. When studies involve (a) use of only some of the species or individuals likely to be collected, or (b) where sub-sampling of the total catch will be undertaken then, wherever practically possible, seine nets will only be partially beached to improve the chances of survival and successful release of non-target individuals and biota.

2.5.15. Securely tied or anchored gill nets will be serviced as often as possible to minimize the number of fish that are injured or killed. Where sampling with gill nets is undertaken in protected areas of high density of potentially vulnerable non-target biota (e.g. waterbirds) or in waterbodies harbouring red-data listed aquatic birds or mammals which could potentially become entangled in gill nets, a continuous watch will be undertaken over the nets at all times.

2.5.16. The length of gill nets used should be appropriate for the size of the water body being sampled and all gill nets will be removed immediately after sampling.

2.5.17. Fish traps in which other aquatic biota (including water birds) could easily become entangled/ gilled will not be used. Traps will be serviced as regularly as possible.

2.5.18. Unused bait for fish traps, line fishing or long lines will be disposed of off-site.

2.5.19. All sampling gear will be laid and raised at a time and in a manner that eliminates the chances of ensnaring birds and other non-target organisms.

2.5.20. If electrofishing, appropriate safety equipment will be used at all times during equipment operation and some habitats in the sampled area should be left undisturbed.

2.6. Marking of Wild Fish

2.6.1. Release of marked and tagged fish back to the wild shall comply with Nature Conservation regulations. Fish shall be in good health, able to function normally once released, be released back to the natural home range, and not introduce any pathogenic agents into the surroundings.
## Appendix 1

Acceptability of procedures involving the euthanasia of fish, amphibia and cephalopoda during research projects (adapted from SANParks Standard Operating Procedures for the capture, scientific manipulation and euthanasia of fish (pisces) in South African National Parks)

<table>
<thead>
<tr>
<th>Method of euthanasia</th>
<th>Laboratory</th>
<th>Field studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abbreviations:</strong></td>
<td></td>
<td></td>
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<tr>
<td>A = Acceptable</td>
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<tr>
<td>AWJ = Acceptable only with scientific justification, in writing, that other methods would interfere with the goals of the research</td>
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<tr>
<td>UNA = Unacceptable</td>
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### FISH

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Laboratory</th>
<th>Field studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-222 (immersion overdose)</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Benzocaine hydrochloride (immersion overdose)</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Quinaldine sulphate (immersion overdose)</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>CO2 (immersion in saturated solution)</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Concussion followed by exsanguinations</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Anaesthetising or stunning followed by pithing</td>
<td>A</td>
<td>A</td>
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<tr>
<td>Anaesthetising or stunning followed by decapitation</td>
<td>A</td>
<td>A</td>
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<tr>
<td>Anaesthetisation or stunning followed by exsanguinations</td>
<td>A</td>
<td>A</td>
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<tr>
<td>Concussion followed by exsanguinations in Formalin solution</td>
<td>A</td>
<td>A</td>
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<tr>
<td>Clove Oil (Eugenol) (immersion in solution)</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Rapid freezing</td>
<td>AWJ</td>
<td>A</td>
</tr>
<tr>
<td>Formalin (immersion in solution)</td>
<td>UNA</td>
<td>AWJ</td>
</tr>
<tr>
<td>Decapitation of awake animal</td>
<td>UNA</td>
<td>AWJ</td>
</tr>
<tr>
<td>Removal from water</td>
<td>UNA</td>
<td>AWJ</td>
</tr>
<tr>
<td>Concussion to head alone</td>
<td>UNA</td>
<td>AWJ</td>
</tr>
<tr>
<td>Electrocution (using electro-shocking collection apparatus)</td>
<td>UNA</td>
<td>AWJ</td>
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<tr>
<td>Exsanguinations alone</td>
<td>UNA</td>
<td>UNA</td>
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</tbody>
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### AMPHIBIA

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Laboratory</th>
<th>Field studies</th>
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</thead>
<tbody>
<tr>
<td>Chlorbutol (saturated solution)</td>
<td>AWJ</td>
<td>AWJ</td>
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### CEPHALOPODA

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<tr>
<th>Procedure</th>
<th>Laboratory</th>
<th>Field studies</th>
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<tr>
<td>Magnesium Chloride solution</td>
<td>AWJ</td>
<td>AWJ</td>
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