Prepare for your animal investigation at the Zoo
Pre-exursion activity

During your excursion at the Zoo, you will conduct an observational data collection with the guidance of a Zoo educator. Prior to arriving at the Zoo, you need to develop an investigation aim and hypotheses, research the animal and note down any relevant information, and ensure you understand what time budgets are and their use in a Zoo.

Time budget protocol

Time budgets are an overview of how and where animals spend their time, as well as how rare or common certain behaviours are for individuals.

From a welfare assessment perspective, any deviations in normal time budget for an individual can be used to flag potential concerns. In addition, it is important for zoos to be providing behavioural opportunities for animals in their care that appropriately reflect natural behavioural repertoires. Thus, they provide a lot of valuable information for advancing welfare standards through behavioural management.

Below are the first steps to developing and conducting a basic research project. This is designed to be a generic research protocol for any studies that aim to collate information on how an animal spends its time. It is designed to provide a standard framework for studies that can be tweaked to suit the particular species of interest.

1. **Ask a question** – this is the first step in identifying what sort of research you want to conduct and drives the formulation of your hypotheses, study design and analysis. In this instance, the question has been identified for you: "How does the activity budget for an orangutan in captivity, differ from the wild?" Other questions the Zoo has investigated include: Is animal x in a state of positive welfare? What does animal x do? Does enrichment x have an impact on animal x? All of these questions rely, at least in part, on accurate time budget data.

2. **Formulate your hypothesis** – a clear hypothesis will invite a direct test and help you design your study. For example ‘enrichment x will increase animal x's time spent foraging’. A hypothesis can also incite a direct test that can be observed in natural variation also. For example ‘Foraging behaviour in animal x increases when temperatures are higher’. Thinking about hypotheses and predictions will help with the next few steps to design the methods and select the correct measures. Use the activity budgets of wild orangutans to guide you (Appendix 3). You might seek guidance from your teacher here.

3. **Take some observations** – During your excursion at the Zoo, you will test your hypothesis and collect data for your animal species.
**Ethics and animal welfare**

On site educator-led workshop

**BIG QUESTION: How are psychology skills and knowledge used in wildlife conservation?**

“As a zoo-based conservation organisation, Zoos Victoria believes that just as the conservation and welfare of species in the wild is paramount, so too is the welfare of the animals in our collection.”

**How does psychology inform Zoos Victoria’s work with captive animals?**

We have an ethical obligation to ensure all animals in our zoos receive the best care and remain in neutral or positive welfare states. With your understanding of psychology, the mind and behaviour, consider how this knowledge might inform Zoo practice of captive animals?

**What does Zoos Victoria need to consider, to ensure the welfare of our animals?**

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**Ethical guidelines**

Unit 1-4 Key science skill; Comply with safety and ethical guidelines: understand the role of ethics committees in approving research and apply ethical principles.

Zoos Victoria’s Animal Welfare Code is intended to ensure that at all times and in all instances, the needs, interests and welfare of our animals is our primary consideration.

The Zoo investigates animal welfare during animal encounters and interactions with visitors. **If this was an experiment and you were the participants, consider the role of the experimenter when you meet an animal. What ethical considerations would need to be discussed with the participants?**

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**Role of ethics committees**

“The National Statement requires that all research that carries more than a low level of risk to human participants must first be reviewed and approved by an ethics committee. This type of committee is formally called a Human Research Ethics Committee (HREC).”

In the process of saving endangered species and providing the best welfare for our animals, Zoos Victoria comes across many complex conservation dilemmas which need to go through a committee called an Animal Ethics Committee (AEC).

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What is an ethics committee? What are some of its roles and responsibilities?

**Zoos Victoria's Animals Ethics Committee (AEC)** is made up of a range of representatives as required by the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes. Zoos Victoria's AEC meet on a bi-monthly basis to assess and review the welfare and ethical considerations of research proposals.


An AEC always consists of the four members listed below. Each member brings the following experience and expertise to the AEC.

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Scientific researcher/expert</strong></td>
<td>They have appropriate recent research or teaching experience. This experience should be relevant to the species used and the activities conducted in the institution.</td>
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<tr>
<td><strong>Veterinarian</strong></td>
<td>They have a degree in veterinary science with experience relevant to the species used and activities conducted in the institution.</td>
</tr>
<tr>
<td><strong>Animal welfare representative</strong></td>
<td>They are a person who is ideally an active member of an animal welfare organisation, with a commitment to furthering the welfare of animals.</td>
</tr>
<tr>
<td><strong>Lay person</strong></td>
<td>An independent person who does not currently, and has not previously conducted scientific or teaching activities using animals, and who is not an employee of the institution.</td>
</tr>
</tbody>
</table>


**Case Study: Cross Fostering of Helmeted Honeyeater Eggs**

**Overview**

**Helmeted Honeyeater pair build nest and female lays and sits on eggs.**  
**On day four, eggs are removed and the nest is dismantled by keepers.**  
**Eggs are placed in Tufted Honeyeater nest to be incubated and raised.**  
**Helmeted Honeyeaters build a replacement nest and lay a second clutch of eggs to raise.**
What ethical questions and concerns may arise from this case study?

In groups, discuss each viewpoint and note down any questions, concerns, recommendations or conditions from the perspective of each AEC member.

<table>
<thead>
<tr>
<th>Scientific researcher/expert</th>
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<table>
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<tr>
<th>Veterinarian</th>
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<tr>
<th>Animal welfare representative</th>
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<tr>
<th>Lay person</th>
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Scientific Research Investigation
On site educator-led workshop

“The physical and psychological wellbeing of captive animals depends on the suitability of the physical and social environment at the zoo, including the exhibit space, animal group size and composition, and the impact of visitors.

It will also depend on the veterinary care and nutrition provided and on husbandry routines and procedures, including the use of enrichment and training. Research enables us to measure the effectiveness of our animal management programs and improve the wellbeing of our animals”.

Research Title: How does the activity of an orangutan in captivity, differ from one in the wild?

Prior Knowledge/Research
• Dr Sally Sherwin’s Research on Orangutan activity levels in the wild (teacher notes)
• Summarise relevant Orangutan information (this may include social status and group behaviour, climate/habitat in the wild, activity levels in the wild)
• [http://pin.primate.wisc.edu/factsheets/entry/orangutan](http://pin.primate.wisc.edu/factsheets/entry/orangutan)
• Information on Melbourne Zoo’s Orangutans and the enrichment they receive will be discussed during the first Educator-led workshop on the excursion.

Aim: Students will use research methods and behavioural observation techniques to capture data and conduct fieldwork which addresses the scientific investigation question and their hypothesis. This research is representative of the type of research used to inform Zoos Victoria’s work with captive animals.

Hypothesis: It is hypothesized that orangutans in captivity will/will not have an increase in activity levels when compared with orangutans in the wild.

Method
Participants: Orangutans
Materials: Data collection sheets in student booklets, pen, stop watch
Procedure:
1. Go with the zoo educator to the orangutan sanctuary
2. Select an orangutan to observe
3. Using the qualitative data collection sheet observe and record animal behaviour with assistance from the zoo educator.
4. Familiarise yourself with the behaviour key on the quantitative data collection sheet
5. Using the quantitative data collection sheet observe and record animal behaviour with assistance from the zoo educator.
6. Identify and analyse any variables, challenges and observations.
7. Report the research and findings, interpret results and make recommendations for zoo keepers or further research.

Identify potential variables on the day:

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Data Collection - Qualitative Research

What is ‘Qualitative’ data and when would you use this method of data collection?

When observing a social animal for your qualitative data collection, work in pairs and record the animal’s behaviour using as much descriptive language and detail as possible.

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<thead>
<tr>
<th>Species:</th>
<th>Period of observation:</th>
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<tbody>
<tr>
<td>Name of observer/s:</td>
<td>Date:</td>
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<td></td>
<td>Time:</td>
</tr>
</tbody>
</table>

Observations

_________________________________________________________________________________________________________________________________________________________________
## Data Collection - Quantitative Research

What is ‘Quantitative’ data and when would you use this method of data collection?

Working in pairs, one student observes an animal every **10 seconds** and identifies its behavior using the Behaviour Key. The other student uses a timer or counts the 10 second intervals and records their partners’ observations in the table.

<table>
<thead>
<tr>
<th>Species:</th>
<th>Name of observer/s:</th>
<th>Day/Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time:</td>
<td>Sex: M / F</td>
<td>Age: Juvenile / Adult</td>
</tr>
</tbody>
</table>

**Weather:** Sunny/Overcast/Raining  Hot/Warm/Cold  Still/Windy  

**Individual observed:** (Distinguishing marks, size, colour, features, scars, and tattoo)

<table>
<thead>
<tr>
<th>Individual observed:</th>
<th>1.</th>
<th>11.</th>
<th>21.</th>
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<td></td>
<td>2.</td>
<td>12.</td>
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<td>10.</td>
<td>20.</td>
<td>30.</td>
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</table>
Post-exursion

Back at school your teacher will assist you in interpreting the data collections you have done. You may be asked to use them to complete a SAC task such as an analysis of data.

Discussion

a. Describe the data you have collected and note any trends or outliers you have observed.

b. Note any challenges that arose during data collection – how could you overcome these?

c. What are some factors that might have affected the data you obtained today?

d. What is the next step or direction for further research or recommendations for the keepers?

Conclusion: Relate back to original research question and compare your results with the prior knowledge you have collected using Dr Sally Sherwin's Activity Budget diagrams.
Appendix 1 – Wild Orangutan Activity Budgets

**ADULT WILD MALE**
- Wild Resting: 56%
- Wild Active: 44%

**WILD ADULT FEMALE**
- Wild Resting: 62%
- Wild Active: 38%

**JUVENILE WILD FEMALE**
- Wild Resting: 74%
- Wild Active: 26%
The Melbourne Zoo Learning Experiences Team, respectfully acknowledges the Wurundjeri People, the Traditional Custodians of the land on which we work, live and learn. We recognise their continuing connection to land, water and wildlife and pay respect to Elders past, present and emerging.