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| **Minor Award Name** | **Animal Behaviour** |
| **Minor Award Code** | **5N0751** |
| **Level** | **5** |

**Suggested resources to support delivery:**

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| **Theme/Topic** | **Type** | **Relevance** | **Author/Source** | **Web Link** |
| Animal adaptation to suit their environments | Web link | Details the processes through which evolution occurs. | berkeley.edu  University of California Museum of Palaeontology, | <http://evolution.berkeley.edu/evolibrary/article/evo_14> |
| Web link | Documentary detailing how Darwin came up with his theory of evolution through natural selection. | David Attenborough | <http://www.dailymotion.com/video/xsxubk_charles-darwin-and-the-tree-of-life-david-attenborough_shortfilms> |
| Web link | Information on terrestrial, marine and freshwater biomes and the adaptations of the plants and animals found there. | Untamed Science | <http://www.untamedscience.com/biology/biomes/> |
| Natural groupings of animals | Web link to PDF | Describes social and solitary behaviour in a variety of animals and explains the factors affecting animal groupings. | [web.pdx.edu](http://web.pdx.edu/~zelickr/animal-behavior/lecture-outlines/lectures2013winter/LS16-ch13-social-behavior-1.pdf)  Portland State University | <http://web.pdx.edu/~zelickr/animal-behavior/lecture-outlines/lectures2013winter/LS16-ch13-social-behavior-1.pdf> |
| Keeping animals in captivity | Web link | Gallery of zoo animals exhibits from around the world | Zoolex Zoo Design Organisation | <http://www.zoolex.org/> |
| Web link | List of Association of Zoos & Aquariums’ Animal Care Manuals which detail enclosure size, barrier types, substrates, water features etc. | Association of Zoos & Aquariums | <https://www.aza.org/animal-care-manuals/> |
| Web link | Documentary entitled ‘Zoochosis – The living conditions of animals in captivity’. Also useful when covering Stereotypic behaviour. | The Documentary Network | <https://www.youtube.com/watch?v=EyFOUGppHco> |
| Courtship behaviour, reproduction and nurturing strategies | Web link | Video footage of Birds of Paradise Courtship spectacle | BBC Earth | <https://www.youtube.com/watch?v=nWfyw51DQfU> |
| Web link | Video footage of Mating rituals of giant cuttlefish | BBC Worldwide | <https://www.youtube.com/watch?v=fR7Dqf0vzzQ> |
| Web link | Clip from the BBC’s Life in the Undergrowth series showing leopard slugs mating. | Unireality channel on YouTube | <https://www.youtube.com/watch?v=wG9qpZ89qzc> |
| Web link | Clip from the BBC’s Wildlife on One showing praying mantis courtship and mating. | BBC Earth | <https://www.youtube.com/watch?v=Os3OBJSlpUc> |
| Web link | Explains processes involves in earthworm reproduction. | Walter Jahn | <https://www.youtube.com/watch?v=KbhjqMngGz4> |
| Web link | Video footage of Mouthbrooding Cichlids of Lake Malawi | EarthTouch TV | <https://www.youtube.com/watch?v=X9z5tXl0SCk> |
| Web link | Clip from the BBC’s Journey of Life series. The clip entitled ‘Modern Dad’ needs to be selected from the menu bar (which contains many examples of parental care). | bbc.co.uk | <http://www.bbc.co.uk/nature/adaptations/Allomothering#p00f28jd> |
| Juvenile Behaviour | Web link | Describes Classical Conditioning and includes illustrations.  Printable PDF is available in web link. | Richard Hall & ISDC  Missouri University of Science & Technology | <https://web.mst.edu/~psyworld/general/> |
| Web link | Describes Operant conditioning with illustrations. Also contains comparison to classical conditioning and links to another article on this topic. | Jason Goldman, Scientific American | <https://blogs.scientificamerican.com/thoughtful-animal/what-is-operant-conditioning-and-how-does-it-explain-driving-dogs/> |
| Web link | Short documentary on the seminal work of Konrad Lorenz. Covers innate behaviour, learning and imprinting. Also links to communication and nurturing strategies. | Biophily2 channel on YouTube | <https://www.youtube.com/watch?v=IysBMqaSAC8> |
| Predator/Prey Interactions | Web link to PDF | Detailed resource covering predator prey relationships including trophic levels, prey defence mechanisms, predator adaptations and hunting strategies. | Royal Saskatchewan Museum | <http://royalsaskmuseum.ca/pub/Lesson%20Plans/Resources/Predator%20and%20Prey%20Adaptations.pdf> |
| Web link | Describes a classroom activity where learners take on the roles of predators and prey. | Nick Baumgart, Michigan State University | <http://msue.anr.msu.edu/news/environmental_games_and_activities_predator_prey_relationships> |
| Response to Stimuli | Web link | Video showing reflex actions and learned behaviour in farm animals. | Association for the Study of Animal Behaviour | <https://www.stem.org.uk/resources/elibrary/resource/33827/stimulus-response> |
| Navigation | Web link | Photo gallery with accompanying explanations of Animal Navigation. | National Geographic | <http://ngm.nationalgeographic.com/1991/06/animal-navigations/amos-photography> |
| Homing behaviour | Web link | Short clip from the BBC series ‘Extraordinary Animals’ entitled ‘How do homing pigeons get home?’. | BBC Earth | <https://www.youtube.com/watch?v=Wl0Ii29XmNk> |
| Migration | Web link | Detailed resource covering which animals migrate, why they do so and the cues they use. | Silke Nebel | <http://www.nature.com/scitable/knowledge/library/animal-migration-13259533> |
| Web link | Video footage of wildebeest migration. | National Geographic | <https://www.youtube.com/watch?v=HYM6LqDJLiM> |
| Handling animals | Book chapter | Chapter 1 of Veterinary Nursing textbook (3rd edition).  Contains information on canine and feline body language and facial expression, handling and restraint methods and equipment use. | D.R. Lane & B. Cooper (eds) | <http://www.abebooks.com/servlet/BookDetailsPL?bi=17397210828&searchurl=sortby%3D17%26an%3DLane%2BBSc%2528Vet%2BSci%2529%2B%2BFRCVS%2B%2BFRAgS%252C%2BDenis%2BRichard> |
| Web link | Discusses the various vocalisations cats use in addition to information on their body language and facial expressions. | The Humane Society of the United States | <http://www.humanesociety.org/animals/cats/tips/cat_communication.html> |
| Web link | Tutorial guide to handling small mammals | AHWLA (Assessing the Health and Welfare of Laboratory Animals),  Newcastle University | <http://www.ahwla.org.uk/site/tutorials/BVA/BVA01-Title.html> |
| Communication | Web link | Documentary entitled ‘The Evolution of Animal Communication’. It covers a wide variety of communication types including chemical communication in ants, deceptive chemical communication between squirrels and rattle snakes and vocal communication in fish, whales, wolves and chimpanzees. | National Geographic | <https://www.youtube.com/watch?v=-Eqen85gG00> |
| Web link | Information on signal modalities and signal functions. Contains illustrations. | Erin Gillam | <http://www.nature.com/scitable/knowledge/library/an-introduction-to-animal-communication-23648715> |
| Stereotypic behaviour | Web link | Explains different categories of Abnormal Repetitive Behaviours including stereotypic behaviour. The author gives permission for the photos and videos listed to be used for teaching purposes. | Georgia Mason  University of Guelph | <http://www.aps.uoguelph.ca/~gmason/StereotypicAnimalBehaviour/library.shtml> |
| Web link | Details abnormal and stereotypic behaviour in captive animals. Contains video footage of these behaviours in various zoo animals | Born Free | <http://www.bornfree.org.uk/campaigns/zoo-check/captive-wildlife-issues/abnormal-behaviours/> |
| Web link | Comprehensive review paper entitled ‘Why and how we use environmental enrichment to tackle stereotypic behaviour’  Full PDF of paper is available in this link. | Georgia Mason, Ros Clubb, Naomi Latham & Sophie Vickery | <https://www.researchgate.net/publication/248335199_Why_and_how_we_use_environmental_enrichment_to_tackle_stereotypic_behaviour> |
| Domestication Timeline | Book | A Natural History of Domesticated Animals  2nd edition | Juliet Clutton-Brock | <https://www.amazon.co.uk/Natural-History-Domesticated-Mammals/dp/0521634954/ref=sr_1_1?ie=UTF8&qid=1475850318&sr=8-1&keywords=A+Natural+History+of+Domesticated+Animals> |
| PDF of book chapter | Book chapter entitled ‘Pathways to Domestication’. Details the process of domestication, the characteristics of the animals selected and the changes in their brains, behaviour and genetics. | Melinda A. Zeder | <http://anthropology.si.edu/archaeobio/cm/Zeder%20Geptsetal%202012.pdf> |
| Summarise a behavioural study | Web link | Many academic journals are now either fully or partially Open Access, for example Animal Behaviour, Applied Animal Behaviour Science and Journal of Zoo & Aquarium Research. | Elsevier | <http://www.sciencedirect.com/science/journal/00033472> |
| <http://www.sciencedirect.com/science/journal/01681591> |
| The Journal of Zoo and Aquarium Research | <http://www.jzar.org/jzar/index> |
| Web link | Google scholar is useful to find scientific papers and links to the PDFs will be listed if available. This is useful for teachers to find papers for the learners to summarise and also for the learners to access peer reviewed sources for their behaviour project. | Google | <https://scholar.google.com/> |
| Ethological sampling techniques | Web link | Detailed resource that demonstrates how to construct an ethogram and scientifically sample and record animal behaviour. Includes a teacher’s PowerPoint presentation, teacher’s notes, video footage of zoo monkeys and PDFs of their behaviours | Living Links to Human Evolution Resource Centre | <http://www.living-links.org/resources/materials-for-teachers/measuring-behaviour-lesson-plan/> |
| Book | Measuring Behaviour: An introductory guide.  Covers research design, preliminary observations, measures of behaviour, sampling and recording rules, recording media and data analysis. | Paul Martin & Patrick Bateson | <https://www.bookdepository.com/Measuring-Behaviour-Paul-Martin-Patrick-Bateson/9780521535632?ref=grid-view&qid=1501430522598&sr=1-1> |
| Book | Observing Animal Behaviour: Design and Analysis of Quantitative data.  Covers many of the topics of the previous two resources. Chapter 7 in particular address behavioural observations in farms and zoos. | Marian Stamp Dawkins | <https://www.bookdepository.com/Observing-Animal-Behaviour-Marian-Stamp-Dawkins/9780198569367?ref=grid-view&qid=1501430624010&sr=1-1> |
| Web link to PDF | Sample observation sheet for recording animal behaviour. Second page can be used to construct a bar chart. | Zoological Society of London | <https://www.zsl.org/sites/default/files/media/2015-10/KS2%20Behaviour%20study%20booklet%20-%202015_EDUCATION_0.pdf> |
| Project investigating behavioural strategies | Book chapters | Chapter 1 & 2 in Field and Laboratory Exercises in Animal Behaviour.  Chapter 1 details the stages of a research project including hypothesis testing and choosing a study animal and topic.  Chapter 2 details how to present results scientifically and includes a useful worksheet for learners. | Chadwick V. Tillberg, Michael D. Breed & Sarah J. Hinners | <https://www.bookdepository.com/Field-and-Laboratory-Exercises-in-Animal-Behavior-Chadwick-V-Tillberg-Michael-D-Breed-Sarah-J-Hinners/9780123725820?ref=grid-view&qid=1501430703496&sr=1-1> |
| Anthropomorphism | Web link | Guardian newspaper article examining the effect of anthropomorphism on how humans perceive animals. Contains many links to other relevant articles. | Oliver Milman | <https://www.theguardian.com/science/2016/jan/15/anthropomorphism-danger-humans-animals-science> |
| Web link | Documentary entitled ‘A Lion called Christian’ which is useful for exploring the topic of anthropomorphism. | Sam Meddoui channel on YouTube | <https://www.youtube.com/watch?v=EZ-da0AZcRU> |
| Web link | The BBC Natural World documentary entitled ‘A Killer Whale called Luna’ is also useful for exploring the topic of anthropomorphism. Viewing of the two documentaries together is good for class discussion. | UnDFiNed\_ FireDsiRes channel on YouTube | <https://www.youtube.com/watch?v=-YzeOnF1I58> |
| Useful books | Book and Web link | Oxford Dictionary of Animal Behaviour (2nd Edition)  Web link allows public limited access to the book’s content | David McFarland editor | <http://www.oxfordreference.com/view/10.1093/acref/9780198607212.001.0001/acref-9780198607212> |
| Book | Animal Behaviour | David McFarland | <https://www.bookdepository.com/Dictionary-of-Animal-Behaviour-David-McFarland/9780198607212?ref=grid-view&qid=1503495948889&sr=1-1> |
| Animal Behaviour: Mechanism, Development, Function and Evolution | Chris Barnard | <https://www.bookdepository.com/Animal-Behaviour-Chris-Barnard/9780130899361?ref=grid-view&qid=1503495995986&sr=1-1> |
| The Behaviour of Animals: Mechanisms, Function and Evolution | Johan J. Bolhuis and Luc-Alain Giraldeau editor | <https://www.amazon.co.uk/Behavior-Animals-Mechanisms-Function-Evolution/dp/0631231250/ref=sr_1_2?s=books&ie=UTF8&qid=1503496187&sr=8-2&keywords=The+Behaviour+of+Animals%3A+Mechanisms%2C+Function+and+Evolution> |
| Animal Behaviour: An Evolutionary Approach 10th Edition | John Alcock | <https://www.bookdepository.com/Animal-Behavior-John-Alcock/9780878939664?ref=grid-view&qid=1504470396907&sr=1-1> |
| Useful Apps | Web link | Sir David Attenborough’s Story of Life App. Contains over 1000 clips from Attenborough’s career. Available for both Android and Apple. | BBC.com | <http://www.bbc.com/earth/storyoflife> |
| Web link | RB Digital Online Magazines App available through local libraries. Available for Android, Apple and Kindle.  Allows library users to read magazines such as National Geographic, BBC Wildlife, Bird Watching, New Scientist and Science Illustrated. | RB Digital.com | <https://www.rbdigital.com/lgma/service/magazines/landing?> |
| Useful DVDs | DVD | The Life of Birds DVD is useful for many aspects of the module. Four episodes in particular illustrate many topics very well. ‘Signals and Songs’ shows how birds communicate. ‘Finding Partners’ demonstrates bird courtship and reproduction. ‘The Demands of the Egg’ and ‘The Problems of Parenthood’ cover the uniqueness of bird reproduction and how they nurture their young. | BBC Earth | <https://www.amazon.co.uk/Life-Birds-Repackaged-DVD/dp/B00977MLX6/ref=sr_1_1?ie=UTF8&qid=1501670647&sr=8-1&keywords=life+of+birds+dvd> |
| David Attenborough’s Natural Curiosities Series. There are four series to date. In each 30-minute episode two animals that are linked by an evolutionary adaptation are investigated, for example how Emperor penguins and wood frogs survive freezing temperatures and how armoured animals evolved. | UK Gold Services Limited/Humble Bee Films | <https://www.amazon.co.uk/David-Attenboroughs-Natural-Curiosities-DVD-x/dp/B00IN0RSEA/ref=sr_1_2?s=dvd&ie=UTF8&qid=1501761264&sr=1-2&keywords=natural+curiosities> |

**Useful Organisations:**

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| **Name** | **Contact Information** |
| Association for the Study of Animal Behaviour (ASAB) | <http://www.asab.org/> |
| BBC Earth | [**http://www.bbc.com/earth/world**](http://www.bbc.com/earth/world) |
| National Geographic | <http://news.nationalgeographic.com/> |
| British and Irish Association of Zoos and Aquariums (BIAZA) | [**https://biaza.org.uk/**](https://biaza.org.uk/) |
| BBC Wildlife Magazine | [**http://www.discoverwildlife.com/**](http://www.discoverwildlife.com/) |

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