Honours Opportunities for 2026
Environmental and Conservation Sciences

Project title	Description	Supervisor(s)	Start date
Understanding the path of seagrass seedling success for *Amphibolis antarctica* and *Amphiboli griffithii*	The viviparous *Amphibolis* plants develop seedlings on the adult plant. The grappling hook at the base of each seedling enables the seedlings to attach to seagrass, seaweeds, or even hessian, while many of the young plants wash up on beaches around Perth. In this project you will be tracking *Amphibolis* seedlings in the field from the point of release in the meadow to settlement, as well as study seedling movement characteristics in wave and flume tanks. Knowledge around the pathway, and forces needed to keep the seedlings suspended until they find a suitable receptor site will inform seagrass restoration strategies using seedlings in combination with other seagrass planting methods.	Prof. Jennifer Verduin	Flexible
Artificial seagrass beds to maximise seagrass recruitment	Seagrasses are so-called soft engineers and provide ecosystem services such as wave and current reduction, water clarity improvement, sediment stabilisation and, in effect, providing coastal protection. This project will study the use of artificial seagrass to slow down waterflow and thus preparing the site in the lee of the artificial meadow to form a more quiescent and suitable recruitment area for seagrass seeds and seedlings settlement and to stimulate further seagrass growth. In addition to the artificial seagrass, which will be constructed of biodegradable materials, you will be using innovative nano technology to further promote suitable growth conditions.	Prof. Jennifer Verduin	Flexible
Changes in community composition of seagrass epiphytes in response to eutrophication	This project will examine the effects of nutrient enrichment on community composition of epiphytes growing on seagrasses in the Perth metropolitan region. Artificial seagrass units will be deployed within seagrass meadows to examine epiphyte community composition under natural conditions. Additional artificial seagrass units will be set up in aquaria. Some of the lab treatments will receive nutrient enrichment, and some will be controls. Results will be measured by regular monitoring of epiphyte communities on the artificial seagrass units. Cultured epiphyte communities will be compared to those placed in the marine environment, and to actual seagrass epiphyte populations. Experimental treatments will cover a range of nutrient enrichment levels and will be sampled during 2-3 seasons. A focus of the study will be the relative proportion of calcareous (climax) epiphyte species vs. filamentous (nuisance/opportunistic) species.	A. Prof. Mike Van Keulen Prof. Navid Moheimani	Flexible
Coral restoration	Projects are available to explore opportunities for restoration of corals and coral reefs. A range of approaches is possible; details will depend on students' personal interests and funding for field and laboratory work. Field study locations can include Coral Bay/Ningaloo Reef and Bali, depending on funding availability.	A. Prof. Mike Van Keulen	Flexible
Not all reefs are made of coral: ecological value of polychaete reefs	Reef-building polychaete worms form extensive structures in several estuaries in south-western Australia, yet nothing is known about this type of habitat. This project can be focused around a student's interests with topics including reef-mapping, environmental tolerances, habitat for fish and invertebrates and food-resources for predators. Projects will involve fieldwork (boating, underwater video and netting) and provide advice to environmental managers and inform restoration efforts. This project has colloborations with Flinders University and the Department of Water and Environmental Regulation.	Dr James Tweedley	S1 2026

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Future-proofing the fish faunas and health of south-western Australian estuaries	Climate change is having a profound negative impact on the health of estuaries in south-western Australia, leading to unwanted records such as the world's saltiest estuary and most salt-tolerant marine fish. Yet, these systems are crucial habitats for many native fish species and provide feeding areas for migratory birds. In a new project with DPIRD Fisheries we are surveying estuaries from Perth to Esperance to understand how the faunal communities of these estuaries have changed in a drying climate and how the biology of key targeted fish species has responded. Students would have the option to conduct sampling across seven estuaries with DPIRD staff and local indigenous rangers and collect fish and invertebrates. Project options include; 1) biology, distribution and abundance of key fisheries species (e.g. black bream, sea mullet, estuary cobbler, yellowfin whiting), 2) fish and invertebrates communities across the estuaries and 3) historical changes in biology and communities understand the effects of climate change and other human-induced pressures (land clearing, nutrient-enrichment). This project would allow prospective students to work with staff from the Department, gain insights, and showcase their skills to an employer.	Dr James Tweedley	S1 2026 Sampling starting in Nov/Dec
You are what you eat but how big are your teeth?	This is a suite of projects that link the dietary composition of fish species to their functional morphology. The shape and size of physical features, e.g. mouth, teeth and various fins have been shown to influence the types of food a predator can both catch and consume. While most studies on fish diet compare radically different species (e.g. a herbivore vs a carnivore), in this study, we will investigate those species that co-occur and/or have similar morphology or taxonomy. Data are available for a range of groups of fish including 1) benthic sharks and rays from Cockburn Sound, 2) ambush-feeding fish from Cockburn Sound and 3) introduced and native fish in the Swan-Canning estuary.	Dr James Tweedley	S1 2026
Diet of Cobia; Does feeding with sharks change their prey consumption	Cobia are large pelagic fish that can reach 2 m in length and almost 70 kg. They are voracious carnivores, feeding on a range of crustaceans, cephalopods and fish, often engulf their prey whole (see photo). Cobia will follow rays, turtles, and sharks, sneaking in to scavenge whatever is left behind. This project will investigate the diet of these fish in Western Australia, including size-related and schooling differences in diet. 	Dr James Tweedley	Flexible
Invertebrates in the deep: what lives at the bottom of the Swan-Canning Estuary?	Benthic invertebrates are key components of all aquatic systems and provide oxygenation, nutrient cycling and also act as a food source for higher predators. Despite their importance, all our knowledge of these species comes from shallow sand bank habitats. We have several projects available involving sampling of shallow and deeper parts of the Swan-Canning Estuary to investigate what lives in these sediments, do they reflect the marinisation of the estuary as the effects of climate change increase and what does this mean for the health and future of these ecosystems? This project would involve collaborations with the Rivers and Estuaries Team at DBCA.	Dr James Tweedley	Flexible
Steak or Celery? How is climate change affecting the nutrient content of fish and invertebrates?	All animals need food to survive and reproduce, yet while their diet is well-studied, the nutritional content of their prey is unknown. As exotherms, the internal metabolism of (most) fish and invertebrates is influenced by temperature, and part of their energy budget is used to maintain an osmotic balance (i.e. absorbing water and excreting salt). The energy needed to complete these vital functions is expected to increase as estuaries become warmer and saltier with climate change, which not only affects these prey species but also the predators that consume them. This project will involve sampling fish and invertebrates from a range of salinities and looking at their body condition and working out their calorific content with bomb calorimetry. The result will help us understand prey selection in predators and how climate change may influence food webs and ecosystem productivity.	Dr James Tweedley	2026
Fish for the future	A range of projects is available with DPIRD, focusing on fisheries science. Current opportunities on "BOFFFF" i.e. 'big old fat fecund female fish' and their importance in stocks and testing machine learning to age fish.	Dr James Tweedley	Flexible
Elucidating the behaviour of bivalves for use as environmental sentinels	Monitoring the degradation of aquatic environments requires cost-effective approaches. Bivalve molluscs are particularly useful environmental sentinels as they are often sessile or can be contained within a narrow area and respond to stress in a consistent way, i.e. by closing their valves. This study employs innovative technology to monitor the valve activity of several commercially important bivalve species exposed to different environmental and anthropogenic factors, e.g. dissolved oxygen, temperature, salinity and microplastics. This project will provide adequate background for future employment in WA's rapidly growing aquaculture industry.	Dr Alan Cottingham & Dr James Tweedley	Flexible

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Movement and valve behaviour of WA's endemic freshwater mussel	*Westralunio carteri* (Carter's freshwater mussel) is endemic to south-western Australia and was recently added to Australia's list of threatened species. Like other bivalves, *W. carteri* can close its shell during periods of poor water quality, but differs from marine bivalves in that it is mobile and can also ameliorate stress through moving from those conditions. This study explores the movement patterns and valve behaviour of *W. carteri* in its natural habitat to establish its physiological thresholds and provide valuable information for the conservation of this vulnerable species	Dr Alan Cottingham & Dr Steve Beatty	Flexible
Determining the filtration capacity of a 'restored' shellfish reef in WA's most important estuary	With 85% of shellfish reefs lost, these habitats are among the most threatened marine habitats. Because these reefs provide a range of ecosystem services restoration projects are increasing rapidly throughout the world including in the Swan-Canning Estuary. Although a single mussel can filter nine litres of water per hour, the filtration capacity of a reef largely depends on a large range of abiotic and biotic factors. This study aims to elucidate the factors that influence filtration and estimate the filtration capacity of the reef under a range of different scenarios.	Dr Alan Cottingham & Dr James Tweedley	Flexible
Fire, rain and runoff	Wildfires are increasing in frequency and severity globally, particularly in southwestern Australia due to climate change. When wildfires occur, ash is washed into aquatic ecosystems through rainfall and runoff, profoundly deteriorating water quality. While previous research has focused on the impacts of wildfires on terrestrial species, the effects on aquatic species remain largely unexplored. This project will investigate how freshwater fish cope with wildfire ash pollution.	Dr Essie Rodgers	Flexible
Supercharged Shellfish: Exploring Triploidy in Rock Oysters	This exciting research opportunity investigates the benefits of triploidy in rock oysters—an innovative approach that enhances growth rates, meat quality, and resilience to environmental stress. Triploid oysters, which carry three sets of chromosomes, are sterile and can allocate more energy toward growth rather than reproduction. The project offers a unique chance to collaborate with the Department of Primary Industries and Regional Development (DPIRD) shellfish hatchery at Hillarys, combining cutting-edge aquaculture science with hands-on industry experience.	Dr Essie Rodgers	Flexible
Heat-Proof Trout: Investigating Extreme Thermal Tolerance in Rainbow Trout	This project explores how rainbow trout (Oncorhynchus mykiss) cope with rising water temperatures—an increasingly urgent issue in freshwater aquaculture and conservation. By examining physiological and molecular responses to thermal stress, the research aims to identify traits linked to heat resilience. This is a fantastic opportunity to collaborate with the Pemberton Freshwater Fish Hatchery, gaining hands-on experience in fish husbandry and experimental design while contributing to solutions for climate-adaptive aquaculture.	Dr Essie Rodgers	Flexible
Change in the urban and peri-urban distribution of the freshwater mussel *Westralunio carteri*: 1988-2023	This project uses data collected on the distribution and population structure (size frequency) of *Westralunio carteri,* Carter's freshwater mussel, by Robson in 1988. Robson visited a wide range of urban and peri-urban waterbodies, measuring the sizes of mussels before returning them to their habitat. This data was never published, but since 1988, many waterbodies have been affected by the drying climate, changing from perennial to seasonal and others have been affected by Perth's accelerating urban development. In 1988, Robson noted that many waterbodies only had populations of large, old mussels (estimated at ~20y of age) with no smaller or juvenile mussels. Those populations were often those that were inside reservoirs where there were no host fish for larval mussels. It is likely that those populations are now extinct, but no one has checked. Similarly, populations in flowing waters may have been more exposed to extirpation than those in standing waters, because running waters have been more dramatically affected by climate change. In this project, the student will visit all the locations sampled by Robson in 1988, plus additional locations where *W. carteri* is now known to be present and collect size-frequency data. Existing distribution data for potential host fish will be compared with the mussel size frequency data to determine whether reproduction and dispersal may be limited in some populations. The two datasets will be compared and analysed to determine where populations have been lost (and infer why) and where populations have been sustainable (and infer why).	A. Prof. Belinda Robson & A. Prof. Steve Beatty	Flexible

Project title	Description	Supervisor(s)	Start date
Ecology of endemic dragonflies	South West WA has more than 40 species of dragonflies, including many endemic species. However, land use intensification and climate drying have altered their freshwater habitats, but the impacts on dragonfly populations and breeding are unknown. This project will involve sampling streams and wetlands for dragonfly larvae and exuviae to identify which species are breeding where and determine habitat correlates for successful breeding.	A. Prof. Belinda Robson & Dr Edwin Chester	Flexible
The contribution of waterfalls to regional freshwater biodiversity in a flat landscape.	South-western Australia is described as being part of the southern Australian flatlands bioregion. Flat landscapes have fewer waterfalls and fast-flowing riffles in their rivers than do mountainous regions. This can increase the importance of waterfalls for providing fast-flowing habitat. Research in another flat region, western Victoria, showed that waterfalls contained unique species of invertebrates not found elsewhere in rivers. Elsewhere in the world, specialised dragonflies, mayflies and stoneflies have been found living only in waterfalls. Southwestern Australian waterfalls have not yet been examined but may also contain unique species. As our climate dries, waterfalls will be very vulnerable to lower flows and shorter flow periods. They may require special management if they are to retain unique species, but the first step is to determine whether waterfalls do contain species not found elsewhere in the landscape. This project involves fieldwork suited to a single or pair of students. A good level of physical fitness is required for this project, as reaching some waterfalls will require hiking and carrying field equipment.	A. Prof. Belinda Robson & Dr Edwin Chester	mid-year only
The flora and fauna of wheatbelt gnammas and climate change	Gnammas are rock pools at the top of the granite inselbergs scattered across the WA wheatbelt. These gnammas have been found to contain rare species of aquatic plants and to have a much higher invertebrate biodiversity than gnammas in other parts of Australia and the rest of the world. Because gnammas are rainfed and unconnected to groundwater, they are unaffected by the salinisation that afflicts much of the wheatbelt, so they may be refuges from salinity. Little is known about the interactions between species in Australian gnammas or geographical patterns of species distribution. Food web structure in gnammas is also poorly understood. These projects will investigate the role of algae and leaf litter in gnamma food webs through sampling gnammas with naturally occurring differences in leaf litter abundance and describing invertebrate food webs and through experimental manipulation of leaf litter abundance. This project is best suited to a pair of students, to ensure that you have fieldwork companions.	A. Prof. Belinda Robson & Dr Edwin Chester	Only suited for mid-year start and part time enrolment
Life history, diet and environmental tolerances of freshwater insects	Southwestern Australia is a biodiversity hotspot with a unique evolutionary heritage. Many aquatic insects in the region are endemic (found nowhere else) and relicts of cooler and wetter times (i.e. of Gondwanan origin). Compared to southeastern Australia, SWWA has relatively few species of Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies) but a high proportion of endemic species. In contrast, SWWA has quite high diversity and endemism amongst the Odonata (dragonflies, damselflies), Coleoptera (water beetles) and Chironomidae (Diptera). Little is known about the life histories, diet or environmental tolerances of these insects. A few studies show that some species have quite low tolerance of heat, whilst other species have shown surprising adaptations to withstand drying. Yet, knowledge of species life histories is essential for effective conservation. Many of these taxa will have important roles in the ecology of waterbodies (e.g. as shredders or algal grazers) but we do not know which taxa fulfil these roles nor how they will respond to continuing warming or drying. Within this topic, there are many options for students to choose which insect group they would like to study. Projects will involve field sampling but could also involve laboratory rearing of insect larvae and experiments to examine responses to warming and drying. This project involves field and lab work and is suited to 1 or more students.	A. Prof. Belinda Robson & Dr Edwin Chester	Flexible
Life history and environmental tolerances of freshwater ostracods	Ostracods are small bivalve crustaceans living in freshwaters in southwestern Australia. Little is known of their ecology, yet they may have large populations and high diversity. Other studies show that ostracods may be sensitive to salinity and show differing responses to wetland drying. For example, within one common family (Cyprididae) some species may enter dormancy as adults in drying wetlands, reviving quickly once wetlands refill; in other species, adults die but leave behind desiccation-resistant eggs that hatch once wetlands refill. Some species appear to show delays in hatching, but the cues for hatching are not known. Given the likely importance of these animals in aquatic food webs, we need to know more about their ecology and life histories. This project involves field sampling and rearing ostracods in the laboratory under different conditions, to investigate responses to drying, warming and cues for egg hatching. This project involves field and lab work and is suited to 1 or more students.	A. Prof. Belinda Robson & Dr Edwin Chester	Flexible

Project title	Description	Supervisor(s)	Start date
Does the parasite load of exotic freshwater snails interfere with their ability to survive drying?	The most common freshwater snail in Perth wetlands is *Physa acuta*. It is an exotic species that has developed an unusual ability here – it can withstand wetland drying, which it does not appear to be able to do elsewhere in its range. However, an experiment showed unexpected death rates in aestivating snails from some wetlands and not others, suggesting that parasite infestation might be the cause. Exotic species often bring unwelcome passengers to their new habitat that may then spread to native species, and few native gastropods are now found in urban wetlands. This project will involve field collections of freshwater snails and conducting laboratory experiments involving drying. Snails will need to be dissected for parasite infestation and the parasites identified and counted and related to snail survival of wetland drying.	A.Prof Belinda Robson & Dr Storm Martin	Mid-year for full-time enrolment, flexible for part time.
Biodiversity of salt lakes	Salt lakes represent one of the most important inland environments in Australia, yet they are poorly studied. They contain unique and diverse communities of invertebrate. Our research group is studying these invertebrates with the goal of generating base-line information that can be used to help manage salt-lake environments, which are under threat from a range of anthropogenic stressors. We are using molecular tools to review the existing taxonomy of groups, and find new species. We are also documenting the distribution and environmental tolerances of species, and studying their population structures, genetic diversity and evolutionary histories and in the process testing ecological and evolutionary theories. Join the fun – honours projects on brine shrimp, *Coxiella* gastropods, giant ostracods, small ostracods, cladocerans and other salt-lake taxa are available.	Dr Jennifer Chaplin	Flexible
Brine shrimp invasion	Invasive species are among the most widespread and damaging environmental threats worldwide. The results of previous studies suggests that two species of *Artemia* have started to invade salt lakes on the Australian mainland, but associated details are sketchy. This project will use genomic data to investigate the origin and pattern of spread of exotic brine shrimp (*Artemia* spp.) in Australian salt lakes. This is a crucial first step in understanding the impacts that these exotic brine shrimp may have on the rich endemic invertebrate fauna, including native brine shrimp (*Parartemia)* found in these salt lakes.	Jennie Chaplin & Brenton Pember	S1 2026
Genetic connectivity of the Australian Herring (*Arripis georgianus*)	Understanding connectivity between the different 'populations' of exploited marine species is paramount to successful fisheries management. The Australian Herring (*Arripis georgianus*) is a commercially harvested indicator species as well as a widely targeted recreational species of finfish in Western Australia. Previous genetic work suggests that there are no barriers to gene flow in this species across its range. However, genomic methods capable of detecting genetic structure with far greater sensitivity and power are now available. This project will use genome-wide single nucleotide polymorphisms (SNPs) to assess the genetic connectivity of the species across its entire geographic range	Brenton Pember & Jennie Chaplin	S1 2026
Are turtle nesting refuges effective?	The southwestern snake-necked turtle (Chelodina oblonga) is endemic to southwestern Australia and is declining in urban areas, due to low recruitment. Nest predation—particularly by red foxes (Vulpes vulpes)—is a major factor. Artificial nesting mounds and refuges have proven effective for some turtle species, but others avoid them. This project will assess whether nesting refuges are a viable conservation tool for C. oblonga. The City of Cockburn has installed 10 nesting refuges across three wetlands—North Lake Ponds, Jubilee Lake, and Boodjar Mooliny. Wildlife cameras will be used to monitor refuge use by turtles and predator activity. The project will also investigate how factors such as habitat type, distance from water, and human or avian presence influence refuge effectiveness.	Dr Jane Chambers & Dr A. Prof. Steve Beatty	S2 2025
Turtle conservation	Climate change is increasing temperatures in southwestern Australia, the home of the southwestern snake-necked turtle (*Chelodina oblonga*). This project investigates how land cover and use around a wetland affect temperature of the soil and surrounds. Increasing temperatures are a problem for nesting females and hatchlings returning from the nest as well as hatching success but may be mitigated with appropriate habitat restoration. This project will make direct management recommendations as to the effect and potential solutions to urban warming	Dr Jane Chambers & Dr A. Prof. Steve Beatty	S2 part-time enrolment recommended

Project title	Description	Supervisor(s)	Start date
Environmental effects on abundance and demographics of Swan Canning Estuary dolphins amid climate change	Analysing an existing photo-identification data set of 14 years for dolphin abundance, survival and emigration rates using capture-recapture approach and relating emerging patterns to environmental changes. There is an opportunity to join fieldwork effort, but the project does not rely on data collection.	Dr Delphine Chabanne	S1 2026
Abundance of dolphins on the Kwinana Shelf, Cockburn Sound	Analysing an existing photo-identification data set for dolphin abundance using the capture-recapture approach. Additional to the project, there is an opportunity to join fieldwork effort in a different area.	Dr Delphine Chabanne	S1 2026
Calf survival and mortality in the Swan Canning Estuary dolphin community: Insights from a long-term photo-identification dataset	This project investigates the survival and mortality of dolphin calves in the Swan Canning Riverpark using a long-term photo-identification dataset spanning from 2011 to the present. While juvenile and adult dolphins have been the focus of previous demographic studies, calf survival remains poorly understood. The study will quantify calf births and deaths, identify known causes of mortality, and explore patterns in unknown or suspected deaths. Findings will contribute to understanding early-life vulnerability in an urban estuarine environment and inform future conservation and management strategies.	Dr Delphine Chabanne	S1 2026
Tidal influences on dolphin live strandings in the Peel-Harvey Estuary	Relating historical tidal records, including residual tide, in multiple measurement locations to dolphin live stranding events in the Peel-Harvey Estuary. There is an opportunity to join fieldwork effort, but the project does not rely on data collection.	Dr Krista Nicholson	Flexible

Project title	Description	Supervisor(s)	Start date
Seasonal movement patterns of southern eagle rays (*Myliobatis tenuicaudatus*) in a dynamic temperate estuary	Understanding animal/environment interactions is crucial to predict how changing environments lead to changes in animal distributions. Environments with pronounced spatio-temporal clines in conditions are most likely to experience concomitant change in the distribution of fauna. Amongst the most dynamic ecosystems, estuaries can feature significant variation in environmental conditions (e.g. salinity, water temperature) over small spatial and temporal scales. The Walpole-Nornalup Estuary system (WNE), is a unique twin-basin estuary known for its high biodiversity, ecological, cultural and social significance, and relatively pristine condition. Unlike most estuaries on the south coast, the WNE is permanently open to ocean via narrow entrance channel. As such, it receives substantial marine inputs and has a high diversity of marine species, including a number of sharks and rays. Acoustic telemetry has become a common method to study movement dynamics of nearshore species, especially those in estuaries, in order to quantify the role that estuaries play in the residency and site-fidelity patterns in response to the dynamic environmental conditions within the estuary. These patterns can change as an animal increase in size or is exposed to various tidal, diel and seasonal cycles throughout the year. This project aims to determine, (i) the distribution of southern eagle rays within the WNE and if it changes over both short (daily) and long (seasonal) time periods, (ii) the level of movement of between the estuary and ocean, (iii) which environmental factors determine these distribution and movement patterns and (iv) what are the likely consequences of warming and drying across SW Australia for the species? The student will be provided with an existing unpublished data-set from the Department of Primary Industries and Regional Development (DPIRD), comprising of 23 eagle rays tracked in an array of 28 receivers within the WNE. The student will receive training from Murdoch and DPIRD supervisors on how to analyse acoustic tracking data-sets using contemporary modelling techniques. The student will have the opportunity to both work in an active research group (www.peaclab.org), as well network with government fishery scientists as part of this project.	Dr Adrian Gleiss & Dr James Tweedley	S1 2026
Developing options and strategies for sustainable management of the Murdoch Farms	Murdoch University has two farms under its management, and currently the University is building a strategy that aims to make best use of the farms for teaching and research, while aligning their management with key elements of the University's Sustainability Strategy, Moorditj Boodja. This honours student would be working closely with the Sustainable Agriculture Specialist A. Prof Hanabeth Luke, with some flexibility in how this research project can be designed. Multi-disciplinary research ideas are encouraged. Topics such as 'the role of land manager perspectives in land-management goals and outcomes', is one suggested project idea.	Hanabeth Luke	Flexible
Exploring drivers of decision-making in farming and natural resource management	Landholder decisions are driven by many complex, interwoven factors. This honours project would link with a national study that is surveying rural landholders across Australia to enable an exploration of specific or general factors driving decision-making around best-practice agriculture. Within this, students may develop their own research question, which may be more general, or more specific, such as 'how does farmer wellbeing relate to best-practice farming?', or what social factors are driving soil-health best-practices in the context of the Northern Wheatbelt? There is opportunity to pursue mixed-method research, which may include running workshops, focus groups or interviews to further interrogate patterns occurring in the national data set. Or, an application of data tools to further explore the quantitative data set.	Hanabeth Luke	Flexible
Climate change projections from the latest CMIP6 models	The Coupled Model Intercomparison Project (CMIP) phase 6 is the latest round of global model projections of future climate change as used by the Intergovernmental Panel on Climate Change (IPCC). A vast family of model simulations exist, from which a number of research questions can be tailored according to the student's interests.	A. Prof. Jatin Kala	Flexible
High resolution modelling of extreme weather events	A number of projects can be tailored to better understand different types of extreme weather events to better understand their underlying atmospheric dynamics using high resolution atmospheric model simulations.	A. Prof. Jatin Kala	Flexible

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Observations and simulations of near surface and subsidence inversions in southwest Western Australia.	Near surface temperature inversions occur typically in the morning after cold cloud-less nights, and this can lead to poor air quality, especially if there were bushfires the day before. Subsidence inversions occur further aloft and can also be conducive to poor air quality. This project will examine the frequency and intensity of these temperature inversion using both observations and models to better understand how these might change in the future.	A. Prof. Jatin Kala	Flexible
Regional climate projections for southwest Western Australia	Under the new Climate Science Initiative of Western Australia, new regional climate projections for WA are being produced at 4 km resolution, by dynamically downscaling the latest CMIP6 global climate models. A number of projects are possible around changes in temperature and precipitation extremes from these new regional climate projections.	A. Prof. Jatin Kala	Flexible
Spatial ecology and remote sensing	A variety of project possibilities exist in the fields of spatial ecology or environmental remote sensing, covering topics such as habitat mapping and modelling, spatial planning for ecological connectivity, spatial conservation planning, detection of ecological disturbances and recovery processes, and more.	Dr Margaret Andrew	Flexible
Ecology for conservation	A variety of research project possibilities exist in the field of plant community ecology and its application to ecological restoration. With my help, students are encouraged to develop projects to address real-world problems. Students can work collaboratively with industry partners including Kings Park Science.	Prof Rachel Standish	Flexible timing
Can we return fauna to revegetation sites by addition of refuges?	Coarse woody debris (CWD) is a critical functional and structural component of forest and woodland ecosystems, providing habitat for many species, and is an important consideration in forest and woodland restoration (Craig et al. 2014). Parts of Chingarrup Sanctuary in southwest Western Australia were revegetated 20 years ago. About 5 years after planting, piles of large mallee roots were added to the landscape as potential fauna habitat and seed accumulation sites. This project will investigate small vertebrate activity around ~50 of these coarse woody debris piles to determine their value for return of fauna to revegetated landscapes. You will use cameras to identify fauna species present, and compare their activity with landscape features. *Craig MD, Grigg AH, Hobbs RJ, Hardy GES. 2014. Does coarse woody debris density and volume influence the terrestrial vertebrate community in restored bauxite mines? Forest Ecology and Management 318:142-150.*	Trish Fleming and Tenaya Duncan	The project suits a mid-year start to maximise reptile captures
Quenda are fussy about their fungi	A recent study lead by Murdoch University found that 80% of fungi identified in quenda scats were unclassified on global genetic databases. This indicates that they have never been genetically described before, representing a huge gap in knowledge. This project will compare fungi consumed by quenda with a broader sample collected form the environment to test the hypothesis that quenda are fussy eaters.	Trish Fleming & Dr Shane Tobe	Flexible
Conservation genetics	All living things have DNA. Genomic tools can be used to provide information about plants and animals to improve their conservation that are difficult to get in other ways. Potential projects could examine genetic health, dispersal, relationships between individuals and populations and how this relates to the environment or even the diet of wildlife. Projects will build laboratory and bioinformatic skills and potentially work with industry partners.	Linda Neaves	Flexible
Animal Conservation and Population Biology	Many of our Australian native species are found nowhere else in the world, and yet are threatened with extinction. The success of conservation measures depends on having a good understanding of species biology and ecology, but for many species this is lacking. Possible honours projects exist in the study of terrestrial vertebrates, particularly on our native mammals. These studies would examine aspects of population biology and species ecology, including projects collaborating with industry to improve the scientific methods for monitoring these species.	Kate Bryant	Flexible

Project title	Description	Supervisor(s)	Start date
The millipede that moults its manhood	The Portuguese millipede (*Ommatoiulus moreleti*) offers a rare opportunity to test and extend scientific models of life-history evolution. Unlike most animals, males of this invasive species can repeatedly switch between sexually mature and immature states across moults, defying the conventional view that sexual maturation is an irreversible process. This project will investigate the genital morphology of males at various development stages (stadia) to identify morphological variation in successive reproductive phases.	Prof. Melissa Thomas, Dr Nicholas Wu, Prof Leigh Simmons	This project suits a mid-year start to coincide with species seasonality
Chemical Phylogenies: Using Chemical Profiles for Arthropod Identification	Chemical traits offer a powerful but underutilised window into the evolution, ecology, and identification of arthropods. Many arthropod groups produce highly diverse and lineage-specific chemical compounds for defence, communication, and reproduction. These compounds can act as stable phylogenetic markers and provide unique chemical "fingerprints" for species identification. This project will focus on a particular group of arthropods to investigate the phylogeny of their chemical profiles. By combining analytical chemistry (e.g. GC–MS, LC–MS), and phylogenetic comparative methods, the research will explore how chemical diversity evolves across lineages and assess the reliability of chemical profiles as tools for rapid and accurate species identification.	Prof. Melissa Thomas, Dr Todd Gillam, Dr Volker Framenau	Flexible
Predicting and conserving habitat for short-range endemic invertebrates	Short-range endemic (SRE) invertebrates are uniquely vulnerable to habitat loss and environmental change due to their restricted distributions. This project will focus on a selected group of SREs and use geospatial modelling to investigate habitat similarity and environmental drivers that shape their distributions. By modelling the relationship between environmental variables and known occurrence records, the study will predict areas of suitable habitat and identify factors limiting species' ranges. The outcomes of this project will provide both fundamental insights into the processes governing SRE persistence and inform conservation planning and environmental management in biodiversity hotspots.	Prof. Melissa Thomas, Dr Sam Lymber, Dr Volker Framenau	Flexible
Lights, Camera, CritterPic! Evaluating a Smart Camera System for wildlife monitoring	CritterPics are new, automated, AI-based imaging units developed to capture high-quality photographs of small terrestrial vertebrates that are often under-detected by conventional camera traps. Their design enables close-range imaging and standardised lighting, offering potential advantages for detecting and identifying small-bodied vertebrate species. This project will evaluate the efficacy and reliability of CritterPic units under field conditions. Specifically, it will quantify detection rates, false triggers, and image quality, and compare performance with conventional wildlife camera traps. The study will further investigate factors influencing detection success, including taxa (e.g. reptiles, mammals), target size and movement behaviour of the animals. Findings from this project will help determine the suitability of CritterPics for improving biodiversity monitoring of small vertebrates.	Prof. Melissa Thomas and Prof. Trish Fleming	Flexible
Urban owls in Australia's Southwest	The urban landscape presents multiple challenges for birds and other biodiversity to survive and flourish. Owls play an important ecological role in managing lower order species and pests. Despite being an iconic and much-loved taxonomic group, a review of the presence and abundance of owls in the Southwest of Australia has not been undertaken for more than two decades. This project will draw on desk-top and/or field-collected data to build a picture of the distribution and abundance of owls in the Greater Perth region and how different urban attributes might predict their population trends.	Dr Rochelle Steven	Flexible
Farm cats in Greater Albany	Cats on farms can present a management conundrum to conservation practitioners and farmers alike. For the South Coast of Western Australia, this is particularly poignant, with multiple highly threatened bird and mammal species at imminent risk of extinction due to habitat loss and degradation and predation by feral cats. This multidisciplinary project will explore the barriers and obstacles to effective cat management (or control) on farms in the Greater Albany region with a view to improving conservation-focused practices across the land management sector. This is a collaborative project working with Oyster Harbour Catchment Group and will require a certain amount of travel, if they student is based in Perth	Dr Rochelle Steven	Flexible
People and nature – multiple project opportunities	My research expertise covers multiple facets of the relationship between people and the non-human environment. Connections and interactions may be positive or negative for both people and other species. I lead research projects that explore the drivers and predictors of these interactions and seek to develop strategies and mechanisms that promote better co- existence between all species at varying spatial scales. Research projects might explore questions related to nature based tourism and recreation, public participation in conservation, resolving human-wildlife conflicts, promoting conservation on private land, managing protected areas for maximum biodiversity benefit, and many other aspects of multidisciplinary conservation. If you are interested in this area of research, please contact me to discuss specific project options that will suit your own interests and analytical strengths.	Dr Rochelle Steven	Flexible

Project title	Description	Supervisor(s)	Start date
Environmental policy implementation	In recent years, MSc students have examined the effectiveness of Australia's implementation of a range of international conventions such as MARPOL, Ramsar Convention and CITES. Projects are available to extend this work to include other international and regional environmental agreements. In addition, the application and implementation of ecologically sustainable development principles within Australian and Western Australian environmental law and decision-making can be studied using a similar framework. Projects of this nature could review the precautionary principle, the use of environmental offsets, etc.	Dr Oliver Fritsch	Flexible timing
Public participation and collaboration in managing Swan River	The participation of citizens, industry, environmental movements and other non-state actors is commonly associated with better environmental policy outputs and a swifter implementation of policies and management plans. Projects are available to analyse the validity of such claims in the context of Swan River. To this end, students will carry out research interviews with policy makers and stakeholders, analyse policy documents and look at a number of other sources. Travel expenses can be covered.	Dr Oliver Fritsch	Flexible timing
Environmental Defender's Office of Western Australia	The EDOWA is an important organisation to offer legal support to citizens and environmental movements in Western Australia. With a small number of staff only and limited resources, EDOWA relies on a network of dedicated environmental lawyers who provide voluntarily and for free legal analyses to win environmental cases. This project takes a novel perspective to look at lawyers as environmental activists. The student will interview EDOWA staff to understand better the conditions under which EDOWA operates and then utilises both research interviews and surveys to explore the wider network of professional lawyers supporting EDOWA. Travel expenses can be covered.	Dr Oliver Fritsch	Flexible timing
Sustainability in regulatory impact assessment	This project will analyse the role of environmental protection and sustainability in Commonwealth and state regulatory impact assessments/statements. Attention: RIA/RIS, not environmental impact assessment (EIA). Large-N and computer-assisted analysis of RIA/RIS documents.	Dr Oliver Fritsch	Flexible timing
Relationship between EPA and WA government departments	This project will explore the day-to-day working relationship between the Environmental Protection Authority and government departments in WA. This includes areas such as environmental impact assessment and environmental regulation. Methods: research interviews with EPA/gov staff, document analysis etc. Travel expenses can be covered.	Dr Oliver Fritsch	Flexible timing
Nature/People interactions: Determining opportunity for people to interact with wildlife across Perth	This survey will ask people which native plant and animal species (a select group) they have seen in their suburb. Supported by data on access to green space/natural areas and from Atlas of Living Australia, this project will seek to determine how people's interaction with wildlife is influenced by where they live in the Perth Peel region. This information will be used to prioritise the creation of wildlife habitat, naturelinks and engagement programs spatially across Perth.	Dr Jane Chambers & A. Prof. Michael Hughes	Flexible timing
High-value products from saline microalgae	Freshwater is a finite resource and should not be used solely for human consumption or for agriculture. On the other hand, we need to generate products from marine environment. In this project, the potential of using saline algae as a source of high value product will be assessed. Depending on the interest of the Honours candidate, the project can be designed for: 1) bio-prospecting, 2) mass cultivation and scaling up, 3) harvesting and down-stream processing, 4) process design, 5) techno-economics or 6) life cycle analyses.	Prof. Navid Moheimani	Flexible timing

Project title	Description	Supervisor(s)	Start date
Milking microalgae for generating hydrocarbon	There is worldwide interest in developing algal biofuel. One main reason for the lack of success so far in producing a sustainable transport fuel from microalgae is the high cost of biomass processing, especially dewatering and oil extraction. There is also a significant cost involved in the energy content of the nutrient fertilisers required for biomass production. Non- destructive oil extraction or "milking" from algae biomass has the potential to bypass all these hurdles. Using a "milking" strategy means that there would be no need for biomass dewatering, breaking cells for oil extraction and addition of nutrients to the culture, resulting in a significant reduction in energy and fertiliser cost involved in production of biofuel from algae. We make use of the natural tendency of *Botryococcus* to produce external hydrocarbon in the extracellular matrix. The project can be designed for: 1) bioprospecting, 2) cultivation or 3) optimisation of hydrocarbon extraction.	Prof. Navid Moheimani	Flexible timing
Taxonomy and systematics of Australian spiders	Did you know that only some 4,000 of an estimated 20,000 species of spiders are currently described in Australia? The Harry Butler Institute employs the most productive laboratory on spider taxonomy and systematics in Australia, and we can help you on your path of species discovery! We use a host of modern taxonomic methods such as whole-genome sequencing, scanning-electron microscopy and multi-focal Automontage imagery to document the vast biodiversity of Australian spiders. Whilst we have personal preferences for particular spider groups, such as wolf spiders (Lycosidae), orb-weaving spiders (Araneidae), and mouse spider (Actinopodidae), the choice of spider species and genera is yours! Maybe you will find the next new species of Peacock Spider!	Dr Volker Framenau, Dr Pedro Castanheira, Dr Andre do Prado	Flexible timing
Light management technologies for increasing algal photobioreactor efficiency	The ever-increasing demand for food, valuable bio-based compounds and energy has triggered the development of novel and sustainable resources. Microalgae are a promising source of sustainable high-value products. The need for light (suitable intensity and wavelength) and temperature control in microalgal cultures remains the most significant challenge limiting their photosynthetic efficiency and productivity. Appropriate light management has the potential to concurrently maximize photosynthetic productivity and control the temperature of microalgal photobioreactors resulting in a reduction in overall production costs. In this Honours project the candidate will examine suitability of a solar control infrared blocking film (IRF) applied to an algal flat plate photobioreactor to block excessive non-photosynthetic photons and regulate the temperature profile of a selected microalga.	Prof. Navid Moheimani	Flexible
Algal wastewater treatment	Due to potential benefits of microalgae production incorporated into waste streams, studies into the use of microalgae culture as a treatment for wastewater have been ongoing for several decades. So far however, results have failed to bring about widespread applications for the industry primarily due to concerns regarding the economic and environmental sustainability associated with pre-treatment or dilution of the waste before growth of microalgae. In this study, the growth of most dominant algal isolates on domestic anaerobic digestate will be assessed. The use of biomass as a source of feed (animal or aquaculture) or bio-fertiliser will also be assessed.	Prof. Navid Moheimani	Flexible
Novel Food Ingredient from Microalgae: A Sustainable Approach to Enhancing Nutrition and Taste	Microalgae have emerged as a promising source of sustainable and nutritious food ingredients, including proteins and sweeteners. Sweet proteins derived from microalgae are a relatively new and exciting development in the world of natural sweeteners. These proteins offer the potential to replace traditional sugars and artificial sweeteners in various food and beverage products while providing sweetness without the associated calories or negative health effects. This research project aims to explore the identification development of a novel food ingredient derived from microalgae to enhance the nutritional and sensory properties of food products while promoting environmental sustainability. This project will involve the isolation, characterization optimization of microalgal strains for the production of novel food ingredients. The nutritional profile, stability and sensory evaluation of the novel ingredient, including protein content, amino acid composition, and potential bioactive compounds from the targeted microalgae will also be assessed as part of this work.	Dr Ashiwin Vadiveloo	Flexible
Utilizing Wastewater-Grown Microalgae as a Sustainable Biofertilizers for Enhanced Crop Productivity	Wastewater-grown microalgae as biofertilizers offer a sustainable and environmentally friendly approach to nutrient recycling, wastewater treatment, and agricultural improvement. This research project aims to investigate the feasibility and effectiveness of wastewater-grown microalgae as biofertilizers for common food crops such as tomato and lettuce. This project will involve growth trials to assess the effectiveness of microalgae-based biofertilizers on different crops, comparing them with conventional fertilizers. Moreover, it will also investigate the impact of wastewater grown algal biofertilizer on nutrient release, water quality and soil heath.	Dr Ashiwin Vadiveloo	Flexible

Project title	Description	Supervisor(s)	Start date
Meta-analysis in ecology and evolution	Various projects are available to explore broad-scale ecological and evolutionary patterns and general principles, such as species responses to environmental change, patterns of biodiversity, or evolutionary trade-offs, via meta-analysis. Students will gain valuable skills in systematic review methodology, statistical analysis (mainly using *R*), and scientific communication, with the potential to contribute to high-impact publications and evidence-based conservation or policy recommendations. This research pathway is ideal for students seeking to develop strong analytical capabilities and contribute meaningfully to the advancement of ecological and evolutionary science.	Dr Nicholas Wu	Flexible
Assessing how passive trap designs affect internal microclimates for small terrestrial fauna	Capturing small terrestrial vertebrates is an essential tool in environmental monitoring programs and wildlife impact assessments. Despite the widespread use of passive traps, there has been little systematic evaluation of how trap design influences the microclimate conditions experienced during capture, and thus the potential heat and dehydration risks for any fauna captured. This project will involve designing field experiments, recording of microclimates from existing and modified trap designs, conducting literature review on animal thermal tolerances, and building biophysical models that integrate weather forecasts, trap design, and microhabitat features to optimize trap deployment strategies. This research is ideal for students interested in improving current guidelines for ethical wildlife research and supporting adaptive field practices in the face of increasing climate change.	Dr Nicholas Wu	Flexible
Climate influence on body size in frog and reptile communities	Climate has a profound influence on the evolution of body size, with various hypotheses to explain these patterns. This project will test competing hypotheses such as resource availability, desiccation resistance, and ecogeographic rules in wide-ranging Western Australian frogs and reptiles. This work will involve measuring museum and live animals across climate gradients, analysing climate datasets, and using phylogenetic and statistical analysis. This project suits students interested in climate change biology, especially those keen to develop quantitative skills. A background in ecology, zoology, or environmental science is helpful, but training in data handling and analysis will be provided.	Dr Nicholas Wu	Flexible
Microclimate preferences of herpetofauna in restored mines	Restoration of jarrah forest after mining has been ongoing for decades, yet herpetofauna recolonisation remains limited. Microhabitat structure strongly influences ground-level temperature and humidity, acting as ecological “filters” to recolonisation. This project will examine how microhabitats within different microclimates vary across restored mine sites and relate to reptile and frog presence. Using temperature and humidity loggers, habitat surveys, and thermal preference experiments, the student will explore how restoration structure affects faunal recovery with the goal to inform the design of thermally suitable habitats to enhance recolonisation in post-mining landscapes.	Dr Nicholas Wu	S2 2026
Thermal microclimate of urban bat boxes	This project will investigate how temperature and humidity vary inside artificial bat boxes at a single site in Western Australia. Using small data loggers, the student will record microclimate conditions across different box types, orientations, and occupancy levels over one field season. The study will assess whether temperatures reach levels that could cause heat stress and how well boxes provide suitable thermal refuges under varying conditions. Understanding these dynamics is increasingly important for managing artificial roosts in a warming climate and will help guide future bat box design and placement for conservation.	Dr Nicholas Wu/ Kelly Sheldrick	S2 2026
Social behaviour of maternity bats in artificial roosts	This project will explore the social and behavioural dynamics of two maternity bat species (Gould’s wattled bats *Chalinolobus gouldi* & Lesser long-eared bats *Nyctophilus geoffroyi*) roosting in artificial boxes, using compact no-glow infrared cameras. Video footage will be used to identify behaviours such as clustering, grooming, and pup care, and to compare patterns between species and through the maternity season. Behavioural observations will be related to microclimate data collected in the companion thermal study. The project offers a unique opportunity to study bat sociality inside roosts and develop improved methods for monitoring and managing artificial bat habitats.	Dr Nicholas Wu/ Kelly Sheldrick	S2 2026
Autumn and winter bat activity in Margaret River caves	This project will investigate bat activity patterns during autumn and winter in caves near Margaret River, Western Australia, using ultrasonic acoustic detectors. The student will deploy and retrieve acoustic recorders to document species presence, activity levels, and seasonal changes during these cooler months when bats typically reduce activity or enter torpor. Results will improve understanding of seasonal bat ecology in a temperate region and inform conservation strategies for cave-roosting bats. This project is ideal for students interested in bioacoustics, wildlife ecology, and conservation monitoring.	Dr Nicholas Wu/ Kelly Sheldrick	S1 2026

Project title	Description	Supervisor(s)	Start date
Parasite diversity of urban rodents in Perth, Western Australia	This project investigates the parasite diversity of urban rodents (primarily black rats and, opportunistically, house mice) across Perth, Western Australia. With black rat populations on the rise since 2024, there's growing concern about the risk of transmission of zoonotic parasites that may impact people, as well as those that may impact pets, and native wildlife. As part of this project, the student will perform necropsies on rodents across Perth. The goal is to identify the parasite fauna present in Perth's urban rodent populations and assess the potential health and ecological risks these animals pose in city environments. This project is ideal for students interested in parasitology, urban ecology, or wildlife disease research and offers hands-on laboratory experience with real-world conservation and public health relevance.	Dr Narelle Dybing and Dr Storm Martin	Flexible
Bat flies parasitic on bats of Western Australia	Bat flies are unusual, often wingless parasites of bats. The bat fly fauna is poorly known in Western Australian. The purpose of this project is to conduct an initial, modern taxonomic investigation. The objectives are to identify species and patterns of host specificity, prospect for and describe species new to science, generate novel molecular sequence data, and obtain basic occurrence and abundance data. Specimens will be sourced through existing collections and opportunistically through ongoing fieldwork.	Dr Storm Martin/ Dr Nicholas Wu/ Kelly Sheldrick	Flexible
Swimmer's itch in the Kimberley	The free-swimming larvae of parasitic blood flukes can cause an intense rash termed swimmer's itch when they emerge from snails and mistake humans for waterbirds and attempt to penetrate through the skin. Although not uncommon, the specific identity of the parasites is rarely determined. The objective of this project is to survey snails from sites in the Kimberley region known to be infested, and collect and identify the parasitic worms using combined molecular and morphological techniques.	Dr Storm Martin / Dr Dave Morgan	S1 2026 (fieldwork prior to S1 start)
Black spot syndrome in fishes off Rottnest Island	An image search (e.g. through iNaturalist) for western king wrasse photographed in vicinity of Rottnest Island will usually reveal obvious evidence of black spot syndrome. This disease is most likely caused by a parasitic worm which transmits between snails, fishes and ospreys. In the Caribbean, black spot syndrome is increasing and affects a broad variety of fishes. The objectives of this project are to determine the identity, host range and specificity, and abundance of the parasite causing black spot syndrome around Rottnest Island.	Dr Storm Martin	flexible