Honours Opportunities for 2025
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
Diet of Green Mud Crabs	Green Mud Crabs are armoured feeding machines! They can reach up to 2.5 kg in weight and have a large claw that can produce 40 kg of force to crush prey and a smaller claw for cutting up their food. Despite their fearsome reputation and cultural and recreational importance as a food source, little is known anywhere in the world about their diet. We are collaborating with staff from DPIRD Fisheries to study the diet of this species in the Kimberley and potentially also from the Pilbara. This project would allow prospective students to work with staff from the Department, gain insights, and showcase their skills to an employer. Potential for a top-up scholarship!	Dr James Tweedley	S2 2025

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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 fisheries 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	S2 2025 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	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 banks 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 and the potential for a summer scholarship if the student wants.	Dr James Tweedley	Flexible (Summer scholarship would start in Dec)
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	S2 2026 Sampling starting in Nov/Dec
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 timing
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 timing

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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 timing
Linking aquatic ecosystem health to improved human wellbeing	Time spent in nature has measurable physical and psychological health benefits, providing strong reasons to conserve nature in urban areas. People who regularly spend time in nature experience improved psychological wellbeing (mental restoration and lower stress levels), a reduced risk of cardiovascular diseases, and greater opportunity for socialisation and physical activity. While the health benefits of nature are increasingly understood, it remains unknown if these benefits increase with the ecological quality (i.e., biodiversity and organismal health) of habitats. Natural habitats with high ecological quality may confer greater health benefits, providing a rare win-win conservation opportunity. The overarching aim of this honours project is to pre-test with means of virtual reality environments, if health benefits gained by nature-users increase with levels of ecological quality in blue-spaces (e.g., lakes, rivers, streams, wetlands). This project will use a combination of biological (biodiversity surveys, water quality testing) and psychological tools (virtual reality, survey questions).	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. This mussel is the only mussel native to southwestern Australia and relies on fish for both dispersal and reproduction. 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. Robson also found that the mussel had 2 different growth forms: a long, thin body shape in flowing waters and a shorter, rounder shape in standing waters. The loss of flows and inundation due to climate drying may have favoured the round body form over the longer, thinner form. 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. As *W. carteri* is now a listed threatened species, all mussels will be returned to their habitat alive. 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
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 the 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	S2 2025

Project title	Description	Supervisor(s)	Start date
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	S2 2025
Do stream confluences provide a unique form of habitat for stream biota?	Understanding longitudinal changes in assemblages of freshwater plants and animals has a long history in the field of freshwater ecology. River flow dynamics change along a hierarchy of spatial scales along the length of a river and are often associated with changes in biotic assemblages. There are several important morphological elements that can cause a sharp change in the flow dynamics along the length of a stream, including tributary confluences (i.e. point where two streams meet). The aim of this project is to assess the importance of river confluences for structuring invertebrate or benthic algal assemblages in small streams in southern Australia, comparing streams in Victoria and Western Australia. Invertebrates or algae will be sampled above and below tributary confluences in both States. 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 confluences will require hiking and carrying field equipment. The student(s) may also have the opportunity to travel to Deakin University in Victoria for field and laboratory work for a period of a few weeks.	A. Prof. Belinda Robson & Dr Ty Matthews	S2 2025
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, not suited to drought conditions
Life history, diet and environmental tolerances of freshwater insects	Southwestern Australia is a biodiversity hotspot with a unique evolutionary heritage. Most 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

Project title	Description	Supervisor(s)	Start date
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
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
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
Environmental effects on abundance and demographics of Swan Canning Estuary dolphins amid climate change	Analysing an existing photo-identification data set of 13 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	Flexible
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	Flexible
Abundance of dolphins in the Shoalwater Islands Marine Park	Analysing an existing photo-identification data set for dolphin abundance in the marine park using the capture-recapture approach. There is an opportunity to join fieldwork effort, but the project does not rely on data collection.	Dr Krista Nicholson	Flexible
Differences in activity budgets for estuarine and coastal dolphins	Conducting focal follows on groups and individual dolphins recording their behavioural state (e.g., rest, travel, forage, socialize). Data will be analysed to compare activity budgets between estuarine and coastal dolphins and if possible between males and females, and different age groups.	Dr Krista Nicholson	Flexible

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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
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
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 Rangelands Natural Resource Management, Alcoa of Australia or Kings Park Science.	A. Prof Rachel Standish	Flexible timing
Monitoring tools for wary dingoes	Understanding how many dingoes are present in an area is an important piece of information necessary to guide their management. Many studies use passive infrared camera traps to monitor population numbers, assuming that estimates obtained through these cameras are robust and representative of actual numbers. However it is clear that dingoes avoid cameras – some stare into the lens, while others walk around the sensor field and therefore avoid triggering the camera. This project will address a simple question – can we alter camera trap position to increase the likelihood of 'trapping' camera-wary dingoes?	Prof. Trish Fleming	Flexible timing

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What do schoolie ravens eat, and where do they go when term is over?	Australian ravens are problematic for many Perth schoolyards. They are super-smart animals that know how to undo backpack zips, open lunchboxes, and access bins. Their populations flourish around schools as they exploit discarded (or badly protected) play lunches and refuse. But what happens when term is over and students leave for holidays? Anecdotal stories suggest that these bullying birds head out into the neighbourhood where they cause havoc among small bird and reptile populations. This project will use a range of methods to find out what the birds are doing: following ravens using trackers, watching their exploitation of resources within schoolyards, and analysing their diet.	Prof. Trish Fleming	Flexible timing
Identifying optimal lures for feral cats	Feral cats can be difficult to monitor and control due to neophobia and trap avoidance behaviour, resulting in low detection rates and variable success of control measures. We will test a novel, long-life (up to 1 year) lure system to increase trap captures and reduce neophobic behaviour of cats and develop a smart camera to identify cats.	Prof. Trish Fleming	Flexible timing
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.	Prof. Trish Fleming & Dr Shane Tobe	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
Aliens among us - biosecurity matters	Rats on Gough island that attack adult albatross and dive into water to prey on crabs. Possums in New Zealand that forego their plant-based diet for native bird eggs. Fire ants in Australia who have the potential to wipe out entire native ecosystems. These invasive species, and many more, are causing significant environmental and economic harm and their numbers are accelerating as the world becomes increasingly connected. Invasive alien species are considered one of the five direct drivers causing a global decline in nature and without significant transformation to support a global sustainable pathway, it's only going to get worse. We are using a multidisciplinary approach (evolutionary, ecology, chemical, computer science, social science) to develop innovative solutions that will help staunch the flow of invasive species from moving around the globe.	A. Prof. Melissa Thomas	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

Project title	Description	Supervisor(s)	Start date
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
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
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