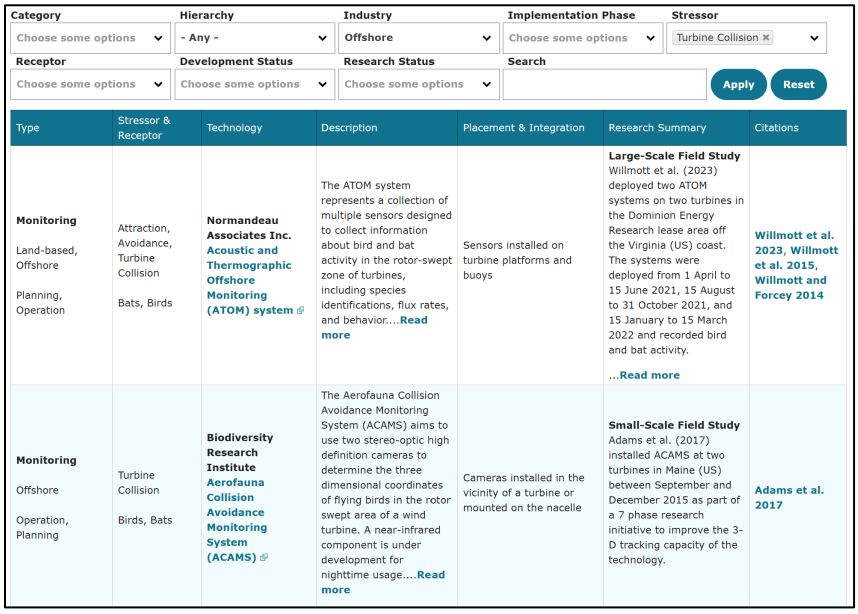
5 December 2025

Tethys is a knowledge hub with information and resources on the environmental effects of wind and marine energy. The bi-weekly Tethys Blast highlights announcements and upcoming events; new documents in the Knowledge Base; and international energy news. ORJIP Ocean Energy has partnered with OES-Environmental to provide additional content. Email us to contribute!

Announcements

Wind Energy Monitoring & Mitigation Technologies Tool

WREN hosts a free catalog of monitoring and mitigation technologies developed to reduce potential environmental effects from wind energy. Technologies are independently reviewed, and the tool is maintained and updated with publicly available information about each technology, its state of development, and related research. Complete this survey to contribute new technologies.



Category: Choose some options | Hierarchy: - Any - | Industry: Offshore | Implementation Phase: Choose some options | Stressor: Turbine Collision
Receptor: Choose some options | Development Status: Choose some options | Research Status: Choose some options | Search | Apply | Reset

Type	Stressor & Receptor	Technology	Description	Placement & Integration	Research Summary	Citations
Monitoring Land-based, Offshore Planning, Operation	Attraction, Avoidance, Turbine Collision Bats, Birds	**Normandeau Associates Inc. Acoustic and Thermographic Offshore Monitoring (ATOM) system**	The ATOM system represents a collection of multiple sensors designed to collect information about bird and bat activity in the rotor-swept zone of turbines, including species identifications, flux rates, and behavior....**Read more**	Sensors installed on turbine platforms and buoys	**Large-Scale Field Study** Willmott et al. (2023) deployed two ATOM systems on two turbines in the Dominion Energy Research lease area off the Virginia (US) coast. The systems were deployed from 1 April to 15 June 2021, 15 August to 31 October 2021, and 15 January to 15 March 2022 and recorded bird and bat activity. ...**Read more**	**Willmott et al. 2023, Willmott et al. 2015, Willmott and Forcey 2014**
Monitoring Offshore Operation, Planning	Turbine Collision Birds, Bats	**Biodiversity Research Institute Aerofauna Collision Avoidance Monitoring System (ACAMS)**	The Aerofauna Collision Avoidance Monitoring System (ACAMS) aims to use two stereo-optic high definition cameras to determine the three dimensional coordinates of flying birds in the rotor swept area of a wind turbine. A near-infrared component is under development for nighttime usage....**Read more**	Cameras installed in the vicinity of a turbine or mounted on the nacelle	**Small-Scale Field Study** Adams et al. (2017) installed ACAMS at two turbines in Maine (US) between September and December 2015 as part of a 7 phase research initiative to improve the 3-D tracking capacity of the technology.	**Adams et al. 2017**

FISHOWF+ Comic Strips & Videos

France Énergies Marines' FISHOWF+ project is using acoustic telemetry at fixed and floating offshore wind farms across France to address several key questions related to fish presence and behavior within and across wind farm development areas. Learn more about the project in the new FISHOWF+ comic strips (in French and English) and videos (in French and English).

UMERC Call for Nominations

The University Marine Energy Research Community (UMERC) is now accepting nominations to fill upcoming vacant seats on their Board of Directors, which sets UMERC's primary direction, such as the structure and timing of conferences and workshops. These are 2-year, voluntary positions. Nominate yourself or a colleague by 7 December 2025.

ORISE Applications Open

The Oak Ridge Institute for Science and Education (ORISE) Marine Energy Fellowship Program, which offers graduate students and postgraduates the opportunity to engage in marine energy research while embedded at selected host facilities for up to 12 months, is now accepting applications for its Summer Cohort through 12 December 2025.

Calls for Abstracts

The Call for Abstracts for the Environmental Interactions of Marine Renewables Conference (EIMR 2026) has been extended through 12 December 2025. EIMR 2026 will take place on 13-17 April 2026 at the Scottish Association for Marine Science in Oban, Scotland.

The Call for Abstracts for the 2026 State of the Science Workshop on Offshore Energy, Wildlife, and Fisheries has been extended until 16 December 2025. The Workshop will take place on 8-11 June 2026 at Stony Brook University in Long Island, New York, USA.

The Call for Abstracts for the Young Coastal Scientists and Engineers Conference (YCSEC 2026) is open until 19 December 2025. The conference will take place 13-14 April 2026 in Nottingham, England. Early bird registration is available through 16 January 2026.

The Call for Abstracts for OCEANS 2026 Sanya is open until 22 December 2025. OCEANS 2026 Sanya will take place 25-28 May 2026 in Sanya, China.

The Call for Speakers for All-Energy 2025 Exhibition and Conference show floor theatres is now open until 23 January 2026. All-Energy will take place 13-14 May 2025 in Glasgow, Scotland.

The Call for Speakers for Marine Technology Society's 16th Buoy Workshop is open through 23 January 2026. The workshop will take place on 23-26 March 2026 in St. Petersburg, Florida, USA. Early bird registration ends 15 December 2025.

The Call for Abstracts for the 8th Asian Offshore Wind, Wave and Tidal Energy Conference (AWTEC 2026) is now open until 6 March 2026. AWTEC will take place on 6-10 September 2026 in Kaohsiung, Taiwan.

Funding & Testing Opportunities

The Offshore Wind Growth Partnership's Industrial Growth Fund is seeking proposals from UK-based organizations willing to expand existing or build new supply chain facilities that align with the 2024 Industrial Growth Plan priorities, including smart environmental services. Complete the eligibility form by 19 December 2025 and submit your full application by 21 January 2026.

The Long-Term Joint EU-AU Research and Innovation Partnership on Sustainable Energy (LEAP-SE) program, co-funded by the European Commission under Horizon Europe, aims to develop a long-term partnership between Europe and Africa in Research and Innovation on sustainable energy. Pre-proposals are due by 5 February 2026.

The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) program, which supports marine energy testing and development projects, has extended the deadline for Request for Technical Support (RFTS) 17 applications until 6 February 2026. RFTS 18 applications will then be accepted until 5 June 2026. Open water support requests are accepted on a rolling basis. TEAMER recently added Commercialization Support to all future RFTS rounds as well.

Horizon Europe has several open Calls for Proposals, including 1) Understand and minimise the environmental impacts of offshore wind energy, 2) De-risking wave energy technology development through transnational pre-commercial procurement of wave energy research and development, and 3) Improved reliability and optimised operations and maintenance for wind energy systems. Proposals are due by 17 February 2026.

Career & Internship Opportunities

The University of Delaware (UD) is inviting applications for a faculty position within the School of Marine Science and Policy (SMSP) at its Newark campus focused on the Blue Economy and Policy. Review of applications will continue until the position is filled.

The University of Glasgow is hiring a Research Associate to support a project that aims to investigate change to nutrient flow through food webs at offshore wind farms to inform policy advice regarding environmental net gain. The candidate will co-design and implement fieldwork strategies to collect samples of biota from offshore wind farms for stomach content and stable isotope analysis. Apply by 15 December 2025.

Ecodetect, an advanced marine science and technology company specializing in the development of end-to-end, AI-driven, marine monitoring systems, is recruiting a Machine Learning Data Engineer and a Marine Systems Engineer. Apply by 19 December 2025.

The Gulf of Maine Research Institute (GMRI) is seeking a Climate-Ocean and Coastal Law & Policy Research Specialist to investigate and analyze how climate, ocean, and environmental science can inform and interact with legal, regulatory, and broader governance frameworks. Apply by 20 December 2025.

Oregon State University (OSU) is inviting applications for a combined position as Pacific Marine Energy Center (PMEC) Director and Associate or Full Professor. The PMEC Director at OSU will work with the other PMEC co-Directors and the Directors of other labs and test sites to lead the program. Apply by 4 January 2026.

The University of East Anglia is offering a funded PhD project, Next-Generation Marine Ecosystem Indicators: Machine Learning for Smarter Marine Spatial Planning in a Changing Climate. Apply by 7 January 2026.

Dr. Linda D'Anna and Dr. Eric Wade are recruiting a PhD student to study the social dimensions of ocean energy. The student will be based at North Carolina State University and participate in Atlantic Marine Energy Center (AMEC) activities. Apply 31 January 2026.

Upcoming Events

The Tethys Events Calendar highlights key events from around the world related to wind and marine energy, including conferences, webinars, workshops, and more.

Upcoming Webinars

Norwegian Offshore Wind is hosting a webinar, "Offshore Wind - Canada/Norway", on 9 December 2025 from 6:00-7:30am CET (5:00-6:30am UTC). This webinar will discuss supply chain strengths in both countries, present Norwegian Offshore Wind's work, and highlight the latest news on advancements towards offshore wind in Canada.

The WEDUSEA project is hosting a webinar on Marine Spatial Planning & Consenting on 9 December 2025 from 9:30-10:30am UTC. The WEDUSEA project is a wave energy project that will be deployed in Orkney, Scotland in 2026. The webinar will feature updates from project partners at the University College Cork and European Marine Energy Centre (EMEC).

The North Carolina Renewable Ocean Energy Program (NCROEP) and Atlantic Marine Energy Center (AMEC) are hosting a Marine Energy Webinar on 9 December 2025 from 9:00-10:00am EST (5:00-6:00am UTC). The collaborative session will include program updates on upcoming events of interest as well as a presentation on Dr. Matthew Bryant's research group providing an update on the Coaxial Turbine testing campaign.

Pacific Marine Energy Center (PMEC) is hosting a Marine Energy Fall Seminar Series for industry trailblazers to share stories from their journeys into marine energy and ocean engineering. The second seminar, on 10 December 2025 from 1:00-2:00pm PST (9:00-10:00pm UTC), will feature Grace Chang, Director of Research & Development at Integral Consulting.

Marine Environmental Data & Information Network (MEDIN) is hosting the next webinar in its MEDIN 2025 webinar series, "Ocean Data at Scale: Autonomous Data Management and High-Volume Archiving at the British Oceanographic Data Centre (BODC)", on 10 December 2025 from 2:00-3:00pm UTC. MEDIN is also hosting, "Unlocking Ocean Knowledge: The Global Push for Better Data Sharing", on 21 January 2026 from 2:00-3:00pm UTC.

RGI and Global Initiative for Nature, Grids and Renewables (GINGR) are hosting a webinar, "Connecting Pollinator Corridors Using evidence and monitoring to deliver a Nature-Positive

grid", on 11 December 2025 from 2:00-3:30pm UTC. The second session of *Connecting Energies 2025: Civil Society Webinar Series* explores how electricity corridors can become ecological assets rather than interruptions in the landscape.

Upcoming Workshop

Join Sandia National Laboratories, the National Renewable Energy Laboratory, Pacific Northwest National Laboratory, Montana State University, Florida Atlantic University, and the Department of Energy's Water Power Technologies Office for a free virtual Synthetic Mooring Lines Workshop on 11 December 2025 from 8:30am-12:20pm PST (4:30pm-8:20pm UTC). This workshop will review and discuss the latest technological challenges in manufacturing, testing, characterization, and prediction of performance for synthetic mooring lines within marine energy applications, and identify key focus areas for future research, development, and collaboration.

Upcoming Conferences

The Offshore Renewable Energy Catapult and Offshore Wind Growth Partnership are hosting the UK Offshore Wind Supply Chain Spotlight on 11 December 2025 in Edinburgh, Scotland.

The National Offshore Wind Research Development Consortium (NOWRDC) is hosting its 2026 NOWRDC Technical Research & Development Symposium on 9-10 February 2026 in New York City, New York, USA and online. Registration will open soon.

The 2026 Ocean Sciences Meeting will take place on 22-27 February 2026 in Glasgow, Scotland. Early bird registration is available until 15 January 2026.

The EAST Marine Ecosystems Conference 2026 will take place on 21 May 2026 at the University of Lincoln in Lincoln, England.

New Documents on Tethys

Tethys hosts thousands of documents on the environmental effects of marine and wind (land-based and offshore) energy, including journal articles, conference papers, and reports.

Marine Energy

Effects of electromagnetic fields from an alternating current power cable on the embryogenesis of three benthic associated marine species – Paoletti et al. 2026

> The global expansion in offshore renewable energy, primarily through offshore wind, is associated with the proliferation of subsea power cables (SPCs) throughout marine and coastal benthic environments. The transmission of electrical power through these SPCs will introduce electromagnetic fields (EMFs) into the seabed and the adjacent water column, which raises questions regarding the potential impact on benthic fauna, particularly during critical developmental early-life stages for which research considering

the effects of both the electric and magnetic components of SPC EMFs is lacking. We conducted an experiment on three benthic egg-laying species, – the elasmobranch *Scyliorhinus canicula*, the cephalopod *Loligo vulgaris*, and the cephalopod *Sepia officinalis* – found in areas under consideration for the routing of SPCs.

Life Cycle Assessment of co-located floating offshore wind and wave energy technologies in Portugal – Bastos et al. 2025

Meeting the projected growth in global electricity demand requires innovative and sustainable solutions aligned with net-zero ambitions. Co-located offshore renewable energy (ORE) systems, integrating wave energy converters (WECs) and floating offshore wind turbines (FLOW) offer a promising alternative to address space constraints, improve reliability, and reduce environmental impact. This study presents a Life Cycle Assessment (LCA) of a co-located ORE system in Portugal, featuring a 30 MW wave energy array and a 300 MW floating offshore wind farm. Results from a cradle-to-grave evaluation indicate a carbon footprint of 17.7 gCO_2eq/kWh, a carbon payback period (CPBT) of 1.4 years and an energy payback period (EPBT) of 2.0 years.

Environmental Risks and Impacts of Offshore Energy: A Literature Review – Pontinha et al. 2025

Offshore renewable energy will be essential in achieving the European Union's goal of climate neutrality by 2050 and meeting the growing global energy demand. This sector includes wind, wave, and solar energy, each advancing at different stages of development. However, the expected expansion of offshore energy production may lead to significant environmental consequences. Assessing the ecological risks posed by wind-generated electricity to marine ecosystems is both urgent and essential. Offshore wind farms can affect biodiversity, disrupt habitats, and interfere with the migration patterns of marine species. Therefore, comprehensive studies are needed to identify potential risks and develop strategies to mitigate them. Through such assessments, like the ones compiled in the work presented herein, effective environmental management strategies can be implemented to minimize negative impacts.

Wind Energy

The collision risk of migrating birds at wind farms: Final report VolZug project – Liedtke et al. 2025

A substantial part of the nocturnal bird migration in Europe passes through the North and the Baltic Sea. These migrating birds are increasingly confronted with development of offshore wind farms, which pose a risk of collision with these anthropogenic structures. It is commonly assumed that the number of collisions increases with the number of birds flying at rotor height. This assumption would mean that collision fatalities peak during periods of peak migration traffic rates (MTR). However, due to lack of suitable methods at sea, empirical data are lacking. The main aim of the present study was to quantify the

collision risk of migrating birds and to test the hypothesis of a strong positive relationship between collision rate and MTR.

Land use impacts the environmental benefits of wind energy farms in China – Xu et al. 2025

Wind energy plays a vital role in meeting rising electricity demand and climate goals, but its land-use footprints from vegetation removal, construction, and road sprawl may overestimate greenhouse gas (GHG) mitigation benefits. Here we used life cycle assessment (LCA) to explore the land-use impacts on GHG emissions and energy performance for three typical wind farms located in forest, grassland and desert ecosystems. We incorporated vegetation/soil removal during the installation stage, and the loss of additional carbon sink capacity during the operation and maintenance stage. Land-use change (LUC) contributed 37.9% of the life cycle emissions for the forest farm, while much lower for the grassland and desert farm (4.3% and 1.2%, respectively).

Offshore Wind Farm Contributions to a Regional Environmental and Ecological Monitoring System to Address Multi-User Needs – Kohut et al. 2025

The responsible development of offshore wind energy in the New Jersey/New York Bight and the broader mid-Atlantic region depends on a robust, long-term environmental and ecological monitoring system. Implemented through two coordinated tasks, this project supports New Jersey's Research and Monitoring Initiative (RMI) by advancing offshore wind farm contributions to a regional environmental and ecological monitoring system designed to address multi-user needs. The conceptual framework developed through this project provides guidance for such a system, leveraging offshore wind energy infrastructure, fixed and mobile platforms, and shore connectivity to generate and transmit valuable data.

News & Press Releases

Marine Energy

EMEC completes 3-in-1 tidal energy, hydrogen and battery demonstration – EMEC

A world-first demonstration combining tidal power, battery storage and hydrogen production has been completed at EMEC in Orkney, Scotland. Led by EMEC, the demonstration successfully integrated three technologies – Orbital Marine Power's O2 tidal turbine, vanadium flow batteries supplied by Invinity Energy Systems, and an ITM Power 670 kW electrolyser, at EMEC's onshore site on the island of Eday. Multiple energy flow scenarios were trialled. During high generation periods, power from the O2 was used to charge the battery system, supply electricity directly to the electrolyser and export power to the grid. When tidal generation was low, the battery system discharged power to the electrolyser to keep the electrolyser operating.

CGEN Engineering Test Their Innovative Tidal Energy Generator at META – META

CGEN Engineering have been testing their fully marinised, next generation modular electrical generator for tidal energy devices over the past few months at the Marine Energy Test Area's (META) Warrior Way test site in the Cleddau Estuary. The trials have proven the system's performance in real tidal operating conditions and elevated the technology's TRL from 5 to 7. The project also demonstrated the generator's manufacturability and transportability and that it is a cost-effective solution for seamless plug and play assembly onsite with an existing tidal turbine. CGEN's technology uses a modular electromagnetic converter to transform slow, powerful renewable energy – like tides or waves – into clean, affordable electricity.

Scotland's giant tidal array project pencils in subsea works for next month – Offshore Energy

A project, which is described as the world's largest tidal stream energy development, has put subsea activities on the agenda for December 2025 in Scotland's Pentland Firth. Based on the information contained within the latest notice to mariners, subsea works are to be conducted at the MeyGen Tidal Array site between December 10th to 17th, 2025. These operations will entail turbine recovery, subsea cable works, and deployments in Inner Sound of the Pentland Firth, between the Scottish mainland and the island of Stroma. Operational since 2016, the MeyGen tidal stream energy project is owned by SAE Renewables (SAE), previously known as SIMEC Atlantis Energy, a developer of sustainable development projects.

Can Your Wave Energy Technology Survive the Ocean? – NREL

Can your technology triumph in the ocean? Ask SEA-Stack. True to its name, this one-of-a-kind, free, open-source tool combines (or stacks) multiple wave energy modeling capabilities into one user-friendly package. With SEA-Stack, wave energy companies—or any developers working on water-based tech, like ships, underwater drones, or even space shuttle crew modules—will be able to quickly vet new technology designs and potentially save significant time and money. Those savings could help accelerate technology development and enable wave energy devices to fulfill their promise: to deliver reliable energy to populated coastal cities, rural and remote communities, or even offshore data centers and military bases.

Advancing Clean Tidal Energy Through High-Fidelity Simulation – Stony Brook University

Researchers at Stony Brook University are helping chart the course toward a cleaner energy future beneath the surface of the Long Island Sound. In partnership with Verdant Power, a New York–based renewable energy company, working with the Advanced Energy Research and Technology Center (AERTC), a New York State Center of Excellence, Associate Professor Ali Khosronejad's research team from the Department of Civil Engineering is leading a project to model and optimize the next generation of

marine hydrokinetic turbines. These devices are designed to capture the immense and predictable power of tidal currents, transforming moving water into a reliable source of clean energy.

Wind Energy

Dogger Bank Wind Farm and Seaway7 mark completion of all foundations on world's largest offshore wind farm – Dogger Bank Wind Farm

Dogger Bank Wind Farm and delivery partner Seaway7 have installed all 277 transition pieces on Dogger Bank Wind Farm, marking the completion of all foundation installation work on the 3-phase offshore wind project in the North Sea. Seaway7's heavy-lift vessel, Seaway Alfa-Lift installed the 87th and final transition piece onto its corresponding monopile foundation at Dogger Bank C, the third phase of Dogger Bank Wind Farm, in late November. This milestone followed the previous installation of 95 transition pieces at the Dogger Bank A and 95 at the Dogger Bank B phases of the project. In total, Seaway7 has installed 554 foundation assets on the wind farm, following successful installation of 277 monopiles earlier in the construction programme, utilising Seaway7's heavy lift vessel Seaway Strashnov

Van Oord installs first monopile at Ecowende wind farm – Ecowende

Van Oord has installed the first monopile of Ecowende's offshore wind farm on Wednesday 3 December. The project, a joint venture between Shell, Eneco and Chubu, is set to become the most ecological offshore wind farm to date. Van Oord used its new state-of-the-art offshore wind installation vessel Boreas for the installation, marking the successful start of installing all 52 monopile foundations produced by Sif. As Ecowende's T&I contractor, Van Oord is responsible for a wide scope of work: transporting and installing all foundations, laying and connecting the inter-array cables, transporting the wind turbine generators (WTGs), and designing and installing scour protection. The Ecowende wind farm is being developed with the aim of accelerating the energy transition while mitigating the effects of offshore wind on marine life and boosting biodiversity.

RWE and TotalEnergies to collaborate with ARC marine on nature-inclusive Reef cubes® at OranjeWind wind farm – RWE

RWE and TotalEnergies have signed an agreement with ARC marine for the supply of 66 innovative Reef cubes® at a section of the future offshore wind farm OranjeWind, in the Dutch North Sea. Installation of the foundations of OranjeWind will start in 2026. Once the construction of the offshore wind farm is completed, the 66 Reef cubes® will be placed at 11 turbine foundations. This will be one of the biggest deployments of artificial reef structures at a wind farm in the North Sea to date. With this nature-inclusive project, the companies aim to further enhance the provision of habitats for marine life and research local biodiversity. In total, 66 Reef cubes® will be deployed creating 1,440 m²

of surface habitat. They will remain in place for the full operational lifetime of OranjeWind.

EnBW He Dreiht: First wind turbine on Germany's largest offshore wind farm to date produces electricity – EnBw

The first wind turbine on the EnBW He Dreiht offshore wind farm generated the first kilowatt-hour of electricity recently and fed it into the grid. Further turbines will gradually follow suit over the coming weeks. EnBW has so far built 27 out of a total of 64 wind turbines, which are all set to be commissioned by summer 2026. A single rotation of the rotor on the 15 MW wind turbine is enough to supply the equivalent of four households with electricity for a day. At a hub height of 142 meters, the rotor with a diameter of 236 meters sweeps through an area of 43,742 square meters per revolution – equivalent to the area of six football fields. By way of comparison, the output of the turbines installed by EnBW in 2010 on the EnBW Baltic 1 wind farm is 2.3 megawatts (MW).

NMSU researchers study effects of wind turbines on ground-dwelling mammals – NMSU

Home to Pattern Energy's Western Spirit Wind, the largest single-phase renewable energy build-out in the Western Hemisphere, central New Mexico has quickly become a hub for wind energy development. Wind farms like Western Spirit Wind – a portion of which sits on New Mexico State University's (NMSU) Corona Range and Livestock Research Center – consist of dozens, if not hundreds, of towering wind turbines. However, little is known about the effects of turbines on wildlife, particularly mammals living on the ground. A project led by two researchers in the College of Agricultural, Consumer and Environmental Sciences and funded by the Bureau of Land Management aims to shed some light on how turbines can potentially change the habits of ground-dwelling mammals, either positively or negatively.