

Capability Statement



Aquatic Ecology Consulting and Research

Marine and Freshwater Ecology Surveys

Biomonitoring

Ecological Risk Assessment

Environmental Impact Assessment

Remote Sensing and Habitat Mapping

Scientific Diving and Vessel Operations

Oceanography and Water Quality

Remote Area Specialists

Deep-Sea Specialists

Research

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Our mission is to deliver excellent environmental solutions for our clients, to support the sustainable use of aquatic ecosystems and to explore the oceans and waterways of our planet.



Fathom Pacific provides aquatic scientific services for industry, government and research providers.

We are committed to tailoring state-of-the-art techniques to our client's needs and delivering high quality environmental outcomes. Fathom Pacific bridges the gap between research and applied consulting.

Fathom Pacific employs highly qualified scientists and collaborates with a professional network of consultants, researchers and laboratories to achieve these goals.

Country Experience

Australia Papua New Guinea
Indonesia New Caledonia
Suriname East Timor
Laos Tanzania
Greenland Mexico
Solomon Islands

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Fathom Pacific applies an in-depth knowledge of the interactions between biological systems and project-related stressors (e.g., metals, hydrocarbons & sediment) to assess impacts on ecological communities, ecosystem function and resource use. We develop best-practice monitoring and management programs that are backed by over a decade of first-hand field experience in a range of environments.

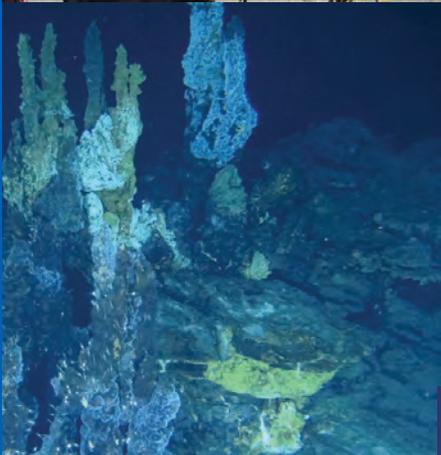
Fathom Pacific has developed productive collaborations with consultants, researchers and laboratories. We assemble the best team of specialists for the job and provide standard operating procedures and quality/OHS systems to manage projects from inception to product delivery.



Adrian Flynn (PhD), director and principal scientist at Fathom Pacific, is a specialist in aquatic ecology, environmental impact assessment and biomonitoring. He has been an environmental consultant for over 13 years and has completed studies and impact assessments for some of the highest-profile resource and development projects in Australia and the Asia-Pacific region.

Adrian is skilled in biostatistics and modelling. He is a qualified ADAS commercial diver and a Member of the Environment Institute of Australia and New Zealand.

Mining Monitoring & Impact Assessment



Core Principles

Mining exploration and development projects face a range of environmental and social challenges. For projects in developing countries and high rainfall regions, these challenges are heightened.

Fathom Pacific applies quality science to mining impact assessment and monitoring. We couple our extensive experience in the mining sector with engagement of regulators, landowners and other stakeholders to help clients achieve best practice environmental management to their operations.

Services

Marine and freshwater ecology surveys;

Ecological Risk Assessment;

Environmental Impact Assessment;

Design and execution of biological and water quality monitoring programs;

Bioaccumulation and other biomarker assessments;

Remote area and deep-sea specialists;

Marine and freshwater habitat mapping;

Biodiversity and rare / threatened / protected species assessments;

Clients

Neptune Minerals: Deep Sea Mining Project (Solomon Islands)

Nautilus Minerals: Solwara Project (Papua New Guinea)

Newcrest Mining: Lihir Gold Project (Papua New Guinea)

Allied Gold: Simberi Oxide Gold Project (Papua New Guinea)

Highlands Pacific: Ramu Nickel Project (Papua New Guinea)

Highlands Pacific: Kainantu Gold Project (Papua New Guinea)

Morobe Mining: Hidden Valley Gold Project (Papua New Guinea)

Falconbridge: Koniambo Nickel Project (New Caledonia)

BHP Billiton: Bakhuys Bauxite Project (Suriname)

PT Weda Bay Nickel: Weda Bay Nickel Project (Indonesia)

PT Inco: Soroako Nickel Mine (Indonesia)

Core Principles

Growth in industry and population requires growth in the capacity of ports and maintenance of these critical transport hubs. Growth of coastal cities and remote area mining increasingly places port developments in close proximity to population centres or areas with significant natural, recreational and commercial value.

Fathom Pacific conducts biological and chemical studies to help clients implement environmental guidelines, assess risks and undertake compliance monitoring associated with dredging and other port activities. We collaborate with commercial laboratories, researchers and consultants to deploy best industry practice environmental management to port projects.

Services

Sediment and water quality assessments under ANZECC / ARMCANZ (2000), NAGD (2009) and international guidelines;

Dredged material assessments;

Ecotoxicological assessments;

Habitat and biodiversity mapping;

Deployment and analysis of oceanographic, water quality and sedimentation loggers;

Deployment and analysis of sensing techniques including side-scan, bioacoustic, ROV and AUV;

Clients

Port of Townsville (Australia)

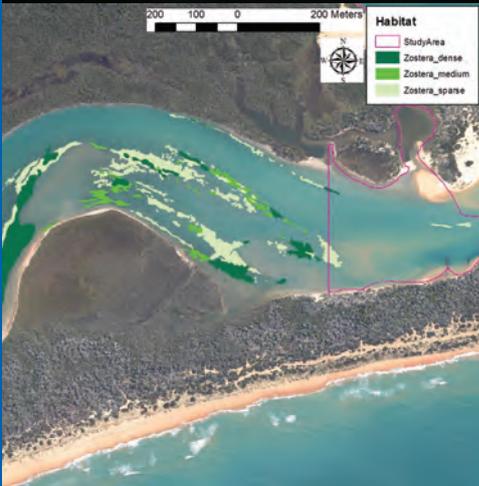
Gippsland Ports: Lakes Entrance (Australia)

Port of Brisbane (Australia)

Beaumaris Motor Yacht Squadron (Australia)

Port of Geelong: Corio Bay (Australia)

Falconbridge: Koniambo Nickel Project Port (New Caledonia)





Core Principles

Understanding ecological values and drivers of change and the design of robust biodiversity monitoring are important to a range of sectors from Marine Protected Area managers to proponents of development projects.

Fathom Pacific bridges the gap between research and applied consulting. We deploy state-of-the-art science and techniques to biodiversity assessment, management and monitoring.

Services

Marine and freshwater biodiversity surveys;

Design and execution of biodiversity monitoring;

Protected area monitoring and evaluation;

Remote video and other sensing technologies (AUV, ROV, baited / towed video, bioacoustics);

Scientific diving (AS 2299.2) and vessel operations;

Remote area specialists;

Deep-sea specialists;

Habitat and biodiversity mapping;

Rare and threatened species assessments;

Example Publications

Mol, J, Wan Tong You, K, Vrede, I, **Flynn, A**, Ouboter, P & van der Lugt, F (2007). Fishes of Lely and Nassau Mountains, Suriname.

In, Alonso, LE and JH Mol (eds.). 2007. A rapid biological assessment of the Lely and Nassau plateaus, Suriname (with additional information on the Brownsberg Plateau).

RAP Bulletin of Biological Assessment 43. Conservation International, Arlington, VA, USA.

Brewer, DT, **Flynn, AJ**, Skewes, TD, Corfield, J, Alawo, J, Shelley, J, Pearson, B & Young, J (2007). Ecosystems of the East Marine Planning Region. Report to Department of Environment and Water Resources. CSIRO, Cleveland, 136p.

Flynn, AJ & Klepadlo, C (2012). Two new species of *Photonectes* (Teleostei: Stomiidae) from the Indo-Pacific, and a re-examination of *P. achirus*. *Memoirs of the Museum of Victoria*, 69: 259-267.

Flynn, A, Edmunds, M, Davis, S & Pritchard, K (2012). The Reef Biota at Port Phillip Bay Marine Sanctuaries, 2011. Report by Australian Marine Ecology Pty Ltd to Parks Victoria. Parks Victoria Technical Series.

Need

Quantification of aquatic biomass and georeferenced habitat mapping are central to robust monitoring and impact assessment. Several challenges are faced when quantifying biomass or mapping habitats using destructive or single-point sampling and visual census techniques, including:

- Selectivity of sampling equipment;
- Time and effort required for replicated, quantitative data using some traditional techniques;
- Visual census observer skill levels;
- Presence of protected species;
- Ethics and collection permits;
- Low visibility environments;
- OHS considerations associated with entering the water in remote locations (e.g. SCUBA diving) or presence of dangerous animals (e.g. crocodiles);
- Prohibition of destructive sampling at spiritual sites (e.g. off-river water bodies).

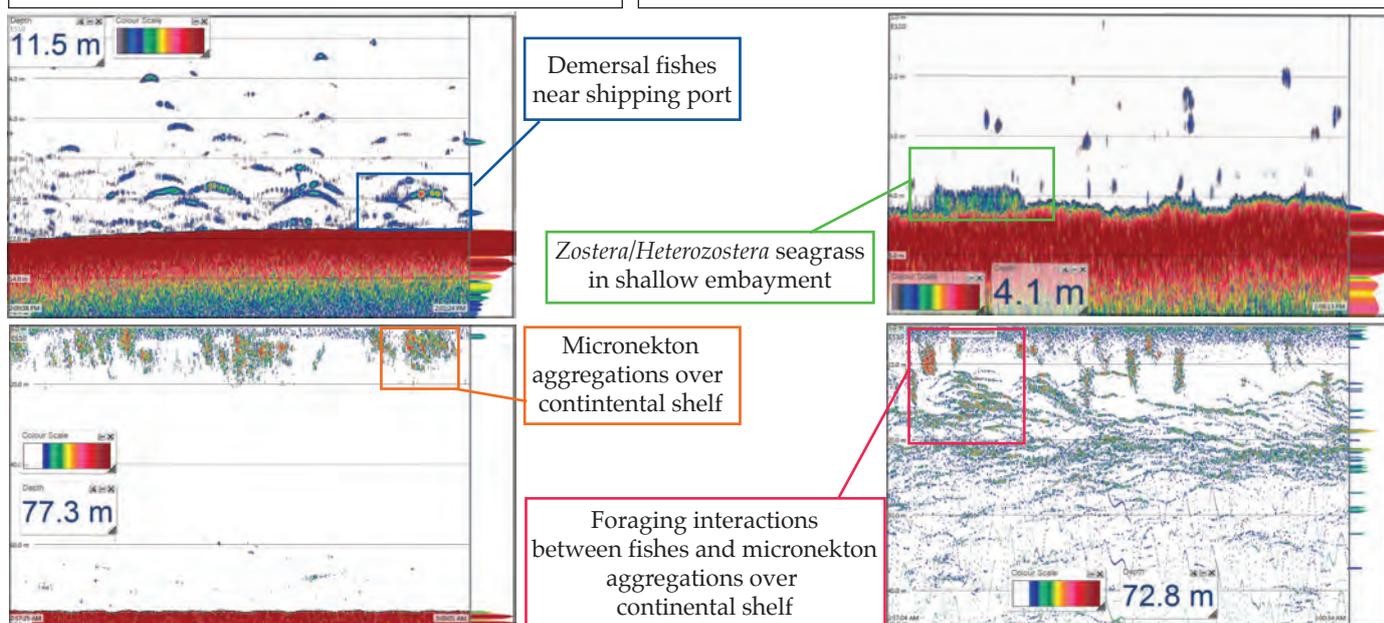
Solutions and Services

Bioacoustics is an established method for quantifying the distribution and biomass of aquatic organisms.

Fathom Pacific has acquired a **SIMRAD EK15** system. The instrument package is configured in a rugged, portable format. The transducer is designed for pole-mounting to vessels ranging from canoes to ocean-going ships, and can be mounted on the seabed (upward-looking) or on permanent structures (e.g. bridges).

Fathom Pacific conducts bioacoustic assessments of nekton, plankton and benthic habitat in marine and freshwater environments. A blend of commercial and bespoke software is used to classify targets, calculate biomass and map georeferenced results.

We offer integrated data collection, analysis and reporting that, linked with our long experience with traditional sampling methods, statistics and habitat mapping, provide clients with state-of-the-art ecological assessments.



Specifications

Frequency: 200 kHz	Power output: 45 W	Depth range of system: ~300 m
Transducer type: Single beam, 26 degrees	Max. depth rating of transducer: 600 m	Weight: Ships in 2 pelican cases, ~15kg
Power: DC or AC	Ping rate: Up to 40 Hz	Pulse duration: 80 to 1240 μ s