



**FRDC**

The Northern Territory Research Advisory Committee RD&E Plan provides a framework to identify the key strategic research needs of the fisheries sector under its jurisdiction from 2019 – 2024.

NT Research Advisory Committee RD&E Plan  
Research, Development and Extension Plan  
2019 – 2024

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## 1 CONTEXT

### 1.1 FRDC

The Fisheries Research and Development Corporation (FRDC) is a co-funded partnership between its two stakeholders, the Australian Government and the fishing industry: commercial (wild catch and aquaculture), recreational and Indigenous. The FRDC's role is to plan and invest in fisheries research, development and extension (RD&E) activities in Australia. This includes providing leadership and coordination of the monitoring, evaluating and reporting on RD&E activities, facilitating dissemination, extension and commercialisation. This is achieved through coordinating government and industry investment, to establish and address RD&E priorities.

FRDC investment is overseen by the following guiding principles:

- maximise efficiency and effectiveness
- avoid duplication
- minimise administration costs
- provide for flexibility
- maximise opportunities for collaboration, leverage opportunities and create value
- encourage the generation of novel and innovative ideas.

The FRDC research, development and extension plan (2015-20) outlines a significant change in the way the FRDC will plan and invest in RD&E for fishing and aquaculture over the next five years. Of note is the transition from being essentially a fund granting body to one that adds value and strategic focus to RD&E for the Australian fishing and aquaculture industry. The 5-year RD&E Plan has been developed through a comprehensive process of assessing the operating environment for fishing and aquaculture, consultation, analysis and consideration.

### 1.2 FRDC RD&E Investment Programs

The FRDC has five Research, Development and Extension (RD&E) investment programs that directly align with its governing legislation, the Primary Industries Research and Development Act 1989 (PIRD Act)<sup>1</sup>. RD&E investments across these program areas will be assessed to ensure the FRDC maintains a balanced portfolio that meets the short and long term needs of its stakeholders, including the Australian Government and the Australian community. The programs include:

#### **Environment**

This program relates to RD&E that supports natural resource sustainability in managing fishing and aquaculture activities in Commonwealth, state and territory waters. Many components of FRDC-funded RD&E focus on improving the sustainable use of Australia's aquatic resources.

#### **Industry**

This program relates to RD&E that assists the production and value of seafood. It could be in the form of business profitability, international competitiveness, opportunities for productivity increases, resource access, and experience or wellbeing benefits. This program aims to help all sectors improve their overall performance.

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<sup>1</sup> Primary Industries Research and Development Act 1989. No. 17, 1990 as amended.  
<https://www.legislation.gov.au/Details/C2014C00033>

## Communities

This program relates to RD&E that maintains the long-term sustainability of the commercial sector by understanding the interactions and co-dependence between fishing and aquaculture, and the wider community. It is enhanced by knowledge about the social importance of fisheries.

## People

This program relates to RD&E that is needed to attract and advance people who will lead fishing and aquaculture towards a sustainable and profitable future. The FRDC has taken a strong role in this area, from employing and developing young researchers, through to facilitating access to leadership development for all sectors of fishing and aquaculture.

## Adoption

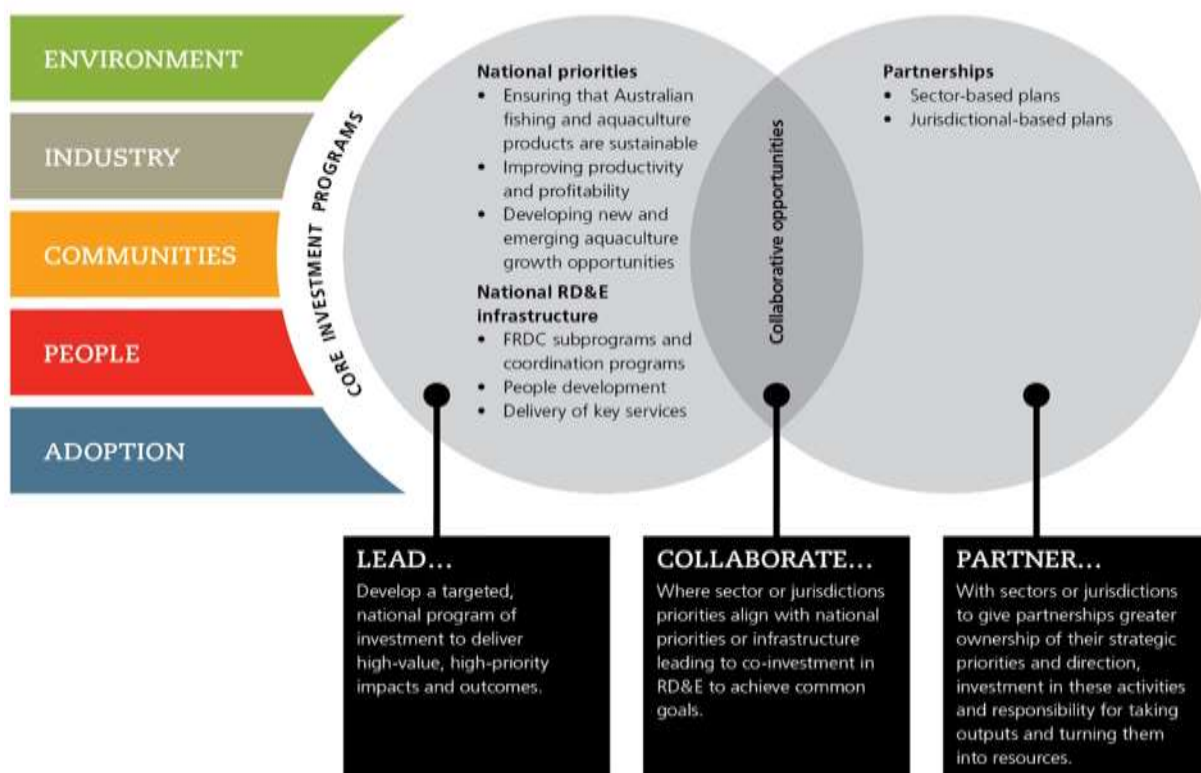
This program relates to how project outputs are delivered so they can be easily adopted and support stakeholder decision making and practices. The FRDC continually works with researchers and end users to determine and implement the best way of extending these results. In addition, the FRDC is continuing to develop its systems to ensure its 'knowledge bank' is widely accessible.

### 1.3 Co-management investment model

Under the FRDC's RD&E Plan 2015 - 2020, the FRDC provides greater ownership and authority to industry sectors in developing RD&E priorities, through Industry Partnership Agreements (IPAs) and to jurisdictions through Research Advisory Committees (RACs) - formerly Fisheries Research Advisory Bodies (FRABs).

A key component of this investment model is the development of a multi-year RD&E Plan for each IPA and RAC aligned with the FRDC's 5-year RD&E Plan. This will assist in developing a tailored RD&E program that:

- meets both jurisdictional and national strategic RD&E priorities
- is balanced across FRDC programs (environment, industry, communities, people and extension)
- focusses on short, medium and longer term RD&E outcomes
- is supported by a consistent RD&E planning framework across all RACs.



## 1.4 Northern Territory Research Advisory Committee

### Responsibility to our stakeholders

The Northern Territory Research Advisory Committee (NTRAC) works on behalf of a diverse and important set of local stakeholders that includes:

- Aboriginal communities;
- the commercial seafood industry;
- the recreational and tourism fishing sector;
- the Northern Territory Government;
- the broader community that has an interest in the services provided by, as well as the integrity of, the Northern Territory's aquatic environments.

Nationally, we have responsibility to a core set of stakeholders that include the commercial fisheries, aquaculture, Indigenous and seafood management sectors as well as the FRDC Board, various FRDC partner groups and the wider research community. The IPAs associated with NT RAC include: Australian Barramundi Farmers' Association IPA; Australian Prawn Farmers' Association IPA and Pearl Consortium IPA. Where the NT Research Advisory Committee strategic investments are placed has the potential to influence and shape national directions. We recognise that our strategic planning processes need to integrate with higher level plans whilst pursuing priority issues on behalf of the Northern Territory.

NT RAC committee members are selected based on expertise, ensuring wide stakeholder representation. Our key points of contact with our stakeholders include the Indigenous Land Councils, the Amateur Fishermen's Association of the Northern Territory (AFANT), the Northern Territory Seafood Council (NTSC), the Northern Territory Guided Fishing Industry Association and Northern Territory Fisheries research and management teams. Specific to effective service to these stakeholders, the NT RAC regards the following as important operational drivers against which our performance should be measured:

- Responsiveness to need;
- Capacity building;
- Balanced investment portfolio;
- Investment in novel and innovative opportunities;
- Collaboration with other partner groups and research initiatives; and,
- Direct adoption and implementation of research outcomes thus driving change.

We expect our stakeholders to hold us to account and our performance review mechanisms will reflect this. How we engage with our stakeholders will define how well we can advise decision-makers about strategic RD&E investment. How we promote the work we are doing will influence adoption of project outcomes. Communications planning is thus a critical component of our planning processes.

### Partnerships

The Northern Territory is a small community with limited capacity to cover diverse and complex RD&E priorities. We need to be clever in what we choose to take a lead in and what expertise we lever into the Northern Territory. Criteria for successful RD&E project development will include collaboration and contribution to the Northern Territory's research capacity. Initiatives that partner directly with user groups to maintain a strong focus on end user needs are essential.

We will actively seek to build partnerships with our local and regional research community and research providers that bring complementary skills to the Northern Territory. Equivalents such as the other FRDC RACs are also important partners. A large part of our success will depend on how well we identify, and partner with other research initiatives and programs additional to FRDC various partner groups including the National Environmental Science Program (NESP), Natural Resource Management (NRM), Developing

Northern Australia and Australian Centre for International Agricultural Research (ACIAR) initiatives. As such, we invite and encourage direct dialogue to stimulate greater research investment coordination.

A Memorandum of Understanding exists between Western Australia, Queensland and the Northern Territory to share and collaborate in the fisheries research space across northern Australia. The NT RAC actively encourages that relationship to continue by seeking to collaborate on priorities and co-invest in projects that address regional issues.

### **Consultation process**

A 5-year RD&E Plan is a major strategic need of NT fisheries and aquaculture, but the diversity and geographical separation of the various sectors (Indigenous, recreational, commercial wild-catch and aquaculture) and their wide stakeholder bases, limits the sectors' capacity to undertake the necessary grass-roots consultation and compile the required information to successfully develop such a plan. The NTRAC sought to address this problem by appointing Fishwell Consulting to engage comprehensively with a wide range of stakeholders and user groups in the NT to identify RD&E priorities and gaps, and define areas of appropriate research for each major sector as part of developing the overall NT RD&E Strategic Plan. Further, the NT RAC sought to develop a cost effective, consistent, transparent and repeatable method that can be used to update each sectors' RD&E Plans and the NT Plan over time. A range of face-to-face meetings, workshops and 5 sector-based online survey were used to obtain RD&E issues and priorities from the stakeholders. These activities were conducted under project 2016-116: Development of a 5-year sector and NT Strategic Research, Development and Extension (RD&E) Plan for Northern Territory fisheries and aquaculture based on priority needs of major stakeholder sectors (<https://www.frdc.com.au/project/2016-116>)

## **2 OPERATING ENVIRONMENT**

All forms of day-to-day fishing and aquaculture in the Northern Territory are regulated under the Northern Territory Fisheries Act 1988. Like most contemporary fisheries legislation, the NT Fisheries Act 1988 sets out objectives tied to sustainability, equity and optimal resource use from the perspective of maximising benefits to the NT community at large. Research, development and extension activities that are driven by sustainability and that illuminate the social and economic components of equitable and optimal use are critical to our current and future prosperity.

### **2.1 Overview**

#### **Indigenous**

The relationship between Aboriginal people and the NT coastline dates back more than 50,000 years. Their historic cultural and spiritual connection to Land and Sea Country is recognised under the NT Fisheries Act 1988 as is their right to continue traditional fishing practices which includes customary, commercial, aquacultural and recreational activities that incorporates management.

Many marine and freshwater species are totemic for NT coastal Aboriginal groups who continue to practise customary management and education relating to the sea that has been passed on through generations in stories, dance, song, art and ceremony. Fishing by Traditional Owners in the Northern Territory mostly takes place in inshore coastal waters, rivers and freshwater water bodies, with about two thirds of all fishing being in saltwater.

Most Traditional cultural fishing takes place using baited line methods, hand collection, spears and cast nets, and vast majority of fishing is done from the shore (as opposed to by boat, although many Indigenous people

own and fish from vessels). Most popular catch by number is molluscs (mostly mussels and other bivalves), finfish (mostly mullet and catfish) and crabs and lobster (mostly mud crabs)<sup>2</sup>. Traditional cultural fishing remains an important part of daily life in the Northern Territory but contemporary involvement of Indigenous people in NT fisheries is not just restricted to traditional fishing, it encompasses commercial wild-catch, commercial aquaculture and recreational fishing sectors.

While there is no single Indigenous entity overseeing Indigenous fishing and fisheries, there are four regional Land Councils in the Northern Territory: the Northern Land Council (NLC) covering the Top End; the Anindilyakwa Land Council (ALC) covering Groote Eylandt in the Gulf of Carpentaria; the Tiwi Land Council (TLC) covering Bathurst and Melville Islands; and, the Central Land Council (CLC) in the southern half of the Northern Territory. The first three are heavily involved in Sea Country rights and the management of Sea Country. The Central Land Council is more involved in Freshwater Country. As mentioned previously, separate from the Land Councils, the North Australian Indigenous Land and Sea Management Alliance Ltd (NAILSMA) assists Indigenous Land and sea managers and Traditional Owners across northern Australia to engage in the market economy and to value and strengthen their own cultural values, beliefs and practices.

Indigenous people are involved in a number of NT commercial fishing license ventures either directly or indirectly through their communities. In the near future, it is likely that there will be a greater involvement of Indigenous people in commercial fishing following financial support provided by the Commonwealth government through the NLC to support Aboriginal participation in the seafood industry. The NT Government is also exploring complimentary support and grant programs to assist Traditional Owner involvement in the seafood industry.

Whilst not strictly commercial licences under NT legislation, Aboriginal Coastal licences (ACLs) are available to Aboriginal people living full time in Aboriginal communities to provide a “start-up” opportunity for economic development and sustainable commercial activities in coastal Aboriginal communities. An ACL allows the licence holder to catch fish near their community. Catches of up to 5t per year may be sold but important commercial species such as barramundi, king threadfin salmon, Spanish mackerel, trepang and mud crab may not be targeted. Allowable fishing gears include: up to 100 m of net with mesh size up to 65 mm; hand spear, scoop net; vertical line as handline or rod and reel; and a traditional fish trap. Licence holders must submit a monthly log sheet detailing what and how many fish were caught and how much was sold, and must not fish in reef protection zones, set nets across rivers or fish in sacred sites. The ACL is viewed as a potential pathway for Indigenous individuals/communities stepping into the ownership and operation of full commercial fishing licences.

Aboriginal aquaculture development is being supported through research projects focusing on low technology, sea-based methods and involving several communities across the NT. The Darwin Aquaculture Centre (DAC) and its partner organisations have worked together with the Waruwi community on South Goulburn Island and the Pirlangimpi community on the Tiwi Islands to conduct black-lipped rock oyster trials. This has involved establishing small scale oyster farming systems (long lines) to provide community members with experience in culturing oysters. Local people maintain the oyster production trials and monitoring water quality, growth and survival of farmed oysters. There has been considerable interest from communities across the NT to participate in this research and eventually establish their own oyster farms.

Another significant and expanding area of involvement of Indigenous people in NT fisheries is through the 16 Marine/Sea Ranger groups supported by the various Land Councils, as well as the Commonwealth

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<sup>2</sup> Henry, GW and Lyle, JM. (2003). The National Recreational and Indigenous Fishing survey. NSW Fisheries Final Report Series No. 48. FRDC Project No. 99/158.

Government. Half also receive funding from the NT Fisheries Division. These Sea Ranger Programs assist with local monitoring and surveillance of coastal waters but are playing an increasing role in extension and education to both Indigenous and non-Indigenous Fishers, as well as providing a visual presence on the water.

The [NT Fisheries Division's recent strategic priorities](#) for Indigenous fisheries development are:

- Partner with Aboriginal communities to deliver economic development;
- Provide technical advice and assist training and skill development in the seafood industry;
- involve aboriginal communities in fisheries management;
- protect customary fishing rights;
- recognise customary management of coastal and marine areas; and,
- support the NT's Indigenous marine rangers.

Notwithstanding the above, of greatest significance to future Indigenous involvement in NT fisheries and aquaculture are the implications of the 2008 Blue Mud Bay (BMB) High Court decision, which recognised Traditional Owners' rights to the intertidal zone on Aboriginal Land, affecting somewhere between 80-85% of the NT coastline. Subsequently, permission to access tidal waters over Aboriginal Land will be mandatory in accordance with the requirements of the Aboriginal Land Rights (Northern Territory) Act 1976 (Cth) (ALRA), except in areas that have entered into an agreement with the Government for open access. The agreements for this access are still under negotiation by stakeholder groups, the NTG and the Land Councils. Although this has raised significant concerns regarding future access arrangements for both commercial and recreational fishers, Indigenous people are exploring the significant economic and community development opportunities that may result from working constructively with both of these sectors in these regions. Capacity building, people development and projects to put in place the fundamentals of fishing businesses represent both a challenge and an opportunity for remote Indigenous communities.

### **Recreational and Fishing Tour Operators**

Recreational fishing is an important pastime for many NT residents and a major tourism drawcard for interstate and international visitors. The high standard of the NT's recreational fishery is attributed to its largely un-spoiled environment, the number of recreationally-significant fish and marine species available and their abundance in particular areas.

Recreational fishing is an intrinsic part of the NT lifestyle with more boat ownership per capita than other parts of Australia. Fishing is a strong tourism draw card and a valuable economic contributor to our economy. Staying attractive as a tourism destination means protecting the Northern Territory's wilderness fishing and high quality sports species branding. Annual expenditure by recreational fishers and the guided fishing industry is estimated at over \$100 million.

Recreational angling is generally categorised into "barramundi fishing" and "blue water fishing", with the latter further divided into reef-fishing, pelagic fishing, game fishing for trophy fish and sports fishing with lures, soft plastics and flies. Mud crab fishing with traps and dillies is also a popular pastime amongst locals. The majority of recreational fishing effort occurs in coastal areas, and almost one third occurs in and around Darwin Harbour.

The Amateur Fishermen's Association of the Northern Territory (AFANT) is the peak body for recreational fishing and there are at least 15 registered fishing clubs around the NT (Groote Eylandt Game and Sportfishing Club, Darwin Game Fishing Club, Darwin FlyRodders, Nhulunbuy Regional Sports Fishing Club, Katherine Game Fishing Club, Palmerston Game Fishing Club, Wagait Beach Fishing Club, RAAF Darwin Fishing Club, RAAF Tindal Fishing Club, King Ash Bay Fishing Club, Dundee Social & Recreation Club, NT Dolphins Spearfishing Club, Alligator Fishing Club Inc. and Darwin Trailer Boat Club). AFANT estimates there



is over 30,000 non-aboriginal recreational fishers in the NT with a direct expenditure of around \$100 million annually. An overriding objective of AFANT is to ensure that the NT's world-class recreational fishery is nurtured and protected for current and future generations of Territory and visiting fishers.

Apart from its role to represent and advocate for the interests of recreational fishers in the NT and provide advice to governments and other stakeholders, AFANT (2013) recognises the following key strategic areas for NT recreational fishing:

- Protect and enhance the quality of the NT fishing experiences;
- Maintain and where possible improve recreational fishing access;
- Promote ethical, sustainable, safe and legal fishing practices;
- Participate in the management of recreational and other fisheries;
- Liaise constructively with other fishing sectors on matters of mutual interest;
- Support and participate in fisheries research; and,
- Promote the protection of the environment related to recreational fishing.

FTOs are an important component of fishery tourism running guided tours and boat hire businesses. There are 134 FTO licences in the NT, held by 91 licencees, although about half of those licences are inactive. While FTOs require a licence to operate, their customers are subject to recreational fishing regulations.

FTOs are represented by the NTGFIA. NTGFIA's objectives are to:

- Promote, develop and maintain the Guided Fishing Industry in the Northern Territory;
- Assist the Northern Territory Government in managing the Guided Fishing Industry to ensure and enhance its economic viability and the sustainability of its target species; and,
- Take a proactive role in maintaining the quality of marine and freshwater fish habitats and of the environment generally.

### **Commercial wild-catch and aquaculture**

The Northern Territory seafood industry has more than 200 commercial fishing licences and 190 registered fishing vessels operating in 17 different wild-catch fisheries and aquaculture operations. Some operate in coastal waters (Barramundi Fishery, Mud Crab Fishery, Coastal Line Fishery, Coastal Net Fishery, Trepang Fishery, Aquarium Fishery and pearl and non-pearl aquaculture) while others operate well offshore (Demersal Fishery; Timor Reef fishery, Offshore Net and Line Fishery, Spanish Mackerel Fishery). Commercial fisheries and aquaculture product is worth \$60 million annually with about \$35 million attributed to the wild-catch sector. The economic significance of the seafood industry is greater than just the landed value of the catch however, seafood wholesalers, processors, transporters and retailers all contribute millions of dollars annually to the Northern Territory's economy.

NT commercial fisheries and aquaculture ventures operate in remote tropical areas where they are often challenged by a lack of infrastructure, access to only basic services, and difficulties obtaining skilled labour, all of which can limit potential without direct planning. Further, the distance from major markets can put upward pressure on living and business costs and regulatory overburden and investment certainty are persistently stated points of concern for the seafood industry.

Commercial wild-catch fishing ventures typically supply relatively low volumes of high value seafood product (comprised of mackerel, Goldband Snapper, Mud Crabs, Barramundi and numerous tropical species of Snapper) to local, national and international markets and restaurants. Six species account for 50% of the total value of the wild-catch fisheries.

All commercial fishing activities in the Northern Territory are regulated under the Northern Territory Fisheries Act, which was updated in 2016. Like most contemporary fisheries legislation, the NT Fisheries Act 1988 sets out objectives tied to sustainability, equity and optimal resource use from the perspective of maximising benefits to the NT community at large. Research, development and extension activities that are driven by sustainability and that illuminate the social and economic components of equitable and optimal use are critical to our current and future prosperity.

Aquaculture continues to emerge as an important industry in the NT. Pearling is an established leader in the region and makes substantial social and economic contributions to the NT. Cultured barramundi production has been very successful and the volume of production is continuing to increase dramatically. There are also significant proposals to develop a large-scale prawn aquaculture in the Northern Territory. New and innovative aquaculture projects have recently developed in partnership with local companies and remote Aboriginal communities. Advances in culture methods for sea cucumbers, giant clams and black-lipped rock oyster have been encouraging, with pilot studies underway at Goulburn Island and the Tiwi Islands.

The Peak industry body for NT commercial aquaculture and wild-catch fisheries is the Northern Territory Seafood Council (NTSC). The Council is an incorporated association that represent the NT seafood industry's interests in a diverse range of forums in the NT and at a national level. The NTSC has a Board of Directors that is comprised of a Chairman, Vice Chairman, Secretary, Treasurer, a CEO and a representative of each of the Licensee Committees: Aquaculture, non-pearl; Aquaculture, pearl; Aquarium Fishery; Barramundi Fishery; Coastal Line Fishery; Coastal Net Fishery; Demersal Fishery; Mud Crab Fishery; Offshore Net and Line Fishery; Spanish Mackerel Fishery; Trader/Processor Sector; Timor Reef; and, Trepang Fishery. All commercial seafood industry Licence holders are eligible for full NT Seafood Council membership.

The NTSC vision is that the "Northern Territory seafood industry is a trusted, stable and prosperous industry which is continually earning its social licence to operate". Their objectives are:

- To promote, encourage and assist the Northern Territory's commercial seafood industry and persons and groups involved in it;
- To promote, engage in, encourage and assist research, conservation and other activities beneficial to the interests, persons and groups of the Northern Territory commercial seafood industry generally; and,
- The promotion of the development of the Northern Territory's fishing and aquaculture resources.

The NTSC has developed a strategic plan to meet these objectives and ultimately achieve their vision. This Plan recognises that "future proofing" the NT commercial fisheries is a key strategic requirement and has focussed on three key pillars to build its "social licence to operate":

1. Improving structures for an effective NT Seafood Council  
Improve NTSC Board governance and capacity in agreement making and sharing control with members so that the NTSC acts as a collective in addressing the longer term, complex risks for the organisation;
2. Building trust in our industry between our members, community and government  
Improve stakeholder communication and engagement and in particular, involve Aboriginal communities in the fisheries and to deliver regionally dispersed economic benefits; and,
3. Demonstrating sustainability  
Lead innovative projects to demonstrate that sustainability challenges can be resolved in a way that secures fishing grounds through better understanding of supply chains and the investment points needed to improve fish quality and supply.

Although the first of these pillars does not necessarily require an RD&E component, the second two can definitely benefit from RD&E, particularly the extension component.

## 2.2 Drivers

### Environmental Drivers:

Sustainable resource use is a clear driver for all fishing and aquaculture nationally and it is a priority area for RD&E in the Northern Territory. Being able to assess the status of stocks and to guide use that is consistent with long term ecosystem sustainability depends on RD&E that can elicit better (and more affordable) methods to understand sustainability, often in a data poor and/or capacity-limited operating environment. The environmental drivers that we recognise as shaping our research priorities include: sustainability of target species, bycatch and threatened species; impacts on habitat; post-release mortality; biosecurity, ecosystem integrity and climate change. Notwithstanding of the overall state of NT fishery stocks and the broader ecosystem, all sectors are particularly interested in ensuring the resources within their areas of interest are sufficiently healthy to support the various needs and values that exist at a local scale.

### Societal Drivers:

Fisheries are a public resource, that can enable a public good, and how resources are used needs to be framed according to community expectation and issues of fairness and equity. Territorians have varied expectations regarding the use of aquatic resources which reflect diverse cultural, social and economic backgrounds and environmental opinions. A clear understanding of these expectations needs to inform how the optimal and equitable use of our resources is defined. The quality of fishing experiences is affected by a diverse range of real or perceived issues that can include impacts to shared resources and visual amenity associated with sharing fishing grounds with other sectors.

The sea is an inseparable part of Aboriginal 'Country' and identity. All of the Land Councils recognise the societal value of Freshwater and Saltwater Country to their communities. Continued and ongoing access to this aspect of Country is critical to individual fishers and broader Indigenous communities, not just for food and economic wellbeing, but because it incorporates spiritual beings and sacred sites that are fundamental to Aboriginal understandings of creation, ceremony and religion. It represents a continuum between Aboriginal culture in the distant past and contemporary coastal Aboriginal societies<sup>3</sup>. It is critical that other sectors recognise this special connection of Indigenous people with Land and Sea Country.

Specific Indigenous societal drivers that can be addressed by RD&E include: definition and recognition of specific totems and sacred sites on sea country, recognising differing sectoral expectations and values; access to fishing grounds and resource allocation (sharing); capacity building of Indigenous people to work in fisheries-related fields; and partnerships and agreements with Traditional Owners.

It is important that recreational fishers and FTOs maintain access to fishing grounds. This encompasses entry to fishing locations (through the Aboriginal Land Rights (Northern Territory) Act 1976 (Cth) (ALRA), private and government owned properties and in Marine Parks), boat ramps and associated infrastructure, artificial reefs and FADs and fishing platforms. Specific societal drivers of relevance to the recreational sector that can be addressed by RD&E include: access to fishing grounds and resources including artificial reef and FADs; resource allocation (sharing); sectoral expectations; understanding and promoting the health benefits of

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<sup>3</sup> Living on Saltwater Country. Review of literature about Aboriginal rights, use, management and interests in northern Australian marine environments. National Oceans Office, 2004.

recreational fishing; capacity building (institutional, workforce and people); and partnerships and agreements with Traditional Owners.

For the wild-catch and aquaculture sectors, the critical need is certainty so that planning and investment into the future can be done with confidence. Not only about certainty to access important commercial fishing and aquaculture areas, but it is also important that processes to reach decisions are clear, considerate and consistent.

Relevant to all sectors, the Northern Territory Animal Protection Act 2018 recently broadened the definition of 'animal' to cover all bony fish, cartilaginous fish (e.g. sharks and rays), crustaceans (e.g. crabs, lobsters and prawns) and cephalopods (squid and octopuses). This change in law has the potential to significantly impact the NT fishing and seafood industry unless Codes of Practice are updated accordingly. It will be a defence under the new Act if a person's interaction with an animal is in accordance with a prescribed Code of Practice. Commercial wild-catch, aquaculture and recreational Codes of Practice will need to be modified so that they adequately cover the capture and post-harvest requirements of the new Animal Protection Act 2018. It is not yet clear how this may impact on customary indigenous fishing practices.

### **Economic Drivers:**

The fishery and aquaculture resources of the Northern Territory have tremendous economic potential for all sectors, but the vast and remote coastline of much of the NT is an impediment to their development due to lack of capital, infrastructure and suitably trained and experienced people.

Significant investment of RD&E directed specifically at development of Indigenous capacity to run, or be involved in profitable businesses associated with recreational fishing, wild-catch fisheries and aquaculture is required to overcome these hurdles. The benefits of good economies in remote Indigenous communities will also have a social benefit through community health and personal wellbeing.

The economic contributions of the recreational fishing and FTO sectors (including fishing retail and gear manufacturing) to the NT are important, and recreational fishing is a primary driver for many interstate and international visitors to the NT. The positive impacts integrate with societal drivers because of the influence that the sectors have on community and personal wellbeing. Understanding and recognition of the contribution of recreational fishing to the NT economy and in particular tourism are important components of a strategic RD&E plan. Specific economic drivers include: continued measurement and communication of economic importance by sector; and assessing potential and defining optimisation for FTOs including delivering high quality fishing experiences.

The economic contributions of the wild-catch and aquaculture sectors to the NT are important. The positive impacts integrate with societal drivers because of the influence that the sector has on community and personal wellbeing. Profitability and benefit maximisation are important components of a strategic RD&E. Markets, business opportunity and stability, as well as regulatory efficiency, all interweave to influence outcomes. Specific economic drivers include: infrastructure and infrastructure planning; assessing potential and defining optimisation; baseline measurements of economic impact by sector; market access and security; resilience and vulnerability (adaptation) to change; biosecurity, product quality and animal health; and traceability.

### **Meeting and survey feedback**

As part of the consultation process that occurred under [2016-116](#), when questioned about the FRDC priority areas, every sector placed environment as one of the highest priority areas – generally sustainability of the target species but also interactions with listed species and ecosystem impacts. Stakeholders recognise the

importance of sustainability and want to ensure and demonstrate that their fishing/aquaculture activities are sustainable. In addition to the environment, commercial wild-catch placed “Industry” as their highest priority. The Indigenous priorities were “community” and “people”.

Despite the above emphasis on environment and sustainability, when each sector was asked which was their “single biggest issue”, those relating to “access” were rated the highest by most survey respondents in the commercial wild-catch, and recreational sectors. Access was also a significantly important issue for Indigenous people behind “commercial opportunities” and for commercial aquaculture behind “food production” and “breeding”.

It was very apparent from grass roots stakeholders across all sectors that the single biggest issue currently being grappled with in Northern Territory fisheries and aquaculture is the implications of the Blue Mud Bay (BMB) High Court decision, which recognised Traditional Owners’ rights to the intertidal zone on Aboriginal Land, affecting somewhere between 80-85% of the NT coastline. The practical outcome of the BMB case is that entry into waters over Aboriginal Land for a purpose such as fishing (either recreational or commercial) requires permission from the relevant land trust<sup>4</sup>, except in areas that have entered into an agreement with the Government for open access. Whilst this decision opens the possibility of unprecedented Aboriginal control and involvement in varied marine industries and environmental and cultural conservation, it has obvious implications for access and allocation for both commercial and recreational fishers operating around the NT coast. The interim arrangements, which have waived the need for an access permit since 2008, will not continue indefinitely, and more enduring arrangements are required.. This issue is the prime driver of the NT RAC’s strategic RD&E directions for 2019-2024.

Although access to NT fishery and aquaculture resource is the same underlying driver, it has a range of implications for each sector.

### **Indigenous**

There is a significant immediate challenge for the Indigenous sector to introduce and manage a permit system to enable commercial and recreational access to inland and coastal waters on Aboriginal Land after interim access arrangements expire. There is obvious potential for such a system to also collect catch and effort information to assist in monitoring and management of the coastal fishery resources. As yet, it is unclear to what extent this system will integrate with that of NT fisheries Department, if at all, but it would be mutually beneficial if it did (not least to prevent duplication of reporting for commercial fishing operations). In addition to a permit system, it is likely that a significant extension project will be required to educate both commercial and recreational fishers about requirements of fishing on Aboriginal Land.

In addition to developing the permit system required to access Aboriginal Land, the NLC is managing significant investment by the Commonwealth government to support the participation of Traditional Owners in commercial fisheries and marine resource management activities. The NT Government is also exploring complimentary support and grant programs to assist Traditional Owner involvement in the seafood industry. The challenge for the Indigenous sector is developing the capacity of Indigenous people in rural areas that want to be involved in various aspects of the seafood industry and supporting them with the training and supply-chain infrastructure necessary for a successful seafood business. This presents an opportunity for the seafood industry to be involved with training and business development in remote Aboriginal communities.

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<sup>4</sup> See the commentary by Lauren Butterly ‘A decade on: What happened to the historic Blue Mud Bay case (and why is it in the news again)?’ on AUSPUBLAW (20 June 2017) <https://auspublaw.org/2017/06/what-happened-to-the-historic-blue-mud-bay-case>

Constructive, mutually beneficial partnerships between the Indigenous and commercial sectors is a key to the success of such ventures.

Similarly, there is opportunity for two-way training between Fisheries Division staff and Indigenous people in the management of remote coastal fishery resources. It is expected that this would build on and expand the scope and capacity of the current Indigenous Marine Ranger program.

### **Recreational**

Much of the popular coastal fishing areas area around Darwin and the van Diemen Gulf are not currently impacted by the BMB decision either because 1) they are not associated with an Aboriginal Land Trust (ALT) or 2) access to tidal waters over Aboriginal Land is still be permitted because the Northern Territory Government has entered into an Agreement with the relevant Aboriginal Land Trust. Nevertheless, the recreational sector is concerned about the implications of the BMB decision and does not want to lose access to the high quality fishing enjoyed by thousands of locals and interstate and international tourists in other more remote areas associated with ALTs and therefore requiring permits from the end of the interim arrangements. As yet, it is too early to gauge the permit requirements that may be sought from recreational fishers and whether they may provide individual or blanket access; there will no doubt be lengthy and ongoing negotiations in this respect. Regardless, there remains the opportunity for individual recreational fishers, groups of fishers or fishing tour operators to negotiate with Indigenous communities associated with an ALT for permits and access to specific coastal fishing areas. Again, such arrangements could be mutually beneficial: potentially offering strictly controlled and high quality fishing opportunities to recreational fishers and, in turn, a revenue stream or business opportunity to the Indigenous community who manages the area.

### **Commercial**

The commercial wild-catch sector has undergone more than two decades of continually reducing access to NT coastal regions and resources as a result of spatial closures implemented variously to segregate them away from important recreational fishing areas, Aboriginal Land or Marine Protected Areas. They are now looking for greater security and certainty for the future of their seafood businesses based on NT coastal fishery resources. Lack of business certainty is a major impediment to investment in the NT commercial seafood industry. Whilst the change in permit requirements associated with the BMB decision is a challenge to the commercial fishing industry in terms of raising uncertainty about their access, it also presents an opportunity for commercial wild-catch operators to partner directly with coastal Indigenous communities to secure long-term access to specific areas of the NT coastline. Not only will this benefit commercial operators, but the TOs and Indigenous communities can benefit from additional employment opportunities associated with working in the seafood industry.

Not dissimilar to the commercial wild catch sector, there will be mutually beneficial opportunities available to the aquaculture sector through negotiating access to prime coastal regions suitable for different types of aquaculture. In fact, such arrangements have been well established for decades in both Western Australia and the Northern Territory with respect to pearl aquaculture and grow-out, and there is evidence of similar arrangements beginning to be negotiated for newer aquaculture ventures such as prawns, sea cucumbers, giant clams and tropical rock oysters.

### 3 RD&E PLAN 2019 – 2024

#### 3.1 Purpose

The NT Research Advisory Committee RD&E Plan provides a framework to identify the key strategic research needs of the fisheries sector under its jurisdiction for the 5 year period from 2019 – 2024.

The RD&E Plan aims to ensure that the research program meets both jurisdictional and, where appropriate, national strategic RD&E goals and addresses the major challenges facing the Northern Territory seafood industry, including the commercial, aquaculture, recreational and Indigenous sectors.

Where possible, this plan will link with other related strategies to enable efficiency and leverage opportunities e.g. other RACs, FRDC subprograms, FRDC coordination programs, FRDC sector based program.

#### 3.2 Framework overview



### 3.3 Goals

The key RD&E investment goals for the NT RAC over the period of the Plan are outlined below.

#### **Goal 1: Demonstrated resource sustainability**

- Cost effective monitoring and assessment methods to determine status of key target species
- Harvest strategies with appropriate limit reference points, target reference points and decision rules, particularly for data poor fisheries (and sectors)
- Management arrangements to ensure cumulative impacts of fisheries and other activities on habitats and ecosystems are sustainable
- Understand the environmental drivers potential impacts of climate change on resources

#### **Goal 2: Fine-scale spatial information to support management**

- Collect fine-scale catch (and effort) data from all extractive users of fishery resources (particularly focused on recreational and indigenous)
- Collate detailed spatial information on the “value” of coastal resources to the different sectors (e.g. culturally and spiritually important indigenous areas; high quality recreational fishing areas; and economically valuable areas for commercial fisheries and aquaculture)
- Combine the above information into a Geographic Information System (GIS) based framework to allow managers and stakeholders to evaluation sectoral access and allocation issues and trade-offs.

#### **Goal 3: Equitable cross-sectoral access and allocation arrangements**

- Develop mutual understanding of each sector’s “values” placed on coastal resources
- Clearly articulate fishery objectives with respect to ecosystem, social and economic requirements
- Foster the potential for strategic alliances and partnerships between indigenous communities and stakeholders from the recreational sector (including fishing tour operators), commercial wild-catch and commercial aquaculture sectors
- Explore opportunities to reduce conflict between the commercial wild-catch (especially barramundi) fishers and recreational fishers

#### **Goal 4: Development of indigenous businesses**

- Training and support for indigenous people and communities to be involved in commercial seafood businesses and recreational business ventures
- Identify and address barriers to successful indigenous involvement in seafood and fishing businesses

#### **Goal 5: Improved compliance monitoring**

- Increased compliance will be needed to deal with the implementation of permits and changed access arrangements to coastal fisheries associated with Aboriginal Land Trusts
- Build capacity and monitoring and compliance capability of the Indigenous Ranger programs

#### **Goal 6: Profitability of aquaculture ventures**

- Improve nutrition, feeding strategies, health and overall husbandry techniques to increase profitability of developing aquaculture ventures.



**3.4 Strategic RD&E investment priority areas**

RD&E Program1. Environment	
<p><b>Priority Area 1 Informing best practice fishery management</b></p>	<ul style="list-style-type: none"> <li>• Harvest strategies with appropriate limit and target reference points and decision rules;</li> <li>• Management arrangements to ensure cumulative impacts of fisheries and other activities on habitats and ecosystems are sustainable;</li> <li>• Develop management strategies that respond to environmental condition and optimise resource use;</li> <li>• Appropriate and cost-effective harvest strategies developed for NT fisheries;</li> </ul>
<p><b>Priority Area 2 Demonstrated resource sustainability</b></p>	<ul style="list-style-type: none"> <li>• Appropriate-scale catch (and effort) data from all extractive users of fishery resources;</li> <li>• Better knowledge of ecological drivers in northern Australia fishery resources;</li> <li>• Cost effective monitoring and assessment methods to determine stock status;</li> </ul>
<p><b>Priority Area 3 Animal health &amp; biosecurity</b></p>	<ul style="list-style-type: none"> <li>• Effective animal health and biosecurity strategies for natural fisheries resources and aquaculture products.</li> </ul>

RD&E Program 2. Industry	
<p><b>Priority Area 1 Informing industry best practice</b></p>	<ul style="list-style-type: none"> <li>• All sectors have appropriate best practice guidelines (for safety and animal welfare issues);</li> <li>• Increased recreational fisher understanding of post-release mortality, and uptake of techniques to reduce post-release mortality;</li> </ul>
<p><b>Priority Area 2 Development of Indigenous businesses</b></p>	<ul style="list-style-type: none"> <li>• Leadership, accountability, and extension support for Indigenous communities in place;</li> <li>• Culturally appropriate governance arrangements/frameworks/tools to support developing indigenous fisheries;</li> <li>• Increased capacity and participation of Indigenous people and communities involved in seafood and fishing businesses;</li> </ul>
<p><b>Priority 3 Fostering productive relationships between sectors – access &amp; allocation</b></p>	<ul style="list-style-type: none"> <li>• Better strategies for reduced inter-sectoral conflict;</li> <li>• Recognised allocation of resources to fishing sectors;</li> <li>• Strategic partnerships between indigenous communities and the recreational sector (including fishing tour operators), commercial wild-catch and aquaculture sectors</li> </ul>
<p><b>Priority 4 Development of market opportunities</b></p>	<ul style="list-style-type: none"> <li>• Development of fishing tourism and seafood business opportunities supported by market research.</li> </ul>

**Priority 5 Understanding social and economic drivers**

- Improved capacity to develop and monitor social, cultural and economic fishery objectives;
- Understanding of illegal trade/markets and implement appropriate management strategies;
- Established economic and social parameters to inform management decision-making and resource allocation across all sectors;

**RD&E Program 3. Communities**

**Priority 1 Synthesising and communicating information regarding NT fisheries**

- Improved transparency of access to information relating to NT fisheries
- Visually aid decision making tools for:
  - Increased spatial information and sectoral understanding on the values of coastal resources to the different sectors
  - GIS-based framework containing information to allow managers and stakeholders to evaluate sectoral access and allocation issues and trade-offs.
- Adopt innovative technological frameworks to display information to allow managers and stakeholders to evaluate sectoral access and allocation issues and trade-offs.

**Priority 2 Fostering productive relationships between sectors – improving industry structures**

- Trust in our industry both within industry and externally (community and government);
- Improved structures and processes for peak bodies;
- Regional governance structures to identify suitable representation of all sectors on NT fishery management groups.

**Priority Area 3 Fishing and aquaculture opportunities for indigenous communities**

- Improved governance systems for approved activity/transit in culturally significant places and sacred sites developed for integration into fisheries management
- Development of training and support opportunities for Indigenous people and communities to be involved in commercial seafood businesses;
- Benefits of fishing and including health, wellbeing, social and cultural benefits to Indigenous communities documented and supported through policy

**Priority Area 4 Fisheries monitoring Opportunities for improved management for indigenous communities**

- Increased capacity of Marine Ranger programs to participate in data collection (including monitoring and compliance), education and related fisheries RD&E
- Methods to monitor, assess and communicate data relating to localised abundance trends of fisheries resources adjacent to Indigenous communities developed

**RD&E Program 4. People**

**Priority Area 1  
Increase leadership capacity of all  
fishing and aquaculture sectors**

- Increased capacity of all sectors to represent their constituents in natural resource management forums;
- Future leaders identified and pathways for their development put in place;

**Priority Area 2  
Involvement in mechanisms to  
develop capacity**

- A skilled workforce developed and maintained across all parts of the NT fisheries and aquaculture sectors, including training and support provided for Indigenous people to be involved in seafood and fishing businesses;
- Consistent NT participation in national training and capacity building programs

**Priority Area 3 Support NT-based  
research capacity**

- Support post-graduate research candidate development in NT

**RD&E Program 5. Adoption**

**Priority Area 1 Identifying preferred and effective pathways for adoption.**

- Sector specific understanding of how operators seek out, evaluate and adopt RD&E to improve operations;
- Strategic determination of periodicity of adoption cycles to allow extension planning to meet temporal needs/patterns.

**Priority Area 2 Effective processes to deliver research outcomes to end-users and broader community**

- Advice in place regarding the use of various communications strategies (including social media) to distribute RD&E outcomes;
- Mechanisms identified, developed and implemented to proactively engage stakeholders;
- Stakeholder forums in place to engage end users in technological advancements and innovative solutions to shared problems.

## 4 RD&E PLAN Guidelines

### 4.1 INVESTMENT COLLABORATION

The RAC's are to be mindful of collaborative opportunities with external funding sources (other than the FRDC) as well as collaboration between the jurisdictional RACs, IPAs and FRDC subprograms. This collaboration occurs through the sharing of RD&E Plans as well as the results of priority planning processes. The annual planning workshop provides a forum for the sharing of these priorities to promote collaboration.

Collaboration provides the opportunity to share investment across common areas of interest and promote RD&E execution efficiency.

### 4.2 EXTENSION

Extension processes are embedded into all FRDC-funded RD&E. How results can be extended begin when a project is approved for funding, are considered in the design and proposal phase where priorities for end users are determined, continue during the project's execution through to the final published report. This is often easier for short-term applied research but needs to be more considered for longer-term, blue-sky research.

On 23 April 2010, the Primary Industries Ministerial Council (PIMC) approved a National Strategy for Fishing and Aquaculture Research, Development and Extension (RD&E) which establishes the future direction to improve the focus, efficiency and effectiveness of RD&E to support Australia's fishing and aquaculture industry.

The FRDC have adopted these as key principles with regards to encouraging and promoting Extension and Adoption. They are:

Principle 1: All stakeholders to value extension and adoption activities in the same way as research activities.

Principle 2: Extension will be a key focus in research project development

Principle 3: Project knowledge and outputs are actively managed

Principle 4: Effectiveness and impact of project extension activities are evaluated

Principle 5: Extension and adoption capacity is maximised and built upon.

It best practice for project managers to have given some thought to how the project outputs will be used and adopted by end users while developing the application. It is a FRDC requirement that an Extension and Adoption Plan is developed and submitted for each project.

### 4.3 EVALUATION OF PROJECTS

The FRDC has adopted the Commonwealth input, output, outcome reporting framework policy. The Department of Finance and Deregulation has determined that the FRDC's planned outcome is *Increased knowledge that fosters sustainable economic, environmental and social benefits for the Australian fishing industry; including indigenous, recreational, commercial and aquaculture sectors, and the community; through investing in research, development and adoption.* The FRDC's performance is measured against its ability to deliver this outcome.

The success of the RAC's planning, investment, management and adoption is measured by an evaluation framework that is based on adaptive management. The structure of the evaluation framework is as follows:

- A planning process that ensures investment is made against priorities where research can contribute to a significant improvement.



- An annual report evaluating the performance of individual projects against the targets in the RD&E Plan.

The FRDC has implemented the Rural RD&E Corporation Evaluation Framework methodology to achieve the total portfolio evaluation assessment. This is based on a rolling series of cost benefit analysis of project clusters (based on previous 5 years' investment). The results of the project cluster assessments links to the agreed KPIs that are relevant to that cluster. This process ensures that the investment decisions are continually being adjusted to ensure optimal investment performance. In this ongoing evaluation, the FRDC will measure the performance of RAC investments after the life of its RD&E Plan.

During the life of the RD&E Plan, the RAC should self-evaluate its performance against its identified Priority Areas as well as monitoring investment to ensure balance in investment across the FRDCs 5 programs. This is to be aligned with the prioritisation and RD&E Plan review processes undertaken in the October RAC meeting.

#### **4.4 REVIEW OF THE RD&E PLAN**

Annually, the RAC will review their RD&E Plan. This will occur at the October RAC meeting. The Plan will be reviewed to:

- assess performance against the identified Priority Areas of the Plan
- identify gaps against the Priority Areas of the plan
- determine priority areas for investment against these gaps

These annual plans will be circulated to all FRDC subprograms and partnership agreements unless it is deemed that there are areas of sensitivity, IP protection or commercial advantage that require protection.

At the beginning of December each year, the FRDC will hold an annual workshop for all RACs, Industry Partnership Agreements and National Initiatives to provide updates on priority areas for investment and any potential overlap and collaborative opportunities for the coming financial year.

The RAC, at each meeting, should also undertake a situational scan of the jurisdiction to identify any tactical or immediate areas of RD&E need that require short term or immediate remediation.