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The Lobster NEWSLETTER

ANNOUNCEMENTS

ROCK LOBSTER CONFERENCE

QUEENSTOWN 2019

The next Trans-Tasman Rock Lobster Conference will be held in Queenstown, New Zealand, from August 11th – 13th 2019. The organiser is the CRA8 Rock Lobster Industry Association in conjunction with the New Zealand Rock Lobster Industry Council.

Due to interest shown in attending this Conference, the organisers will provide a small number of places for interested parties from outside of Australia and New Zealand. For more information on this, or any other query, please see the contact details on the Conference website: *www.lobsterconference2019.co.nz*

Malcolm Lawson
Chief Executive Officer
CRA8 Rock Lobster Industry Association Inc.

12th International Conference and Workshop on Lobster Biology and Management (ICWL)

Save the date: 18-23 October 2020 in Fremantle, Western Australia

The Department of Primary Industry and Regional Development (DPIRD) and the Western Rock Lobster (WRL) Council are pleased to be hosting the 12th ICWL conference and workshop on 18-23 October 2020 at the Esplanade Hotel in Fremantle, Western Australia. Fremantle is a major port for the western rock lobster fleet, 20 km from Perth, the capital city of Western Australia (WA). The western rock lobster fishery in Western Australia is the largest single species fishery in Australia with a value of over AUD$400 million and it has a long history of research, management and compliance which is highly regarded. The Fisheries Research and Development Corporation (FRDC) have agreed to provide strong support for the conference.

The timing of the conference is the week following the **World Fisheries Congress** on 11-15 October 2020 in Adelaide, South Australia (wfc2020.com.au) which provides an excellent opportunity to attend two world-class events during your visit to Australia.

Planning for the conference is underway with a steering committee and a technical committee already meeting to plan for the conference. A professional conference organiser has also been appointed to assist with the planning to ensure a smooth, successful and enjoyable conference for all. We will be launching the 12th ICWL website (http://www.icwl2020.com.au/) early in the new year which will be updated as planning progresses.

This lobster conference returns to where it all began in Western Australia over 40 years ago when a group of 37 lobster biologists from 6 countries met in Perth to discuss and compare their work on lobster ecology, physiology, and management protocols, and to find common themes amongst the different species that were commercially fished. In recent years participation has risen to about 150-200 people from 20 countries.

The theme for the 2020 conference is '**ecosystem-based fisheries management (EBFM)**' as this generally represents best practice for fisheries management and reflects that fisheries research and management focus is now broader than just sustainability. Therefore we will be welcoming the presentations that focus on the biology of the lobster species and stock assessment and are also hoping to attract presentations that examine other aspects of EBFM such as ecosystem effects of fishing, economic assessments, social issues, governance and compliance with management regulations. This focus also reflects the importance placed by DPIRD and industry on third-party certification of the key fisheries in WA by the **Marine Stewardship Council (MSC)** with the western rock lobster fishery being the first in the world to receive this accreditation. An industry day is also planned to be an important component of the program so we are looking forward to strong support from lobster industry participants.

WRL and DPIRD are looking forward to hosting scientists, managers and industry participants in Western Australia in 2020. The steering committee and technical committee welcome any ideas that you may have for the lobster conference such as particular sessions and special workshops that could be held. There has been some interest in crab scientists participating in the 12th ICWL which reflects the approach adopted by the 2nd ICWL in Canada. Your comments on this suggestion are welcome.

Co-hosts of the workshop

Nick Caputi

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Proceedings of the 11th International Conference and Workshop on Lobster Biology & Management

Edited by Kari Lavalli and Richard Wahle

11TH INTERNATIONAL
Conference and Workshop
on LOBSTER
Biology & Management
Portland, Maine 4-9 June 2017

Celebrating its 40th year, the 11th International Conference and Workshop on Lobster Biology & Management recognizes the major advances in lobster research. Encompassing topics such as diseases and parasites, fisheries science and aquaculture, management, and much more, the issue serves as a guide to the state of lobster research and the challenges that lie ahead for successful management across the world.

Wahle named director of the Lobster Institute at the University of Maine

Excerpted and revised University of Maine News Services press release 7 September 2018

University of Maine marine sciences research professor, and co-editor of *The Lobster Newsletter*, Richard Wahle has been named director of the University of Maine's Lobster Institute, effective Sept. 1. He succeeds Robert Bayer, who has directed the institute since 1995 and is retiring from UMaine this year.

Wahle joined UMaine's School of Marine Sciences in 2009. He is based at the University's Darling Marine Center, where he will continue to teach and conduct research. In his new role, Wahle plans to energize and expand the existing connections of UMaine's distinguished researchers and communicators to the lobster industry and resource managers in the state and region. Among the first initiatives will be establishment of a group of affiliated UMaine faculty and student researchers to extend the institute's impact and reach. Wahle also envisions the Lobster Institute as a major disseminator of information on new developments in research.

At UMaine, Wahle has been involved in fisheries research in New England and Atlantic Canada since 1985, and is well known in the lobster industry and among fishery managers. He has published widely in the scientific literature on lobster and other invertebrate species of commercial importance, such as scallops, sea urchins and crabs. He has co-edited *The Lobster Newsletter* since 2008. In the past few years, he chaired two major international scientific conferences on lobster biology and management, both hosted by UMaine.

Prior to joining the University of Maine in 2009, Wahle was a senior research scientist at Bigelow Laboratory for Ocean Sciences for 15 years. He held two postdoctoral positions at Brown University and the University of Rhode Island, with a short stint in Ireland working on the European lobster. Inspired by the ground-breaking work of Bruce Phillips and Nick Caputi in Western Australia, in 1989 Wahle founded the American Lobster Settlement Index, a US-Canadian collaborative that monitors the yearly pulse of young-of-year recruits in rocky coastal nurseries to assess lobster year class strength. He has also collaborated on research in Chile's remote Juan Fernandez Islands, which host an endemic species of spiny lobster. He currently serves as an adviser to the development of another spiny lobster fishery in the Andaman Islands of India.

The mission of the University of Maine's Lobster Institute is to conduct research and educational outreach to steward the lobster resource and preserve lobstering as an industry and as a way of life. More information about the Lobster Institute is available online.

RESEARCH NEWS

Genesis of a spiny lobster hatchery and aquaculture in rural Nicaragua

Nicaragua is the largest as well as the poorest country in Central America. The challenges faced by artisanal fishermen on the Pacific coast are further exacerbated by historical and on-going overexploitation of marine resources and destruction of habitat, making it difficult for them to make a living and feed their families. Our group (Teach a Man to Fish) has been working on the southwest coast of Nicaragua to help local fishermen increase their wild catch of local target species like Pacific red snapper (*Lutjanus peru*) and spiny lobster (*Panuliris gracilis)*.

Our mission depends on developing a coordinated approach to improving the lives of impoverished rural fishermen while helping them transition to aquaculture to reduce their dependence on wild catch. The approach includes both restoration of marine ecosystems with artificial reefs that function as incubators for native marine life as well as promotion of long-term sustainability by establishing marine aquaculture operations for local fishermen cooperatives that will then be required to permanently protect surrounding artificial reefs. The key to the success of this mission is the research, development, and implementation of a hatchery for the under-utilized green spiny lobster, *Panuliris gracilis*.

Figure 1. Spiny lobster (*Panuliris gracilis*) at home in one of our early artificial reefs

Cooperatives are legal entities owned by the fishermen with local, regional, national and international structure. The purpose is to protect and enhance the fishing economy of the area, which in this case has very low productivity. Construction, installation and monitoring of artificial reefs built from simple concrete blocks over the past four years has demonstrated a quick adoption by reef-dwelling organisms, including juvenile red snapper and spiny lobster (Fig. 1).

Building and installing the artificial reefs with materials and technology appropriate for underdeveloped areas with limited resources and infrastructure was pivotal to our mission. Toward that end, we have developed methods to easily move large heavy structures made of concrete across the ocean surface and position them precisely on the sea floor without heavy equipment such as cranes. Monitoring of the first pilot reef (concrete block and rebar) for over a year, located on the bottom on a sandy bay (San Juan del Sur, Nicaragua), demonstrated the successful adoption of such structures by desired species even in a 'marine desert'. A composite of the first year's results is striking proof of the effectiveness (see: https://www.youtube.com/watch?v=h224Z31i_ok).

Our designs, structural details, and methods of installation have evolved over the past four years. During that time we have installed over 140 artificial reefs at a number of locations along the SW Pacific coast of Nicaragua, from Playa Maderas to Ostional, next to the Costa Rican border. The Nicaraguan government has been a strong supporter of the project and approved the locations we submitted for artificial reef installation.

One of the responses of the local fishermen to the difficulty they experienced to maintain a harvest in this overfished coastal ecosystem has been to resort to diving, especially for spiny lobster. Without training and proper equipment, this has led to many injuries and deaths. We saw from the outset that the best way to help the artisanal fishermen stabilize their catch was to help them transition to ocean farming and to include diver safety training for the fishermen who would be operating the farm.

For this long-term goal, we have sought a mechanism to help fund the broader vision. We formed a US-based non-profit called Teach A Man to Fish (TAMTF) last fall (https://tamtf.net) and a subsidiary business in Nicaragua. Our plan is to develop a lobster aquaculture operation within a matrix of artificial reefs. The aquaculture operation will be given to our partner fishermen's cooperative (Oceanic Cooperativa) in exchange for 24/7 protection of the surrounding artificial reef matrix, thereby including a strong element of marine ecosystem restoration in a program designed to enhance the local fishing economy and to improve diver safety. An example of the planned lobster aquaculture unit plus artificial reef matrix layout is shown in Figure 2.

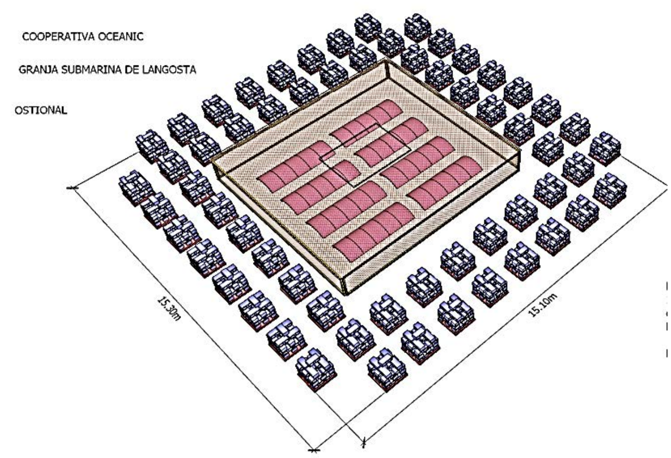

Figure 2. Design of ocean floor lobster aquaculture unit imbedded in a matrix of artificial reefs

The lobster houses are located inside a netted superstructure that is large enough for a diver to enter and work as needed. The Nicaraguan government is supportive of the planned lobster aquaculture operation and artificial reefs and is in the process of granting the Oceanic Cooperativa an ocean floor concession in Ostional Bay, the first in the country, for the planned installation. Even after growing the aquaculture system by adding a grid layout of units plus reef matrices (Figure 2), the operation will cover a small fraction of the concession area.

Many spiny lobster operations around the world depend on wild-caught juveniles for seed stock. For a variety of reasons, TAMTF is developing a hatchery starting with berried females and hope to expand lobster aquaculture to other locations in Nicaragua and Central America. Attempts at spiny lobster hatcheries have primarily involved laboratory proof-of-concept models or sophisticated commercial operations. We face two challenges in establishing our hatchery. First, little has been documented about the early life-history (e.g., reproduction, egg development, larval stages) of this local species, *Panuliris gracilis*. Second, we are working in very primitive conditions in coastal fishing villages in rural Nicaragua where lack of technology must be counterbalanced with creativity and dedication. You can learn more about our team and some of the materials and methods used by our Director of Operations, Christian Lemouche, at the TAMTF website.

During the pilot phase of a land-based hatchery, we will be working with Dr. Goldstein to document the early life-history of this species. Although the recent political unrest in Nicaragua adds some complications regarding supply lines for our operation, it makes the needs of these fishermen even more stark. We are dedicated to seeing this plan reach a successful implementation and are currently seeking additional funding. The project is being designed with simple materials and basic skills that are available in any developing country, so it could be easily replicated anywhere in the world.

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Growth, maturation and breeding of the clamkiller slipper lobster *Scyllarides tridacnophaga* Holthuis, 1967 in captivity

The clamkiller slipper lobster *Scyllarides tridacnophaga* Holthuis, 1967, (Family Scyllaridae) is known to be distributed in the Indo-West Pacific region, from East Africa, Red Sea, Gulf of Aden and Pakistan to the west coast of Thailand. It has been reported from the western Bay of Bengal along the south-east coast of India from Rameswaram (Radhakrishnan et al., 1995) and Kovalam (Kizhakudan et al., 2013). Native to the Indian Ocean, the species is known to live on coral and rocky reefs at depths of 5 - 112 m (MacDiarmid et al., 2011).

Four live specimens (two males and two females) have been obtained within a span of 6 years from the western Bay of Bengal from depths of 12-40 m off Kovalam coast to the south of Chennai in south-east India. The lobsters were caught by bottom-set gill nets operated over sedimentary rock patches. Details of the lobsters collected are presented in Table 1.

The collected specimens were transferred to the lobster rearing facility at the Kovalam Field Laboratory of Madras Research Centre of Central Marine Fisheries Research Institute (CMFRI) for studies on growth and reproduction. The animals were reared in the fluidized *in situ* bed filter type recirculatory broodstock tanks of 3 ton capacity with reduced light intensity and minimum rearing water exchange. The sea water quality was maintained without much variation, by monitoring the biofiltering efficiency.

Table 1. Details of live specimens of *Scyllarides tridacnophaga* collected from the western Bay of Bengal off Kovalam

Specimen	Date obtained/sampled	CL (mm)
Male 1	Jul-11	75
	Jun-15	80
	Aug-16	80
	Mar-17	81
	Mar-18	82
Female 1	Jun-13	95
	Jan-14	100
	Jul-15	105
	Dec-17	110
Female 2	Jul-13	70
	May-14	74
	Sep-15	78
	Dec-16	84
	Sep-17	89
Male 2	Sep-17	74

A female specimen (Fig. 1A) weighing 570 g and measuring 105 mm carapace length (CL) and 222 mm total length (TL) mated successfully in the late evening hours on 25th June 2015 with a smaller but active male of 80 mm CL, 170 mm TL and 230 g weight. Spawning was observed during the early morning hours with the male attaching the gelatinous matrix embedded sperms on to the posterior part of the ventral sternum of the female, mostly on the sides of the 5th walking leg bases and the protruding knobs on the sternum (Fig. 1B). The newly extruded eggs were bright yellow in colour and under the microscope they appeared oval and soft (Fig. 2). The eggs were seen pushed inside the membranous follicle and strung on to the pleopodal seta on the abdomen. Most of the eggs were scattered on to the sternum, outside the pleopodal area and were lost in the water.

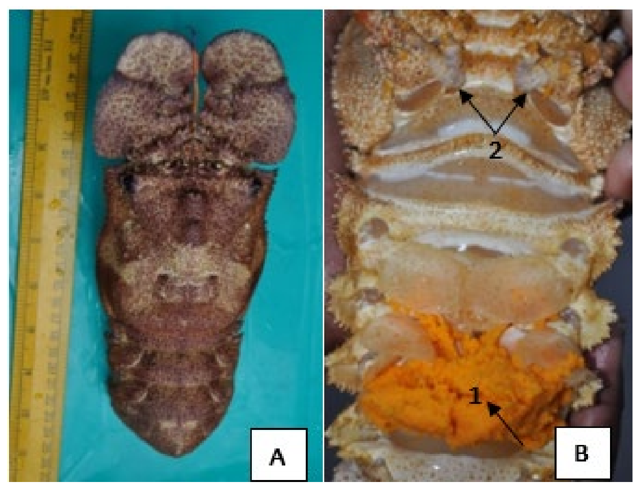

Figure 1. Female scyllarid lobster Scyllarides tridacnophaga A. Dorsal View; B. Fertilized eggs (1) and sperm attachment on the sternum (2)

The freshly extruded eggs measured 510-520 µm in diameter. By the second day the eggs became more spherical with the diameter stabilizing at 530-550 µm. The colour of the developing eggs changed progressively from bright yellow to orangish to rusty brown as cell division progressed and the yolk was pushed to a corner of the egg. Both the male and female specimens had moulted 3-4 weeks prior to the mating, although the male did not show much increment in size and weight while the female showed substantial increment from 100 mm to 105 mm CL.

The observed egg diameter for this specimen is slightly higher than the values recorded for the hunch back locust lobster *Petrarctus rugosus* (395-470 mm) but is considerably smaller than the slipper lobster *Thenus unimaculatus* (850-910mm). Therefore, the anticipated larval period (more than 8 phyllosomal stages) is expected to be longer than that of *P. rugosus* and *T. unimaculatus*, which are the two lobsters for which larval cycles have been completed in captivity in India (Kizhakudan, 2004).

Figure 2. Fertilised eggs just after spawning

Unlike slipper lobsters of the genus *Thenus*, *S. tridacnophaga* does not exhibit burrowing behavior and shows a preference for crevices as hiding places. It is of a shy disposition and resorts to hiding at the slightest sign of disturbance in its immediate environment. Holthuis (1991) and Lavalli et al. (2007) have observed that this nocturnal species shelters during the day and forages at night, feeding on dead fish and molluscs and that it opens and feeds on giant clams (*Tridacna* sp.). In the course of our observation of its behavior in captivity we have found that the lobster strongly prefers darkness, is very adept at opening and feeding on clams, does not exhibit cannibalism and does not prey upon other lobsters or fishes. It appears to be a very hardy and long-lived species with very slow growth rates. There also appears to be differential growth between sexes, with males being smaller and showing extremely small growth increments, compared to females. This species has been assessed as "Least Concern" in the IUCN Red List (MacDiarmid et al., 2011).

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Habitat characteristics and prevalence of parasites in Caribbean spiny lobsters

The Caribbean spiny lobster (*Panulirus argus*), a major fishing resource, is affected by the pathogenic virus *Panulirus argus* virus 1 (PaV1) and the digenean trematode *Cymatocarpus solearis*, for which lobsters act as second intermediate hosts. A previous study in three zones within Bahía de la Ascensión, Mexico, revealed an intriguing spatial pattern for these parasites, with higher prevalence of PaV1 in the most vegetated zone (Briones-Fourzán et al. 2012), and the higher prevalence of *C. solearis* in the less vegetated zone (Briones-Fourzán et al. 2016). Also, the probability of infection decreased with increasing lobster size for PaV1, but increased with increasing lobster size for *C. solearis*, and coinfection with both parasites was almost nil.

To explore a potential relationship between habitat characteristics, the associated invertebrate communities, and these infection patterns, in May 2017 we further sampled three shallow bay zones with contrasting types of habitats: the back-reef zone of a large reef unit ("reef"), the reef lagoon ("lagoon") between Punta Allen (a land point harboring the only town around the bay) and the reef, and a shallower, inner coastal zone away from the reef ("shallows") (Fig. 1).

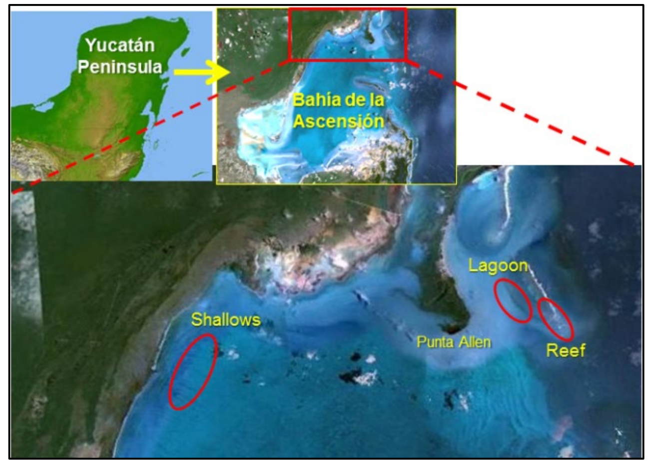

Figure 1. Location of the study area (Bahía de la Ascensión, Mexican Caribbean) and the three sampling zones.

On each zone, the percentage cover of benthic components was estimated via the point intercept method along seven 25-m long transects, with 21 quadrats, 2 m × 2 m each (three per transect) used to obtain a habitat assessment score (HAS, see Gratwick & Speight 2005; Lozano-Álvarez et al. 2017) as a measure of habitat complexity. Then, all conspicuous invertebrates observed within the quadrats were identified *in situ* and quantified by two thoroughly trained divers (e.g., González-Gómez et al. 2018). Finally, we used hand nets to extract lobsters from commercial casitas deployed throughout each zone. Each lobster was measured, examined for clinical signs of PaV1 (mainly milky hemolymph) and for encysted metacercariae of *C. solearis* (visible to the naked eye). A sample of hemolymph was put into ice-cold 70% ethanol for examination of the presence of DNA of PaV1 by PCR (Huchin-Mian et al. 2013). The lobsters were then returned to the capture site.

HAS was compared among habitats with a Kruskall-Wallis test. Cover of benthic components was examined with a PCA followed by separate GLMs per component. Differences in the composition of invertebrates among habitats were analyzed by non-metric multidimensional scaling (nMDS) followed by an analysis of similarity (ANOSIM) (Clarke 1993). The lobster data were subjected to logistic regression analyses with carapace length as a continuous covariate and zone as a categorical factor (with three levels). Three separate analyses were conducted considering as the binomial response variables (1) the presence of clinical signs of PaV1, (2) the presence of DNA of PaV1 detected by PCR, and (3) the presence of metacercariae of *C. solearis*.

Habitat complexity and benthic components

The shallows had a significantly lower median HAS value (i.e., habitat complexity) (9 [8,10], median [interquartile range]) than the other two zones (reef: 12 [9, 13]; lagoon: 13 [12, 14]). Results of the PCA revealed that the first two components explained 70.2% of the total variance. The first component explained 51.7% of the variance and was correlated positively with coralline algae and seagrass, and negatively with calcareous pavement and sand. The second component explained 18.5% of the variance and was correlated positively with coral rubble and negatively with seagrass (Fig. 2). Transects on the shallows differed from transects on the other two zones along the first component, whereas transects on the reef differed from transects on the lagoon along the second component. Zone significantly affected cover of all benthic components except for rubble (not shown). The back reef zone was the most heterogeneous in terms of benthic components with, on average, 38% seagrasses, 18.6% coralline algae, 13.4% sand, and 11.4 % dead coral. In contrast, the lagoon was dominated by seagrasses (67.7% cover), followed at a distance by sand (11.7%) and macroalgae (9.4%), whereas the shallows was dominated by sand (56.9%), followed at a distance by calcareous pavement (17.4%) and (short) macroalgae (16.6%).

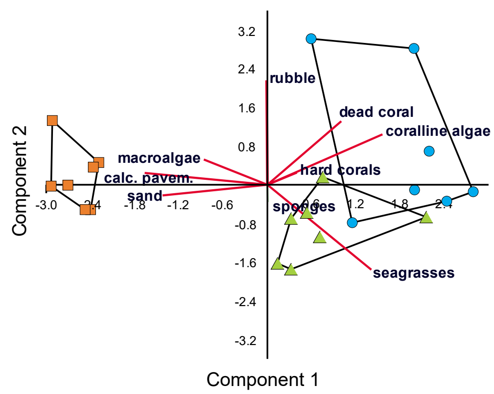

Figure 2. Principal Components Analysis (PCA) bi-plot on logit transformation of percent cover of benthic components over the back reef (blue dots), the reef lagoon (green triangles), and the shallows (orange squares). Each symbol represents a transect.

Invertebrate community

In all, 63 species of invertebrates were identified (6 polychaetes, 1 cirripede, 20 decapods, 1 isopod, 3 stomatopods, 2 anemones, 4 sea urchins, 3 brittle stars, 6 bivalves, 15 gastropods, and 2 chitons). There were more species on the lagoon (38) and back reef (35) than on the shallows (20), but the numbers of individuals were 2903, 563, and 1384, respectively. Overall, invertebrate assemblages differed significantly with zone (ANOSIM, $R = 0.704$, $p < 0.001$) and between all pairs of zones (range in R values: 0.514–0.807, all $p < 0.001$). The invertebrate assemblage of the shallows showed no overlap with the invertebrate assemblages of the back reef and the lagoon, which also exhibited little overlap (nMDS, Fig. 3).

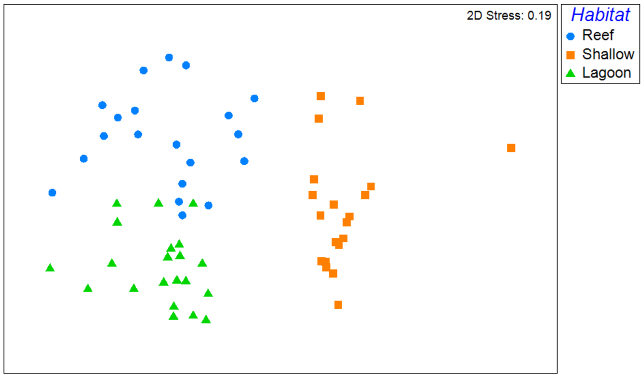

Figure 3. Non-metric multidimensional (nMDS) ordination of invertebrate community structure in samples from the back reef (blue dots), the reef lagoon (green triangles), and the shallows (orange squares), based on species abundances. Each symbol denotes a quadrat.

Therefore, in terms of habitat complexity, cover of benthic components, and invertebrate community, the three zones were substantially different.

Prevalence of parasites

Results of the logistic regression models confirmed that, as lobster size increased, the probability of infection (both clinical and subclinical) decreased for PaV1 ($p<0.001$) but increased for *C. solearis* ($p<0.001$). However, the probability of infection with *C. solearis*, although lower in the lagoon (prevalence: 7.3%) than in the other two zones (shallows: 10.8%; reef: 22.7%), did not vary significantly with zone. In contrast, the probability of infection with PaV1 was significantly higher in the reef lagoon (the most vegetated habitat), with 14% of lobsters clinically infected ($p<0.001$) and 46% positive to PaV1 by PCR ($p = 0.019$), than in the other two zones. By breaking down the samples from each zone into small (<50 mm CL) and large (≥ 50 mm CL) lobsters (Fig. 4), the effects of lobster size and zone become more evident, in particular the high levels of lobsters of both size categories positive to PaV1 by PCR in the lagoon. Coinfection was slightly higher than previously experienced, with 5.5% of individuals (mostly larger, reef-dwelling lobsters) presenting both PaV1 (via PCR, just 0.43% in those clinically infected) and *C. solearis*.

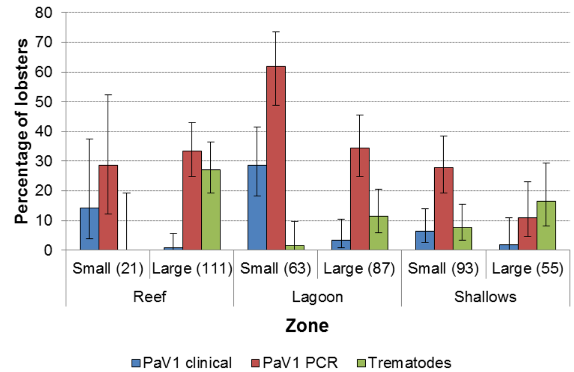

Figure 4. Prevalence of lobsters with clinical signs of PaV1 (blue columns), lobsters that tested positive to PaV1 by PCR (red columns) and lobsters with *Cymatocarpus solearis* infection (green columns) among small (<50 mm carapace length, CL) and large (≥50 mm CL) Caribbean spiny lobsters sampled from casitas in the Reef, the Lagoon, and the Shallows. Numbers in parentheses are sample sizes; error bars denote 95% CI.

Conclusions

Our results concerning PaV1 are consistent with previous results (Briones-Fourzán et al. 2012; Candia-Zulbarán et al. 2012; Huchin-Mian et al. 2013), supporting the idea that marine vegetation (far more abundant in the lagoon) could be a reservoir for PaV1. In the case of *C. solearis*, the results were not consistent with those of Briones-Fourzán et al. (2016), but we believe this is due to a much larger proportion of smaller lobsters in the shallows in the present study relative to the previous study. Nevertheless, the characterization of the invertebrate community allowed the identification of some mollusk species that will be investigated as potential first intermediate hosts for this trematode. Our ongoing investigation aims to increase insight into the complex relationships between habitat characteristics, parasites, and diseases of spiny lobsters.

Acknowledgements: This project is being

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Tackling the problem of whale entanglement

Entanglements of whales in lobster fishing gear has been a considerable issue in Western Australia, with 17 entanglements in commercial lobster gear in 2013. This prompted the introduction of gear modifications which has been effective in reducing the entanglement rate. However, with a humpback whale population which is increasing at over 10% p.a., entanglements will continue to be of concern. With Federal government funding, staff from the Department of Primary Industries and Regional Development (DPIRD) embarked on a project to produce a low-cost tracking buoy which could be attached to an entangled whale (Fig. 1).

This would allow subsequent interception and disentanglement of whales which may otherwise not have been able to be disentangled due to either sufficient time (daylight), available resources (crew or vessels) or weather conditions. A prototype from this project was successfully attached to an entangled whale on dusk before being tracked for 2 days and subsequently successfully disentangled.

Figure 1. Whale tracking buoy

With this new technology, and given the recent fatality in North America during an disentanglement operation, crews have made the tracking buoy an integral part of their disentanglement operation, with this being the first priority after assessing any entangled whale. To assist these teams, the lobster industry body, Western Rock Lobster, provided funding for componentry for 10 disentanglement buoys. Coupled with in-kind support from DPIRD staff in their construction, these buoys were made available to disentanglement teams throughout the state this year. They have been deployed 5 times so far this year and allowed successful disentanglement operations to be conducted (Fig. 2).

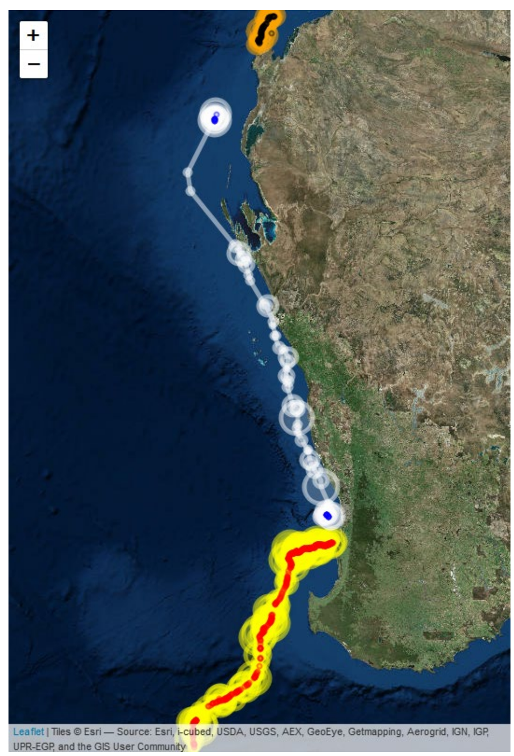

Figure 2. Tracking buoy deployments in 2018

Further refinements of the technology are planned for this "off-season" with interest from other states in acquiring the buoys for their disentanglement teams, to assist in what is a growing global issue.

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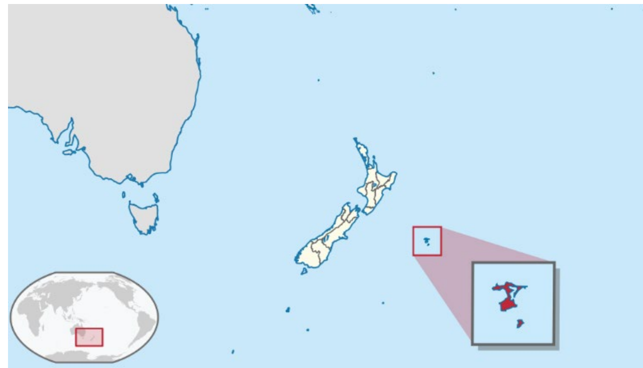
STORIES FROM OUR HISTORY

The Chatham Islands Lobster fishery where 'Two Ton' Johnson took a chopper to a cray fight!

At the invitation of Bill 'Two Ton' Johnson, Mike's company Alexander Helicopters stationed a helicopter at Waitangi on the Chatham Islands, New Zealand, in June 1967, to trial airborne pot-setting and vessel unloading. The operation was under the direction of Chatham Islands Packing Company, which was under the control of 'Two Ton' and his managers, Reg Wills and Cecil Scott.

The old Gisborne lighter Endeavour, with its large deck space, was also purchased for the trials. The craypots were baited, and laid from Endeavour, but retrieved by helicopter.



A special buoy system was developed to allow the helicopter to hook on quickly, lift the line vertically, and deposit the pot on the deck of Endeavour, from where it was emptied, re-baited, and then re-laid.

The vessel size and speed of the retrieve and re-setting cycle made it possible to run 80 pots over a large area. The results quickly enabled the crew to gauge where the crayfish were plentiful and to re-set the gear on more productive grounds. The system worked too well – other fishermen quickly latched onto 'Two Ton's' detection methods and bombed these more productive areas with their gear. This resulted in mayhem and the airborne fishing system was scrapped. The helicopter then concentrated on unloading the lobster from the boats and transferring to the various fish packing houses.

The Chatham's lobster industry grew quickly, with some 200 vessels fishing a wide area. At the peak of the boom there were seven packhouses operating and three helicopters unloading the fleet. Processors had two machines on the Chathams and a third operating at Pitt Island.

Land was purchased and a house and workshop established for the engineers to look after the helicopters. Two fishing boats – the Waiiti and Breaksea — were also deployed in the lobster fishery in conjunction with the Alexander Helicopters' operation. Alexander Helicopters was then catching and carrying their own fish, as well as all the other product they handled.

Ultimately, lobster bait became short so Endeavour was used to freight fish frames from Gisborne. Local paua, which was then worthless, was also used along with blue cod. All very different now of course but at the time only the lobsters had any real value. However, not the whole lobster — all that was taken was the tail. The rest was ground up and put back into the sea. A shocking waste!

The entrepreneurial Alexander saw an opportunity and negotiated with a deal with the Japanese to use the heads and claws for wedding catering. For the initial trial they required 20 tonnes of heads per week but Alexander was unable to convince the packhouses to take up the opportunity so, unfortunately, the wastage continued. What a contrast to the modern lobster fishery where the whole fish is prized by the market. A record day was 55 tonnes of crays landed off the boats by the helicopters at a cost of $10 per 400 kg basket, even if it was not full. The fishermen tried to overload the lifting baskets, which became dangerous, so pilots were told to flick the basket in the water and float the top 200 mm off. This quickly fixed the problem.

It was not uncommon for fishermen to engage a helicopter to take them from their boat deck to the pub for a bit of R'n'R. Expensive, but some were earning $80,000 per year and that was in the 60's - a couple of hundred bucks was nothing.

There was the odd boat (which for obvious reasons must remain nameless) that did not have any cray pots, but they seemed to do pretty well. No need to explain how. Lots of deals were done at the pub too! There are many stories that could be told of the Chathams era but they can never be published – even fifty years on.

By August 1970 things had slowed down considerably. Alexanders had one helicopter left and in spite of the locals wanting the Government to subsidise that, it too was withdrawn. The land and buildings along with Waiiti and Breaksea were sold. It was the end of an extraordinary and exciting era for the many who shared it.

Mike Alexander recounts many more stories in his self-published book: *The Beat of the Rotors* (Alexander, M., & Harrington, A. (2010). *The beat of the rotors*. Taupo, N.Z.: M. Alexander. 196 pp; ISBN 0473163926, 9780473163921).

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The Lobster NEWSLETTER

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