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FRDC Final Report

# Establishing Industry catch sampling for WA's crystal crab fishery

*Roy Melville-Smith, Clive Maynard, Kim Nardi & Neil MacGuffie*

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Establishing Industry catch sampling for WA's crystal crab fishery  
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### Researcher Contact Details

Name: Roy Melville-Smith  
Address: Curtin University  
Department of Environment and Agriculture  
GPO Box U1987, Perth WA 6845  
Phone: 0487300302  
Email: Roy.smith@curtin.edu.au

### FRDC Contact Details

Address: 25 Geils Court  
Deakin ACT 2600  
Phone: 02 6285 0400  
Fax: 02 6285 0499  
Email: frdc@frdc.com.au  
Web: www.frdc.com.au

In submitting this report, the researcher has agreed to FRDC publishing this material in its edited form.

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Fig. 3 Length frequency of male and female crystal crabs sampled by FV Toyosaka Maru in 2013 using iCallipers off Carnarvon, Western Australia.

Fig. 4 Length frequency of male and female crystal crabs sampled by FV Napoleon in 2013 using iCallipers off Shark Bay, Western Australia.

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## Executive Summary

Length frequency monitoring data for crystal crab, which are caught by the West Coast Deep Sea Crustacean Managed Fishery, are currently collected by staff of the Department of Fisheries, Western Australia. The data collection method is expensive because the fishery extends from Cape Leeuwin in the south of the state, to North West Cape in the north and the small number of boats operating in the fishery tend to work in different areas of the fishery. This means that considerable travel costs are incurred for staff to get to where the boats are working and to spend time at sea measuring and monitoring the catch. These costs are prohibitive for a small fishery. On top of the expenses incurred, the method of data collection is also not ideal. Crystal crabs tend to vary in size along different parts of the coast and at different fishing depths. Good quality length frequency data would therefore be dependent on good coverage of depths and coastline, but given the constraints outlined above about the amount of sampling that can reasonably be supported, adequate coverage will not always be possible.

One solution would be to get the fishermen themselves to monitor the catch from a small number of pots each day. Over the course of a year it would be feasible to build up a reliable dataset of catch measurements. This project has attempted to develop and implement a straightforward and efficient system of measuring crabs in the catch that fishermen would be willing to apply.

The system developed through this project uses electronic vernier callipers fitted by Scielex Pty Ltd with a Bluetooth feature. The design also made it possible to measure crabs in the catch using a different button for the two sexes, and to have the data electronically transmitted to a receiving device, in this case an iPhone.

An application (app) for use on an iPhone was written to capture the data transmitted from the vernier callipers and to automatically add the date and latitude and longitude of where the crab was measured. The only data required to be physically entered is the set depth of traps sampled. At the end of the trip, all data collected can be easily transmitted by the iPhone to an onshore server, or in this case to file-hosting service Dropbox.

The second objective of the project, was to work with the skippers and licence holders who are responsible for most of the crystal crab landings, to establish an appropriate sampling regime and to initiate the start of a long term commercial fisher catch sampling program. This has been achieved and ~150 crabs have so far been sampled by industry, demonstrating that the concept is viable.

The iCalliper sampling equipment will become the property of the Department of Fisheries, Western Australia and all future liaisons with the fishermen using that equipment as well as maintenance of the equipment will be assumed by the Department. The Department will need to use the iCalliper sampling system side by side with the current catch sampling arrangements to compare the two sampling methods over a longer time period. If a longer time series of commercial catch sampling shows there to be no significant difference between the two sampling methods, it would be logical to assume that the iCalliper system which is a more economical sampling method could become the only method of sampling the size frequency of the catch. There is also potential for the Department of Fisheries, Western Australia to consider expanding this size frequency sampling method to other fisheries such as prawns, rock lobsters and other crab species.

**KEYWORDS:** Crystal crab, *Chaceon albus*, measure, electronic, vernier callipers  
iPhone, Western Australia

## 1.0 Introduction

Length frequency monitoring data for crystal crab which are caught by the West Coast Deep Sea Crustacean Managed Fishery, are currently being collected by staff from the Department of Fisheries and have been for many years. This method of data collection is not ideal, because it is both expensive and inadequate.

The data collection method is expensive because the fishery extends from Cape Leeuwin in the south of the state, to North West Cape in the north and the small number of boats operating in the fishery (currently three boats) tend to work in different areas of the fishery. This means that considerable travel costs are incurred for staff to get to where the boats are working. Once there, staff often have delays in getting to sea due to mechanical problems or adverse weather conditions. There are also the costs of sending staff to sea for the duration of the trips. All of these expenses place significant limitations on the budget allocated for a relatively small fishery such as this one and the amount of data sampling trips therefore needs to be minimised.

On top of the expenses incurred, the method of data collection is also not ideal. Crystal crabs tend to vary in size in different parts of the coast and even in different fishing depths. Good quality length frequency data would therefore be dependent on good coverage of depths and coastline, but given the constraints discussed above about the amount of sampling that can reasonably be supported, adequate coverage will not always be possible.

Clearly, one solution to the above predicament would be to get the fishermen themselves, to do the length frequency monitoring for the Department. This possibility has been raised with industry on various occasions and representatives have always been open to the suggestion. It is recognised that the success of getting industry to collect data is to make the task as straightforward as possible so as to minimise the impact of collecting data whilst undertaking fishing operations.

This project has been about developing and implementing the methods to minimise the task of collecting length frequency data by industry.

## 2. Objectives

1. Development of effective and efficient means to sample the catch and record the data.
2. Provide training for those fishermen who are sampling the catch and recording the data.



### 3.0 Methods

This project was initiated to develop a way of minimising the time and effort required for measuring crabs.

Commercial electronic systems design and manufacturing company, Scielex Pty Ltd, was co-opted to modify their waterproof vernier calliper logbook product with a Bluetooth feature.

The unmodified vernier calliper logbook

([http://www.scielex.com.au/products/products\\_6.html](http://www.scielex.com.au/products/products_6.html)) is capable of collecting size frequency data and storing it on a memory card. By entering the data using one of three different coloured buttons information can be recorded in three different categories based on which button is pressed. Depending on the categories ascribed to the buttons, it is possible for example, to record males, females and ovigerous females. The modification to the vernier calliper logbook product for this project allowed the same measurement data previously recorded on a memory card, to instead be electronically transmitted via Bluetooth.

An iPhone app was developed by Curtin University to retrieve the data transmitted by the callipers and to store it together with the date and GPS position, thus minimising the need for physically entering the data. Minimising the need to enter data is important, because this task can be difficult on a rocking boat with fishing gloves and can result in the introduction of ‘finger error’ in the entry of data.

The second arm of the project was to liaise with those crystal crab licence holders responsible for 90% of the crystal crab landings and together with the skippers of their boats to establish an appropriate sampling regime.

The vessels fishing for the licence holders responsible for all but 10% of the total crystal crab catch in this fishery are the FV Napoleon and FV Toyosaka Maru. Agreement was established with the owners/skippers, that sampling the entire catch of crabs from two pots on each line would be manageable. The operation of the sampling equipment as outlined in Appendix 3 was explained to Drew Wassman, skipper of the FV Napoleon, during at sea sampling in January 2013 and to David Hand, Managing Director of Chaceon Pty Ltd and ex-skipper of Toyosaka Maru in July 2013.

## 4.0 Results

### 4.1 Vernier iCallipers and iPhone app

Scielex Pty Ltd successfully modified their waterproof vernier calliper logbook product by fitting Bluetooth capability. The box housing the Bluetooth feature (20 mm X 50 mm in size) was located behind the measurement viewing window on the iCallipers (Fig. 1). It was only possible to fit two coloured buttons on top of this box to allow for two different categories of measurement to be collected (Fig. 1), however this satisfied the capability of collecting separate measurements for males and females. A full description of the process involved in pairing the vernier iCallipers to the iPhone is outlined in Appendix 3 and separately, a description of the program behind the app is provided in Appendix 4.

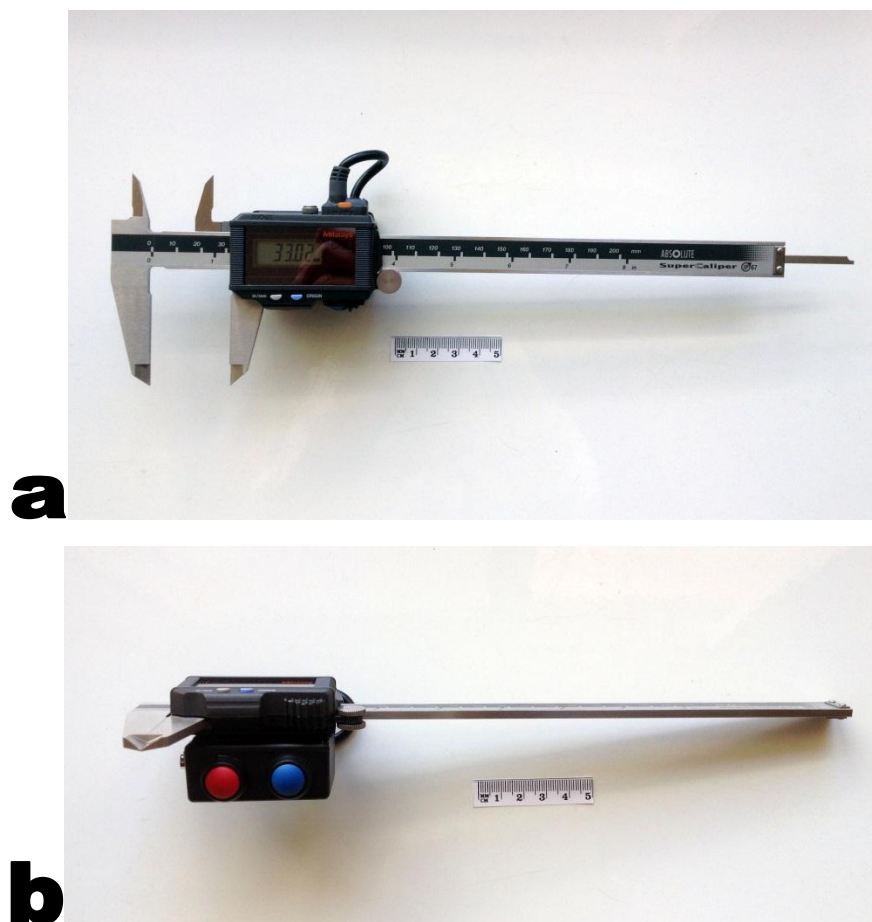


Fig. 1 a. iCalliper positioned ready for measuring and b. showing the underside with the positioning of the buttons which are used to record measurements; the red button for female crabs and the blue for males.

### 4.2 Data collection

The locations from where crystal crab length frequency samples have been collected to date is shown in Fig. 2. The samples taken west of Denham are from fishing operations on FV Napoleon, while those further north and west of Carnarvon were collected by FV Toyosaka Maru.

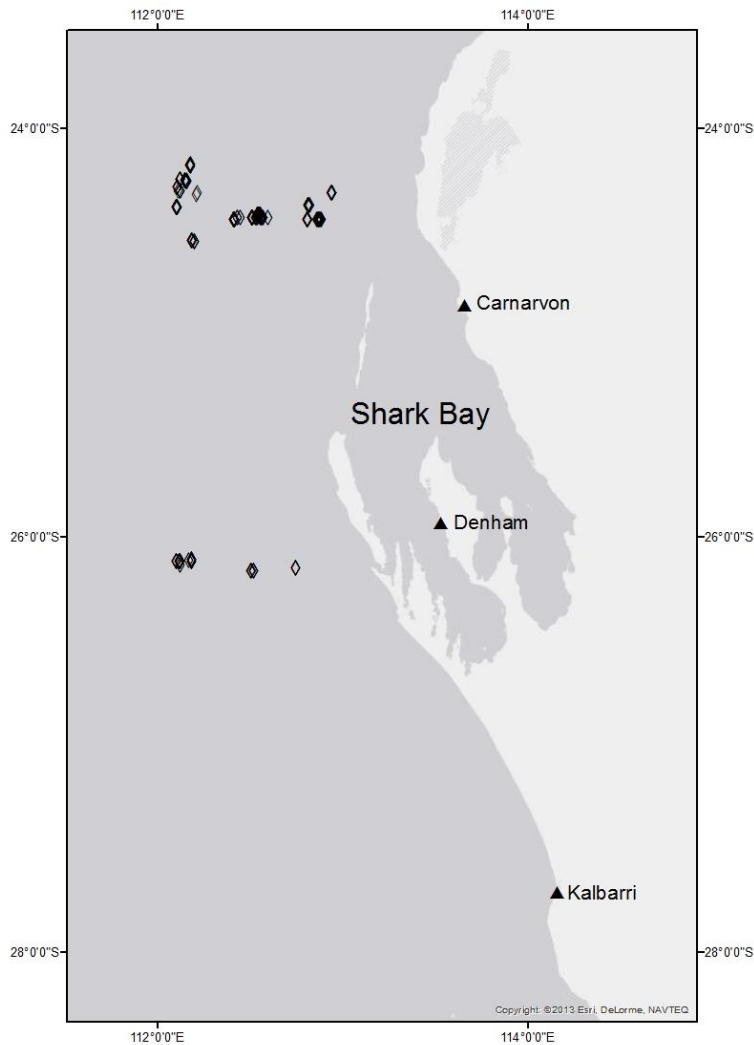


Fig. 2 Map showing areas off the Western Australian coast in which the commercial crystal crab catch was sampled using the iCallipers/app developed by this project. The sampling locations are represented by black dots.

Length frequency sampling for male crabs west of Shark Bay and west of Carnarvon are shown in (Fig. 3) and for female crabs west of Shark Bay and west of Carnarvon in (Fig. 4). Due to the relatively limited size of the data sets and the restricted range of depths sampled (west of Shark Bay 494 – 676 m and west of Carnarvon 490 – 627 m), there has been no attempt to view the data by depth categories. However, the data for Shark Bay and Carnarvon localities have been presented separately.

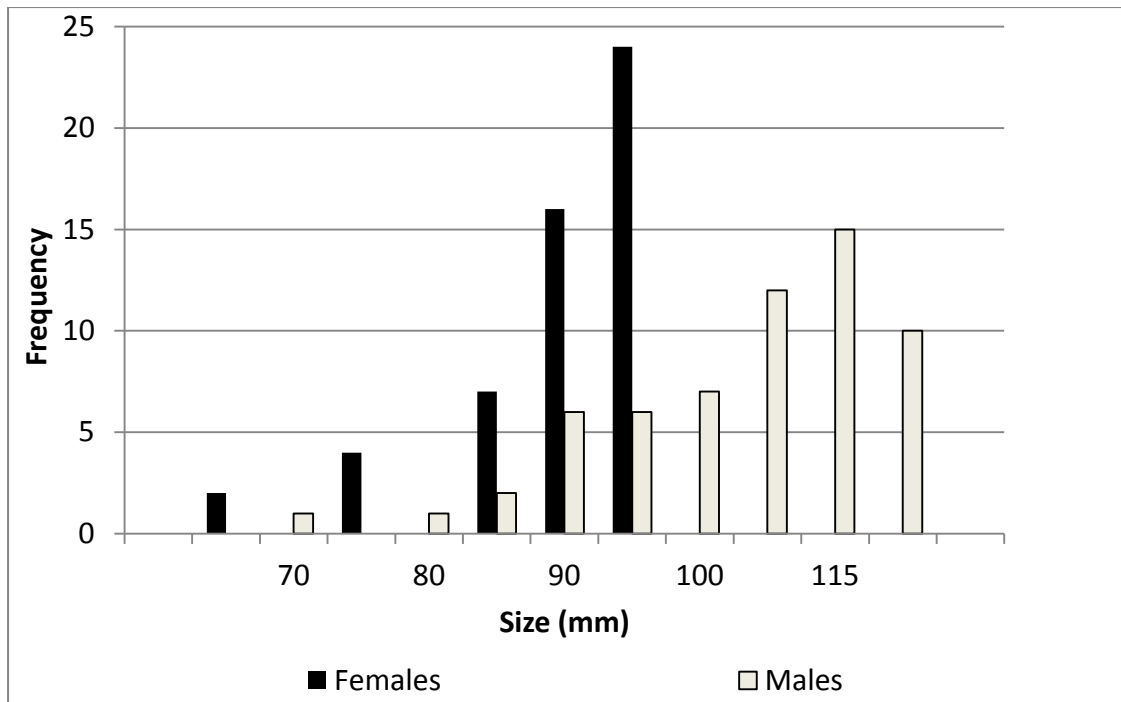


Fig. 3 Length frequency of male and female crystal crabs sampled by FV Toyosaka Maru in 2013 using iCallipers off Carnarvon, Western Australia.

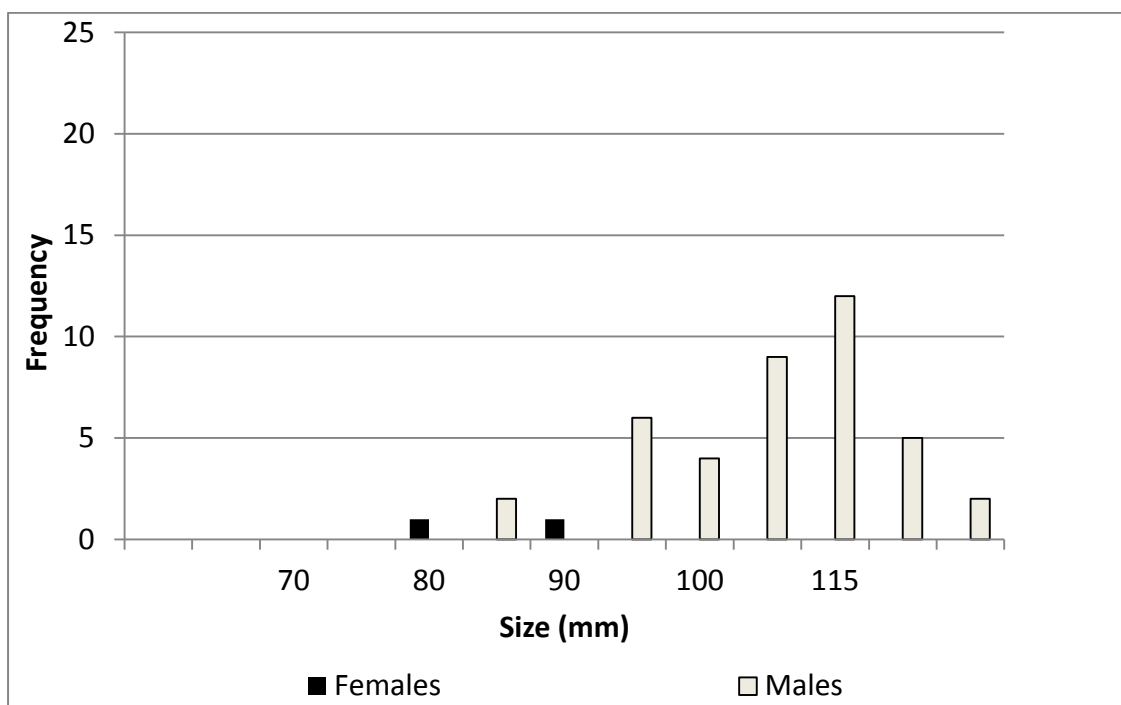


Fig. 4 Length frequency of male and female crystal crabs sampled by FV Napoleon in 2013 using iCallipers off Shark Bay, Western Australia.

## 5.0 Discussion

Sampling of the catch by the two boats that have been issued with iCallipers has been sporadic. This has not been due to any reluctance on the part of the skippers to assist with the task, but has instead been due to the need to modify the equipment during its development. Modifications are time consuming due to the equipment needing to be sent from the fishing ports of Denham and Carnarvon to Perth and then on several occasions having had to be sent on to Scielex in Tasmania. Accordingly, the amounts of data that have been collected by the iCallipers to date is not large, but at time of writing both sets of iCallipers are in use on the two crystal crab fishing boats. This is the first time since the start of the project that the gear is in use on both boats at the same time and so the quantity of data being collected should increase rapidly from here on.

The following are some examples of what occupied time in the development of the measuring equipment and thereby led to delays in getting the equipment deployed on the commercial crab fishing boats:

1. The iCallipers were initially fitted with touch switches, so that all that was required to choose either a male or female crab measurement, was to touch either the blue (male) or red (female) switch. Trials using that arrangement were successful, but it was found that the touch switch was too sensitive for use at sea. In falling around on a rocking boat it was found that the touch switch was too sensitive and measurements were being recorded in error due to the touch switch being brushed up against objects on the deck and on the person doing the measuring. Accordingly, the iCallipers were returned to Scielex and our collaborators there sourced different types of switches and ultimately fitted them with 'piezo' based pressure switches. The new switches have been found to be very successful.
2. Most of the crabs that are measured are males. This may be due to there being more males than females in the depths being fished, or perhaps is related to the fact that females do not grow as large as males. Because there are so many males measured, the fishermen asked for the blue (male) and red (female) switches to be changed around so that the blue switch is nearest to the thumb of the person holding the iCallipers. Having the switch that is most often used nearest the thumb is beneficial because it is easier to operate the iCallipers with this arrangement. Accordingly, the iCallipers were returned to Scielex Pty Ltd for the switches to be swapped over.

As noted in the results, because the size frequency data collected during the course of this project was limited, it has not been presented by depth category. We have viewed these size frequency distribution datasets as satisfying the proof of concept, that useful data can be collected by crystal crab (and other) fishers using this equipment. The length frequency distributions from this small amount of sampling are similar to those collected by the Department of Fisheries, Western Australia from their at sea sampling program. Larger sample sizes in the future will produce more meaningful comparative results.

It is possible for fishers to record the number of pots sampled. If the vernier callipers are set to zero and either the red or blue switch is depressed, a record is inserted indicating that a new pot is to be measured. Although this information has been recorded, we were sceptical about its authenticity because it is easy to forget to insert a zero measurement and thereby forget to record that a new pot is being sampled. Extra emphasis will need to be stressed on getting those doing the measuring to record this information if it is deemed to be useful by the Department of Fisheries, Western Australia. We considered that it would be more reliable to use daily catch and effort log book information for recording any form of CPUE and to use the size frequency data for only that purpose.

## 6.0 Conclusion

This project has successfully achieved its objective of developing a method which will enable commercial fishers to measure the catch from a small number of crab pots on each line that they work. The goal to provide greater sampling coverage of the west coast deep sea crustacean fishery and to do it more cost effectively has been proved.

While the concept has been achieved, it will be necessary to run the comparative data collection trials for a longer period than what was possible in this project. This will be necessary so as to have a reasonable transition period between the system of length frequency sampling that has been in place in the past (i.e. sending staff to sea to specifically measure crystal crabs), versus instituting this proposed system (i.e. having the fishers measuring a subsample of pots from each line over the course of their fishing year).

## 7.0 Implications

This research could have implications beyond the deep sea crustacean fishery to other fisheries requiring size frequency data to be collected using vernier callipers (e.g. prawns, rock lobsters). The major benefit from this project is that data from the fishery can be collected effectively (no need for staff to be deployed to go to sea to sample the catch, so there are cost savings) and accurately (the large buttons are easy to depress even with a gloved hand and the result records size, GPS location etc in a single key stroke).

## 8.0 Recommendations

The iCalliper sampling equipment will become the property of the Department of Fisheries, Western Australia and all future liaisons with the fishermen using that equipment as well as maintenance of the equipment will be assumed by the Department.

The Department intends to adopt the iCalliper sampling system and run it side by side with the current catch sampling arrangements to compare the two sampling methods over a longer time period. If a longer time series of commercial catch sampling was to show that there was no significant difference between the two sampling methods, it would be logical to assume that the iCalliper system which is a more economical sampling method could become the only method of sampling the size frequency of the catch. There is also potential for the Department of Fisheries, Western Australia to consider expanding this size frequency sampling method to other fisheries such as prawns, rock lobsters and other crab species.

During the trials of this equipment, the fishermen measured the crabs across the width of the carapace. The Department is using carapace length measurements. It is easy to convert the different measurements using a length-width relationship that is available, but future training of those measuring crabs may need to standardize on the measurement that is being used by the Department.

The app that was developed by this project will be available through the App Store in the future.

## 9.0 Extension and Adoption

The project has been very much a collaborative effort, with the fishermen and licence holders key players and Department of Fisheries, Western Australia and WAFIC representatives as collaborators on the project. In terms of adoption of the research, the fishers are committed to undertaking at sea sampling of their fishery in the future and the Department of Fisheries, Western Australia will take over the running of the project into the future.



## **Appendix A: Intellectual Property**

Ownership of any intellectual property (IP) arising from this project has been waived.

## **Appendix B: Staff**

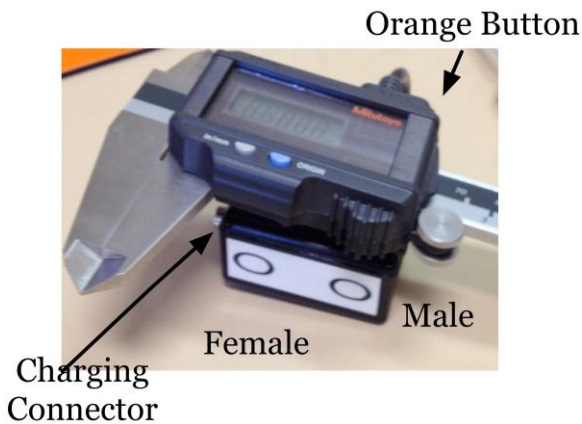
Dr Roy Melville-Smith  
Mr Clive Maynard  
Mr Kim Nardi  
Mr Neil MacGuffie

Curtin University  
Curtin University  
Department of Fisheries, Western Australia  
Western Australian Fishing Industry Council

## Appendix C: iCalliper manual for use of calipers and iPhone app

The application is designed to work with a Digimatic Bluetooth adaptor (from Scielex)

attached to a Mitutoyo calliper. The user instructions cover both the calliper and the iPhone application operations.



### Setting the Callipers to Operate Mode:

Press and hold the orange button (close to the cable) until the buzzer stops, release immediately. After a couple of seconds the unit will give a short buzz and is now ready to connect to the iPhone. The left side LED on the Bluetooth module will flash red.

### Connecting to the iPhone:

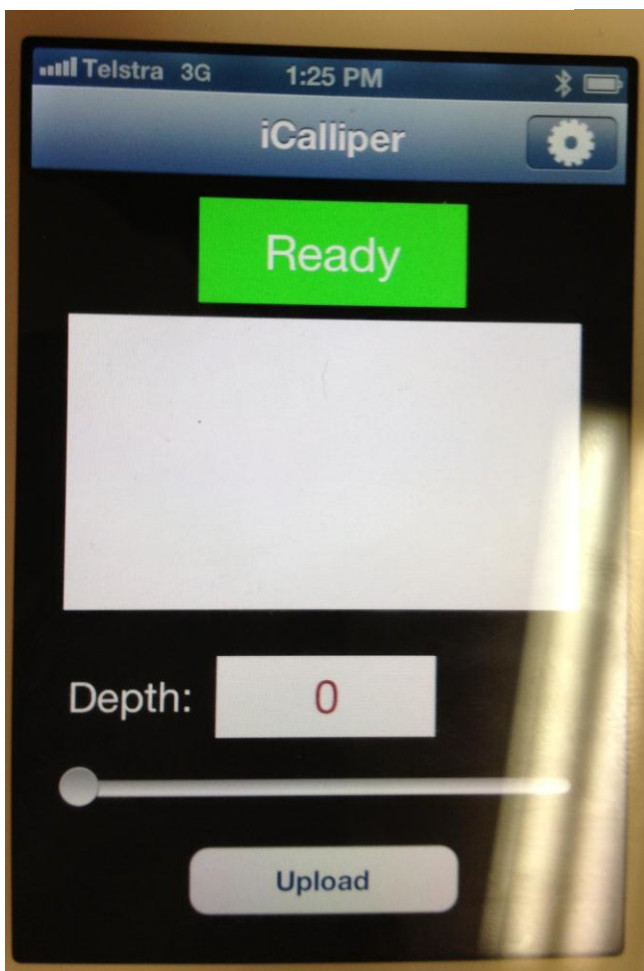
Select the Settings icon on the iPhone and then select the Bluetooth setting. Tap the On/Off selector so that it shows ON in blue. A Devices label will appear and a CALLIPER Not Connected line appears. Tap this line and the iPhone will search for the CALLIPER device and, provided the calliper module has been turned on first, will show as Connected. Check that the left side LED on the Bluetooth module changes to solid green. Close the Settings functions by tapping the Home button on the iPhone.

### Running the iCalliper App:

Find and tap the iCalliper icon on the iPhone. The application appears as shown and is ready to collect data. Use the slider below the Depth label to select a fishing depth if that data is needed.

In order to have GPS information available in the data the iPhone location services must be enabled. If they are not a dialog box will appear asking for this to be turned on.

If the date setting of the iPhone is invalid another dialog box will appear asking for this to be set. This can be done manually or automatically if the phone is within a 3G cell



range.

Use the iCallipers to measure a crab carapace and touch one of the two buttons to transfer the data. With the buttons facing towards you the left button is for Female and the right button for Male. The iCalliper will vibrate and buzz for a short time to indicate that a measurement has been made.

Setting the iCallipers to a zero reading and touching a button results in a “Pot Change” message in the data window.

During transmission the green Ready becomes red Busy with a 4 second count down back to green.

The data appears in the text window and is updated every time a new value is received. The format of the data displayed is described below. When the number of entries exceeds the screen display manual scrolling with the finger can be used to observe all the current entries. When all data collection has been completed the app may be closed by pressing the Home key. When back within range of a mobile telephone communication cell the data can be transmitted back to a Dropbox data base by running the app and selecting the “Upload” button. To ensure that the iPhone is in range touch the “Check Connection” button and see if “CONNECTION OK” appears. If not try again later.

If the connection is OK then press Upload and after a few moments the “File uploaded successfully” message should appear.

Going back to iCalliper (button in the top left of the screen) the text window is clear and new data can be collected. NOTE: All collected data is still in the iPhone and being conservative an Upload backup operation can be performed which will send all currently accumulated data to the database (and a different file).

#### **Turning off the iCallipers and Bluetooth:**

To switch off, press and hold the orange button for 3 seconds. Release when you feel the unit buzzing.

Go back to the Settings in the iPhone and turn Bluetooth off.

#### **Format of the data:**

Date , Location (GPS) , Size , Sex, Depth, iCalliper ID  
 22/11/2012, -32° 0' 23.7718", 115° 53' 40.8753", 16.20mm, M, 0, 0001  
 22/11/2012, -32° 0' 24.7757", 115° 53' 49.6079", 6.75mm, F, 201, 0001

#### **Charging the iCalliper module:**

Connect the charger lead to any USB port or USB charger. Attach the “battery” connectors on the lead to the charging connector of the Bluetooth module.

The middle LED will light green while charging and turn off when charged.

Charging will take approx. 4 hours from flat.

#### **NO BLUETOOTH CONNECTION:**

If the application is started with no Bluetooth connection to the iCallipers a keyboard appears on the screen in front of the app. Close the app and initiate the Bluetooth connection.

## Appendix D: iCalliper programmers guide

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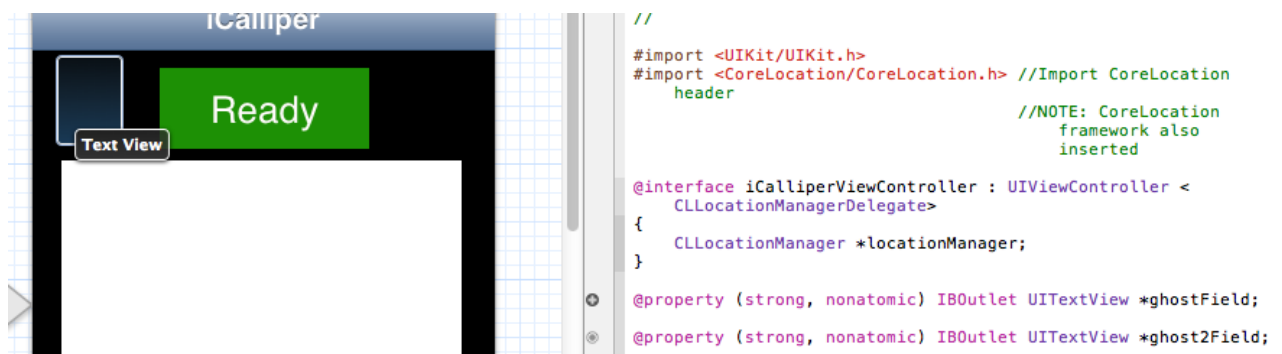
## **C.1 About this app**

The iCalliper app is designed to capture carapace measurement and sex of a sea creature sent from the SuperCalliper IP67 device via Bluetooth. When the app receives the data, it then adds the GPS location, date, and sea depth (which the user may specify in the app) and stores the data into the app's own csv file. The user can also upload the data (and backup data) to a Dropbox account via mobile internet, Wi-Fi or 3G connections.

## C. 2 The data input method

Before a user can transfer data between the iCalliper and the app, both devices need to get paired in the iPhone Bluetooth settings. Please refer to the user guide on how to pair devices. If the user can see a keyboard on the “Input Mode” screen, it is most likely that the devices have not been paired.

To receive the measurement and sex of the creature, there is a text input field hidden in the iCalliper View Controller. It’s called ghostField. If you would like to see where the ghostField is in the Storyboard, you can hover over the ghostField property in iCalliperViewController.h with Editor view.



When the input mode view (iCalliperViewController) gets loaded on the screen, GPS location services gets checked and if location services are enabled, it requests the GPS locations from the OS.

```
if(![CLLocationManager locationServicesEnabled] ||
    [CLLocationManager authorizationStatus] == kCLAuthorizationStatusDenied)
{
    UIAlertView *alert1= [[UIAlertView alloc] initWithTitle:@"Location services
disabled"
                    message:@"You must enable location services in iPhone Settings
for this app."
                    delegate:nil
```

```

        cancelButtonTitle:@"OK"

        otherButtonTitles:nil];

    self.ghostField.text = @"";

    [alert1 show];
}

else
{

    locationManager = [[CLLocationManager alloc] init];

    locationManager.delegate = self;

    locationManager.distanceFilter = kCLLocationDistanceFilterNone;

    locationManager.desiredAccuracy = kCLLocationAccuracyBest;

    [locationManager startUpdatingLocation];

    locationManager.locationServicesEnabled = YES;

}

```

Else, issue a dialog box to the user to enable location services. Please note that, this application will not work fully functionally if location services are disabled. More on the GPS location will be explained in the next section.

On the iCalliperViewController, there's a slide bar through which the user can define the depth of the sea level. When the user modifies the value of the slide bar, the depth label get's changed by the following lines:

```
[depthSlider addTarget:self action:@selector(sliderValueChanged:)
forControlEvents:UIControlEventValueChanged];
```

One last and most important function in the iCalliperView Controller is to set the ghostField to be the first responder so that when the data gets received from the iCalliper, it calls the main method (inputHandler) and does what is necessary with the data:

```
[self.ghostField becomeFirstResponder];
```

```
NSNotificationCenter *notificationCenter = [NSNotificationCenter defaultCenter];
```

```
[notificationCenter addObserver:self
```

```
selector:@selector(inputHandler:)
```

```
name:UITextViewTextDidChangeNotification
```

```
object:ghostField];
```

### C.3. GPS Location

As mentioned in the previous section, GPS location services enablement gets checked when iCalliperViewController is loaded on the screen. It also gets checked in the main function (inputHandler) when the data is received from the calliper.

If the location services is enabled, a GPS location should appear in the bottom iCalliperViewController view.

In the header file, `CLLocationManager *locationManager` is initialized with `<CLLocationManagerDelegate>`.

The following syntax shows how CLLocation is stored into the app file along with others information:



```
fileContent = [NSString stringWithFormat:@"% @, % @, % @, % @, % @, % @\n",
currentDate, CLLocation, currentSize, currentGender, currentDepth, deviceID];
```

#### C.4. Local Storage

The data gets stored into two files almost simultaneously when the app receives data from the iCalliper.

The data stored in the “new.csv” file gets erased after the user uploads the file to the Dropbox, however, “backup.csv” file’s data will not get deleted within the lifetime of the app. It will only get deleted when the app is uninstalled from the phone.

```
NSString *currentFileName = [NSString stringWithFormat:@"% @/new.csv",
documentDirectory];
```

```
NSString *textFromCurrentFile = [[NSString alloc]
initWithContentsOfFile:currentFileName usedEncoding:nil error:nil];
```

```
//NSLog(@"% @", textFromCurrentFile);
```

```
if(textFromCurrentFile == nil)
```

```
{
```

```
textFromCurrentFile = @" ";
```

```
}
```

```
NSString *textToCurrentFile = [textFromCurrentFile
stringByAppendingString:fileContent];
```

```
NSError *currentFileError;
```

```
[textToCurrentFile writeToFile:currentFileName
```

```

        atomically:NO

        encoding:NSUTF8StringEncoding

        error:&currentFileError];

//Backup

NSString *backupFileName = [NSString stringWithFormat:@"%s@/backup.csv",
documentDirectory];

NSString *textFromBackupFile = [[NSString alloc]
initWithContentsOfFile:backupFileName usedEncoding:nil error:nil];

//NSLog(@"Backup \n%@", textFromBackupFile);

if(textFromBackupFile == nil)

{

    textFromBackupFile = @" ";

}

NSString *textToBackupFile = [textFromBackupFile
stringByAppendingString:fileContent];

NSError *backupFileError;

[textToBackupFile writeToFile:backupFileName

        atomically:NO

        encoding:NSUTF8StringEncoding

        error:&backupFileError];

```

### C.5. Upload to Dropbox

This app uses Dropbox SDK to upload the csv files to the Dropbox account:

<https://www.dropbox.com/developers/core/sdks/ios>

In the app folder, the Dropbox framework is inserted and uses the framework from the app delegate file:

```
- (BOOL)application:(UIApplication *)application
didFinishLaunchingWithOptions:(NSDictionary *)launchOptions
{
    // Override point for customization after application launch.

    DBSession* dbSession = [[DBSession alloc]
        initWithAppKey:@"bioyunz0utuktj6"
        appSecret:@"u1jxiu4d3uymue0"
        root:kDBRootAppFolder];

    [DBSession setSharedSession:dbSession];

    //NSLog(@"I am here");

    return YES;
}
```

Before the file/s get uploaded to the Dropbox server, the user can check the internet connection on the phone. The app can upload the file to Dropbox using or 3G connection.

Please note that, uploading files to Dropbox uses the connectionless method, which means we cannot keep track of the status of the upload.

Just before data gets uploaded to the server, the date is attached to the file name to distinguish between the files on the server.

```
[dateFormat setDateFormat:@"YY-MM-dd-HH-mm-ss"];

    NSString *tempDateStamp = [dateFormat stringFromDate:date];

    [[self restClient] uploadFile:[NSString stringWithFormat:@"backup_data_%@.csv",
tempDateStamp]

        toPath:destDir

        withParentRev:nil

        fromPath:fileName];
```

After the files are uploaded to the Dropbox server, the clearFile method gets called to erase the content of the file.

Please note that, there are a few methods used in the app to get feedback from the Dropbox:

```
-(void)restClient:(DBRestClient *)client uploadedFile:(NSString *)destPath from:(NSString *)srcPath metadata:(DBMetadata *)metadata

{

    messageView.text = @"File uploaded successfully.";

    if (clearFileContent == 1)
```

```
{
    [self clearFile];
}
}

-(void) restClient:(DBRestClient *)client uploadFileFailedWithError:(NSError *)error
{
    messageView.text = [NSString stringWithFormat:@"File upload failed with error - %@",
error];
}

-(DBRestClient *) restClient
{
    if(!restClient)
    {
        restClient = [[DBRestClient alloc] initWithSession:[DBSession sharedSession]];
        restClient.delegate = self;
    }
    return restClient;
}
```

## C.6. Device Setting

In addition to the depth setting on iCalliperViewController, the user can set the device id and max depth which limits the depth setting slider.

They both use identical view controllers called: deviceIDKeypadViewController and maxDepthKeypadViewController.

Those view controllers are segued from the setting view controller.

