

Field Guide to Shoreline Video Assessment

How to MangroveWatch



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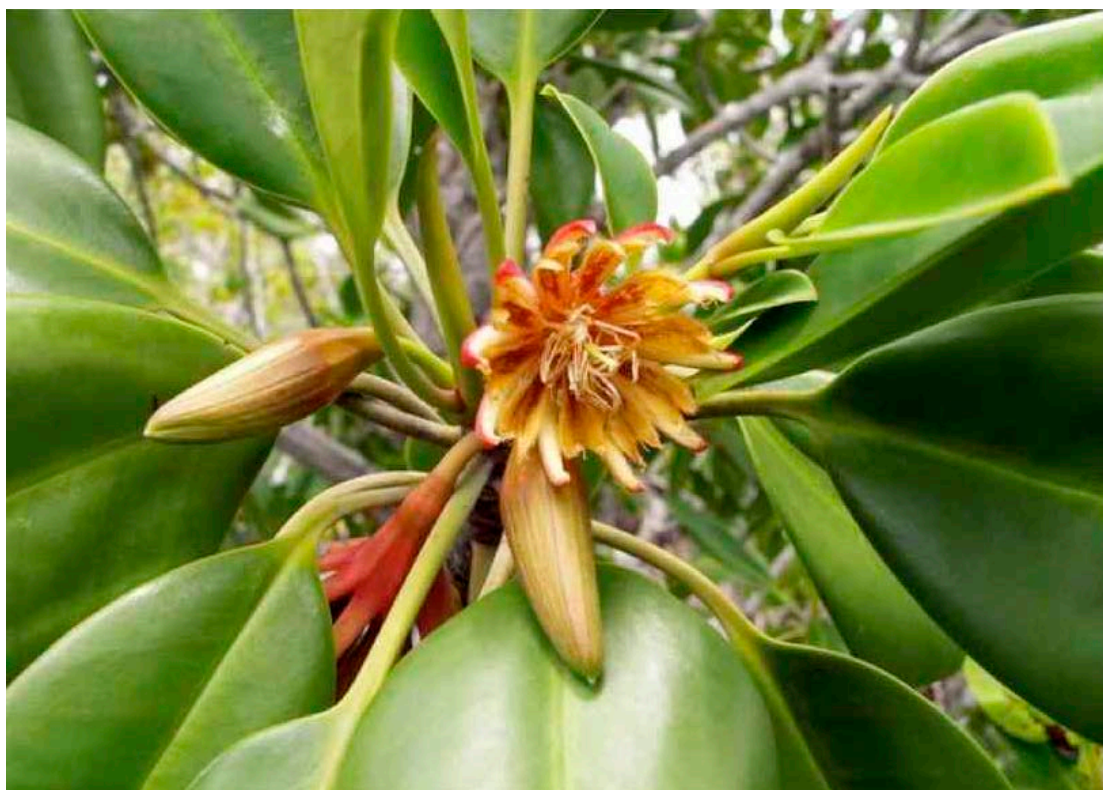


Figure 1 *Bruguiera gymnorhiza* flower. Photo by. L. Titmarsh

This manual was produced September 2017
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Welcome to MangroveWatch

We thank you for your support for MangroveWatch - as a MangroveWatcher – and, as custodian of a valuable mangrove area.

Thank you!

What is MangroveWatch?

MangroveWatch is a community-driven science-community partnership to monitor the health of estuarine mangroves and saltmarsh in tidal wetlands.

MangroveWatch is here to help you:

- Learn about mangroves in your region
- Discover the many benefits of mangroves
- Explain misconceptions about mangroves
- Monitor changes to mangroves and shoreline health
- Help with surveys of estuary condition
- Join a mangrove rehab team
- Get advice and training from specialists

Australia's mangroves are rich in biodiversity and biomass – and, they are among the most extensive in the world. These highly beneficial coastal habitats are also the most pristine, but we should **not** take this for granted. 'Times are changing!' The growing pressures of human influences, like our sea-change shift to northern parts, coupled with global climate change are beginning to show. Now, more than ever, people in local communities are needed to watch over our valuable mangrove wetlands.

Mangroves are Important & Useful!

No mangroves – no fish!

Mangroves are essential habitat where bountiful and beneficial fish live, feed and breed. Nearly all seafood needs mangroves.

Healthy mangroves – healthy catchment upstream!

Responsive mangroves act as end-of-catchment indicators. Mangroves show the effects of runoff sediments, nutrients and agricultural chemicals.

'Coastal kidneys' – protect the Reef & Seagrass

Coastal mangroves protect Coral Reef and Seagrass by filtering catchment runoff, and reducing shoreline erosion. Healthy mangroves support healthy corals with clearer, cleaner water - lower in sediments and chemicals.



MangroveWatch is a partnership between the Scientists from James Cook University and the community.

Your contribution is essential, highly valued, and most beneficial!

MangroveWatch is needed now, to raise community awareness, capacity and understanding of changes taking place in our mangrove areas.

There is a lot to do, & a lot to learn – about both mangroves, and about MangroveWatch. If you would like to find out more & get involved, please contact your friendly facilitator at the Mangrove Hub.

The Mangrove Hub

The Hub is your support base on all matters related to MangroveWatch. This includes advice, training, speaking engagements for your group, access to appropriate monitoring equipment and reading material on assessment of mangrove habitat biota and its condition. Our hub group consists of Dr Duke plus his students and plus other volunteers who assist in the functioning of MangroveWatch. We are based mostly at James Cook University in Townsville.

MangroveWatch Directors:

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Introduction to MangroveWatch Video Assessment.

The MangroveWatch video assessment technique is designed to take a continuous video recording of the shoreline. From this video, the state of the mangroves can be determined through observations of mangrove: height, tree density, present species, the number of seedlings and the health of the forest. Other features that influence mangroves are recorded such as: bank type and condition, adjacent landuse, built features and other vegetation. This assessment then provides an indication of the health of the mangroves and the estuary as a whole.

Your job is to be the eyes and ears of MangroveWatch. Because the video is reviewed elsewhere, it is important to provide as much information as possible. During the assessment, record your observations, opinions and any historical facts that may help to piece together a story about the mangroves and the estuary itself. By being in the estuary and observing changes, you provide invaluable information that can: help identify the causes behind your observed changes, assist in the development of strategies to improve the estuary condition and/or instigate actions to prevent further environmental degradation.

But most importantly, MangroveWatch is a great excuse to get out on the water and observe your local waterways whilst having fun and hanging out with friends old and new.



Figure 2 TSRA Warraber Land & Sea Rangers filming the Warraber shoreline.



Where to Go MangroveWatching

Choose your mangrove area.

These MangroveWatch methods are specifically designed for shoreline mangroves, estuaries and tidal inlets.

Criteria for choosing a MangroveWatch location.

A shoreline that interests you and;

- Is easy to access
- Is mostly easy to navigate
- Is somewhere that can be repeatedly monitored

Who to Take - Your MangroveWatch Team

To easily conduct MangroveWatch surveys, a team of 4 people is recommended, but you can do it with 2 if necessary.

1. Boat Driver
2. Handycam Operator
3. Observer/ Recorder
4. Photographer

When to go MangroveWatching

Optimal conditions:

- Daylight 9am to 3pm
- Cloudy but with good light
- Light winds
- Low chance of rain
- Low to mid tide (Not high tide)

A bright cloudy day with no wind at low tide are the perfect conditions for MangroveWatching. It is unlikely that all these conditions can be met at all times, so try your best but don't let it stop you. The two most important conditions are the tide height (not high tide) and not raining.

The MangroveWatch video needs to be taken at low to mid tide so that the bank type and seedlings can be seen. The peak high tide is no good. But there may be times when to gain access to certain areas you need a high tide – so, just do your best. All video is good video.

Do not plan to take the video if it looks like it will rain as visibility is greatly reduced and equipment gets damaged.

How to MangroveWatch

MangroveWatch is easy!

Start recording at an identifiable “starting point”. Travel along the estuary at 6-10kts (11-18 km/h) approximately 30-50m off the bank following the main channel as the Handycam records one side of the estuary (left or right bank). Record the video until the channel is no longer safely navigable or you are beyond the estuary extent (no more mangroves). Return to the start location whilst recording the opposite bank. If the starting point is in the middle of the estuary, restart the video with the starting location in the frame and record the rest of the estuary.

Do not record if you are more than 200m from the bank.

MangroveWatch Tasks

There are 5 tasks involved in MangroveWatching;

- 1. Handycam Operator – controlling the Handycam**
- 2. GPS Operator – taking waypoints and tracks**
- 3. Photographer – as many as you can**
- 4. Observer/ Recorder**
- 5. Boat Driver**





Instructions for the Handycam Operator

Refer to the Cheat Sheet

Before you start Filming

(It is important you are familiar with the handycam before getting in the boat)

SUMMARY

- 1. Set up the time (this must be done at the start of every trip)**
- 2. Make sure the camera is set-up to record to the memory card**
- 3. Check the recording quality is set to FX**
- 4. Attach the Lens Hood**
- 5. Check sound recording mode is set to “Wind Noise Reduction On”.**
- 6. Clean the lens**
- 7. Take a short film of the clapper board (a few seconds)**
- 8. Take a short video clip of the GPS time showing hh:mm:ss**

1. Setting the time (VERY IMPORTANT!)

The camera should be set to within 1-second of the GPS time so the GPS and camera should have the same time.

Follow the instructions on the cheat sheet on how to set-up time.

2. Make sure the camera is set-up to record to the memory card.

Look for the memory card symbol (rectangle with a triangle) in the top right-hand corner below the battery symbol. If the memory card symbol is not present you'll need to change the record mode.

Select MENU (top-left of the viewing screen) - Press SETUP (Red Toolbox)- Press the arrow tabs (left of screen) to scroll through the menu options to MEDIA SETTINGS (centre top). - Select MEDIA SELECT (if it's set to record to the internal memory it should read “Int Memory”). - Select MEMORY CARD to change the record mode.

To exit press the X in the top left of the screen until you are back at the main viewing screen.



If the memory card is full or nearly full, you'll need to record to the internal memory. The memory card should record 3 hours of film on FX mode and 4 hours on FH mode (visible in the top right of the viewing screen e.g 3h 7m). Ideally the memory card should be empty. If not, follow the steps as above to change recording mode to internal memory. Do not delete any clips.

3. Check the recording quality is set to FX

If you are doing a short trip (< 3 hours), record in FX mode. If you are doing a longer trip (<4 hours) record in FH mode. For longer excursions you'll need to record video to the internal memory.

To check the record mode, press MENU – select IMAGE QUALITY/ SIZE – check REC MODE – select REC MODE to change the recording mode (no lower than FH).

4. Attach the Lens Hood

The lens hood stops spray and glare on the lens.

But! When the lens hood is popped out it can be seen when the camera is not zoomed in. To avoid this, always zoom in a little bit when the lens hood is popped out.

If you are very close to the bank – you will need to press the lens hood down.

5. Check sound recording mode is set to “Wind Noise Reduction On”.

The sound recording mode ‘Wind Noise Reduction Off’ should be on. A wind-sock symbol should be visible in the bottom right of the viewing screen. If not,

Press MENU – select CAMERA/MIC – scroll through the menu options to MICROPHONE – select WIND NOISE REDUCT. – turn ON

6. Clean the lens

Wipe the lens clean with a soft cloth (not a tissue).

Filming – Using the Handycam to Film Mangroves

Using the Monopod set-up

- o Position the monopod near the bow (front) of the boat facing 90° to the direction of travel.
- o Use the trigger grip to adjust the camera tilt
- o Position yourself so that you can sit facing perpendicular - 90° - to the direction of travel.
- o Place the monopod on your legs or against your body
 ** It's important to buffer the tripod against vibration. Holding it on your leg or placing it on a lifejacket is useful to prevent vibration.
- o Having a fold-up or plastic chair on the boat makes MangroveWatching a great deal more comfortable.



Start Filming

- o To start recording – shout 3-2-1 GO! Then immediately press record. Make sure the viewing screen says REC not STBY. The video may take a second to start recording.
- o Keep the Handycam position at right angles to the bow (do not point the video forward or backward). Once it is in position avoid moving it to the left or right.
- o Keep an eye on the viewer and make sure the tops of the trees are in the top of the frame and some water is visible at the bottom – if necessary use the zoom and tilt the video up and down (remember that slightly facing down is better).

Note: The less water in the shot the better, but make sure you can see the roots of the mangrove and the edge of the bank.

- o Use the zoom to maintain the best shot. But, moving the boat closer is the best approach, although not always possible. Remember – 200m away is too far and will be used for data.
- o Tell the boat driver if you need to be closer or further away from the bank. How close you need to be to the bank is relative to the size of trees. Small trees – go closer. Large trees – move away. For medium sized trees, 50m is the optimal distance.
- o If the boat stops for a period longer than 30seconds (lunch, stuck on a bank etc.). Stop recording. Count down from three (3-2-1-STOP) so that the Observer can record the time of stop recording and take a waypoint. When you start recording again, say 3-2-1-GO. Make sure everyone is ready before starting.
- o Start recording from the same position where you stopped – e.g. use a notable feature such as different looking tree as a marker and make sure it is in both frames. You can re-record parts of the bank if needs – the most important this is to have no bank missing in the video.
- o Make sure the boat driver doesn't go too fast.
- o Provide active commentary during the video.
- o If spots of water get on the lens wipe the camera using the tissues provided.



- o To avoid glare and sun – use the polarizing lens filter. Use an umbrella to shade the camera. The film will be poor quality if the sun is at 45 degrees to the camera (8am and 3pm). Film the other side if the sun is in this position.

Note: the fewer stops in the video the easier it is to interpret.

At the end of each clip, take another short film of the clapper board.

Video Commentary

– Tell us your stories about the mangroves

As you travel along it is important to note specific features so that the person analysing the video can easily interpret what's being seen. This is particularly important at the start of the video. It's also useful for recording things that may not necessarily be visible from the video.

The more voice notes the better! **Just keep talking!**
Have a conversation with the camera.

Talk LOUDLY!

The following provides an indication of what to say. You don't have to say all of them at the same time. The best way is to note when things change or when something may not be clear on the video or are outside the shot. Especially things like species, seedlings, background landuse and fauna. There is no incorrect commentary, so just say what you think.

What to say

Mangrove Height:

4m, 2m etc. Estimations are fine.

Mangrove Health:

Are these trees lush, healthy, average, sick, very sick or dead.

How many dead trees do you see?

Has this area been affected before?

If the trees are looking sick – is it obvious why they are sick?

Species:

What species do you see (if you know – common names are fine). What is the dominant species?

Seedlings:

How many seedlings do you see – imagine a 1x1m square – how many seedlings are in it – 5, 10, 100.

The bank:

What is the substrate – mud, sand etc.

Is it eroded, stable or depositional.



What is the slope of the bank.
Is it natural?

Background:

What land use is adjacent to the estuary
– residential, commercial, industrial, agricultural etc

Point Features:

Note specifically when you see a built feature in the estuary – especially drains and pipe as these are hard to see. For example – jetties, wharves, large pieces of junk, litter.

Other Vegetation:

If terrestrial vegetation is present, what are the species, is it healthy, are noxious weeds present e.g. Lantana

Notable features:

Things such as pollution, obvious insect attack, fruits and flowers or anything you think is interesting and may be important.

Change:

If you know the area well, make a note about what has happened in the past at specific locations. E.g. there was a fuel spill here 20 years ago. Or there used to be no mangroves here until recently.

Importance to you.

If you use a mangrove area for fishing, recreation or other reasons, tell us why the mangroves are important to you.

Tips & Tricks

Vibration

Vibration from the boat can severely effect the quality of recording. Heavy vibration will cause the camera to shut-off.

To reduce vibration, buffer the tripod/ monopod against your body.

Going very slow often makes the boat vibrate more, so travel at a speed that keeps the boat from shuddering.

If the water is choppy, try to travel with the waves to avoid bumpiness.

Noise

Noisy boat engines and wind make it hard to hear voice notes on the video. To reduce engine noise, place the camera near the front of the boat.



For windy days, wrap a thin sock (piece of cloth) around the handycam to reduce wind flow across the mic.

If you want to get technical you can use an external microphone.

Light

Direct sunlight makes it nearly impossible to interpret the video. Avoid filming directly into the sun. To do this you may have to film one side of an estuary in the morning and the other in the afternoon. If the estuary is sinuous (winding), it's sometime better to swap the side of the estuary you recording, or change direction. If you do this, make sure the notes are clear.

Low light (heavy overcast weather) and shade make the auto-light adjustments go crazy. Avoid filming in poor weather and if heavy clouds come over, stop and wait until they pass.

The best light for filming occurs when the sun is on your back.

The camera auto-adjusts for light, so having the shot filled with mangrove, very little sky and very little water will make the clearest image.

Getting the best Image

The most common mistake made when filming mangroves is too much water, not enough tree. So, always over-compensate. Try to maximize the trees in the shot by moving the boat closer. Sky is better than water (except when you're facing into the sun of course).

Avoid having objects, straps, rope etc in front of the camera. The camera will focus on objects in the foreground. Otherwise I won't be able to see the mangroves for the rope.

Keeping the lens clean

Small specs of dust and particularly water droplets from spray greatly affect the auto-focus. Regularly wipe the screen. You can do this quickly while your filming. Have one of the other team members check the lens. If there's a lot of spray, protect the camera with an umbrella, plastic bag or rain jacket.

Protecting the camera

Salt spray is not good for the camera. But, having the camera in the rain jacket is not ideal either. To reduce spray, travel with waves, not against them. If it's bad, use the rain jacket, or wrap the camera in a plastic bag, keeping the viewing screen and lens clear. Wipe the camera clean after each use.



On very hot days, you'll need to protect yourself and the camera from overheating. An umbrella is great for this.

Always keep an eye on the viewing screen.

Watch for;

The lens hood

Keeping the best frame of view

Dust/ Water particles

Objects in the foreground of the shot

Battery life

Memory

Satellite signal

The GPS Operator

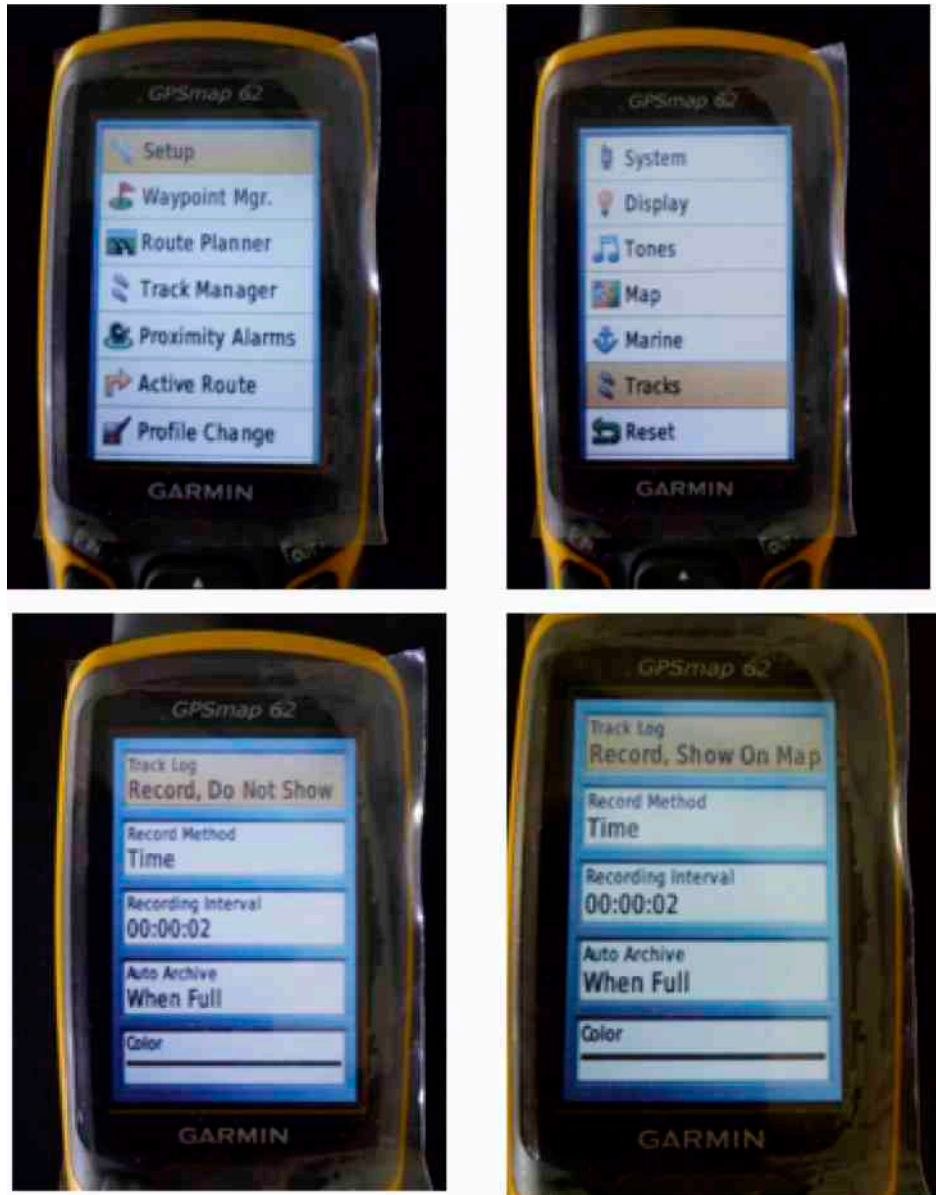


Before you start Filming

(It is important you are familiar with the GPS before getting in the boat)

1. Turn the GPS track log on and set to record every 1s. **VERY IMPORTANT!**

- o Turn on the GPS
- o Press PAGE, cycle through to MAIN MENU, wait until Main Menu screen appears. Select SETUP – Press ENTER – Select TRACKS – Press ENTER – Select TRACK LOG – Press ENTER – Change to RECORD, SHOW ON MAP. The Record Method should read TIME, the Recording Interval should be 00:00:01 and Auto Archive, WHEN FULL. Press PAGE to return the screen to TRIP COMPUTER.



2. Reset the Trip Computer

On the trip computer screen, press MENU – select RESET, press ENTER – select RESET TRIP DATA, TIMERS ETC. – Press ENTER, Select YES, Press ENTER.

3. Make sure there is a photo and a video of the GPS time showing seconds – refer to the cheat sheet.

During Filming

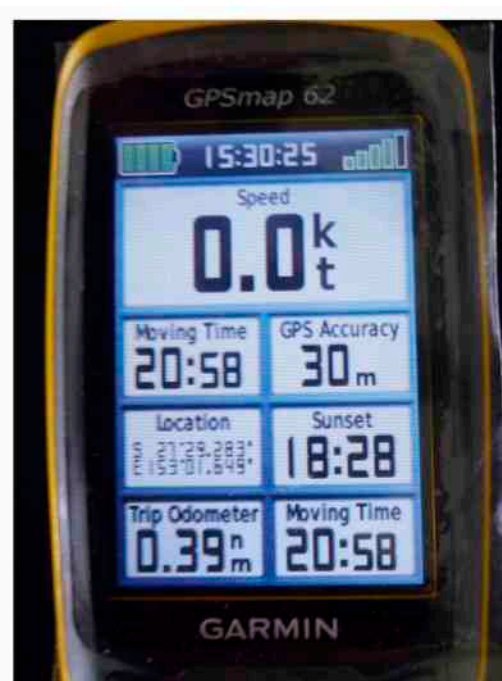
The GPS Operator needs to do the following during filming

1. Ensure the GPS records the track
2. Ensure the GPS always has a clear signal
3. Take waypoints of the start and stop positions
4. Take waypoints of photos
5. Take waypoints of interesting features
6. Ensure the GPS batteries don't go flat.
7. Keep an eye on the boat speed.

The Trip Computer screen

The GPS should display the following information;

- *Time*
- *Battery Level*
- *Signal Strength*
- *Speed (kts)*
- *Moving Time*
- *GPS Accuracy*
- *Location*
- *Time of Sunset*
- *Trip Odometer*
- *Total Time*



1. Ensure the GPS records the track &
2. Ensure the GPS always has a clear signal



To ensure the GPS keeps a regular 1s track recording the track recording must be on. The GPS also needs a clear view of the sky. If satellite reception is lost the track stops recording and assessment accuracy is lost.

To check the satellite reception, look for the signal bars in the top right of the screen. Also look at GPS ACCURACY, this tells you the number of satellites the GPS can see. The lower the accuracy the better. Greater than 15m is not good.

To keep a good signal, keep the GPS away from your body. Tie it to the boat within reach for making waypoints. Keep the GPS outside of the boat canopy.

3. 4. & 5. Taking Waypoints

To take a waypoint press MARK on the GPS (bottom left). Tell the recorder/ observer the waypoint number and what the waypoint was for. This needs to be loud enough to be heard on the video.

Take waypoints of the following;

1. When the Handycam operator shouts 3-2-1 GO! Press Mark.
2. When the Handycam operator shouts 3-2-1 STOP!
3. Photo points. The photographer should take a photo and say what the photo is. You should take a mark and shout "PHOTO WAYPOINT 33, SEA EAGLE"
4. Interesting Features. Take waypoints of things you see or know about e.g. previous mangrove clearing. And, waypoints of point features, bridges, boat ramps, drains etc. "WAYPOINT 40, STORMWATER DRAIN".

6. Ensure the GPS batteries don't go flat.

Keep an eye on the battery levels (top right). Change the batteries before they go flat.

7. Keep an eye on the boat speed.

Keep an eye on the boat speed and tell the driver to go faster or slower. 6-10kts (~12-15km/hr) is a good speed.

The Photographer



The role of the photographer is to take photos of anything and everything. But particularly;

1. **The clapper board**
 2. **Start and Stop Locations**
 3. **Scenic Shots** – up and downstream
 4. **Action Shots** – smiling, happy people MangroveWatching
 5. **Artistic Shots** (Be Creative – there's prizes to be won!)
 6. **Things the video cannot see** – eg. Things on the other side of the boat, in front of the boat, behind the boat.
 7. **Aspect Shots** – Provide a different perspective to the video
- Fauna** – birds and wildlife
Threats to the Mangroves
People using mangroves/ waterways

JUST KEEP CLICKING AWAY - Take as many photos as you can!
Remember, digital photos don't cost a cent.

Before you start Filming

(It is important you are familiar with the handycam before getting in the boat)

SUMMARY

1. **Synchronise the Camera Time with the GPS**
2. **Clean the camera lens**
3. **Take a photo of the GPS time showing seconds**

Taking Photos

Take 5 photos at the start & stop of each film;

1. **The clapper board**
2. **The shoreline**
3. **Up the shoreline**
4. **Down the shoreline**
5. **People doing things**
 - o Have the camera available for ready use.

Observer/ Recorder



The role of the observer is to record all the information on the clapper board that will make the video easier to interpret later, make observations and make sure everybody is doing their job.

Before you start Filming

Record on the clapper board

- o Location
- o Date
- o Approx start time
- o Start Waypoint
- o Team members
- o Direction of travel
- o Compass bearing
- o Video number

Make sure there's a photo and short video clip.

Fill in the datasheet with start & stop times and descriptions that are good enough so you can return to those points if needed.

During Filming

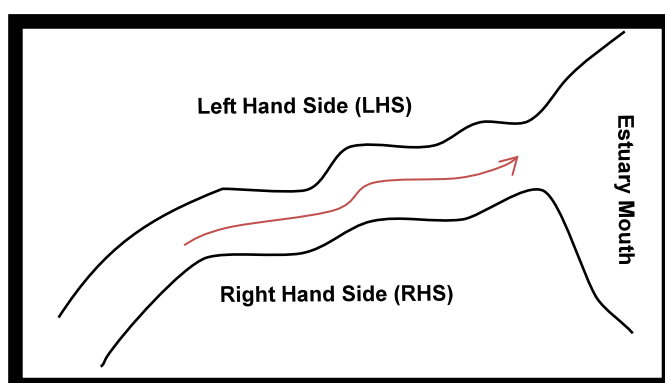
Make observations and make sure there's a waypoint, photo and voice recording such as;

Bird and Fauna Species Observed. If you're a keen bird observer, keep a tally of the species you see and shout out when you see them.

Number of people using mangroves/ waterways – keep a tally of fishers, paddlers, boats etc.

If you observe mangroves to be in **flower or fruit**. Or if you notice lots of propagules in the water.

Record any information that you think will make the interpretation of the video easy.



The direction of travel is the side of the bank in relation to the boat.

After Filming

Complete the clapper board;

- Stop Waypoint
- Approx stop time

Make sure there's a photo and short video clip.

Make sure there is a photo of the datasheets at the end of each day.



Boat Driver

(It is important you are familiar with the waterway before getting in the boat)

- o Position the boat approximately 30-50m from the bank (if possible). Be prepared to move closer/ further away at the instruction of the Handycam operator
- o Minimum distance is ~10m. The maximum is 200m.
- o Travel at 6-10kts (10-20km/hr).
- o Always follow the main channel of the estuary.
- o Try as best as possible to follow the curves of the bank.
- o Avoid stopping and starting. If you do stop, make sure you turn the boat around so the stop point can be videoed again on the restart.
- o Try to keep engine noise and vibration to a minimum
- o **Watch for Wildlife**

SAFETY FIRST!

Remember – You're in charge of the vessel. Before you go boating check local weather conditions, tide times, make sure you've got plenty of fuel and necessary safety equipment.

