OzFish Unlimited:

Habitat Mapping Method

Contents

Introduction

OzFish Unlimited is a not-for profit organization that is simply about providing the proud recreational angling community of Australia, an opportunity to be actively involved in habitat protection and restoration programs. The mission for OzFish Unlimited is "to help every Australian recreational fisher become a proud contributor to a better fishing future". By protecting the future of native fishes, our children, and the generations to come, will have the same amazing opportunities of creating cherished memories, while undertaking the best sport in the world, fishing.

In the past 5 years, fish finders have improved greatly and now offer ground-breaking technology and features designed specifically for finding habitat and fish. Side imaging sonar is now seen as an affordable and efficient way to undertake habitat mapping, as it can produce high quality imagery at a low cost. This imaging can offer enormous benefits to providing in-depth information on submerged habitat qualities including vegetation, texture of the riverbed and other debris, especially in highly turbid conditions.

To plan effective and targeted management activities, knowledge of habitat distribution and sizes is essential for understanding, communicating, and identifying future restoration or monitoring sites. Recreational anglers and research managers broadly know the types of habitat that can be found in waterways, but such information is usually patchy and can vary dramatically. To make informed decisions about future restoration projects and identify sensitive habitat areas that may need protection, extensive on-ground habitat mapping surveys should be conducted by the local OzFish group.

The collected information from the habitat mapping will identify future restoration sites, made available to view by OzFish employees and members and raise public awareness of the negative consequences of de-snagging and the importance of fish health and abundance.

Purpose and scope

This mapping document will be a comprehensive methodology that all OzFish Unlimited chapters can use while undertaking habitat mapping. This will ensure all habitat mapping undertaken by OzFish Unlimited chapters will follow the same techniques, therefore allowing each internal and external group to utilise the data.

Humminbird technology

Humminbird sonar imaging technology creates an image of the floor of waterways with a collective 180-degree underwater perspective. This allows the user to see the submerged woody habitat or lack thereof. A transducer, towed behind the vessel, continuously emits pulses of sound (sonar) in a thin fan-shaped beam perpendicular to the direction of travel. As sonar pulses interact with an object, they are reflected back to the transducer, all of which is recorded by the Helix head unit.

Side scan settings

The Humminbird side scanner should be set up with the following settings:

1. Turn the Humminbird on by pressing the power button located at the bottom right of the device.
2. Using the 'view' button, scroll through the display options until the sounder is displaying side imaging on full screen.
3. Once on full screen side scan imaging, press the menu button once to access the express menu.

Once in the express menu, change the settings to match the table below and leave all other settings as is.

Setting	Level
Side scan sensitivity	14 – 16
Contrast	10 – 12
Side scan range	20 – 30 metres (depending on size of waterway)
Chirp speed	3 – 5
Quality	Low

Methods

The habitat mapping will be undertaken from a floating vessel (canoe or boat) that is fitted with Humminbird® Side Imaging® Sonars. The Humminbird technology will be the Helix CHIRP series in a 10 or 12 inch model, fitted with side and down scan imaging.

Each waterway that undergoes habitat mapping will follow the below methods:

- The waterway will be divided into sub reaches, making the data analysis and map design easier to interoperate.

- The complexity of the instream woody habitat will be recorded and scored between one and four (Fig 1). The higher the grading, the higher the habitat complexity.
- Travel up-stream at an idling pace between 1.3 – 2.0 km per hour and remain between 10 – 20 m from the riverbank edge.
- While idling upstream, utilize the side imaging on the Humminbird technology. Score and create a GPS waypoint for each individual instream woody habitat (waypoints can be created on the Humminbird unit).
- Measure the woody habitat length in metres to the closest multiple of 5.
- All woody habitat submerged and non-submerged will be measured and scored.

Grade 1: Woody habitat stand entailing single trunk or branch.

Grade 2: Woody habitat stand entailing trunk or branch with one or two branchings.

Grade 3: Woody habitat stand entailing one or more trunks with multiple branchings.

Grade 4: Woody habitat stand entailing highly complex complete tree with multiple branchings, or accumulation of separate branchings to achieve similar complexity.

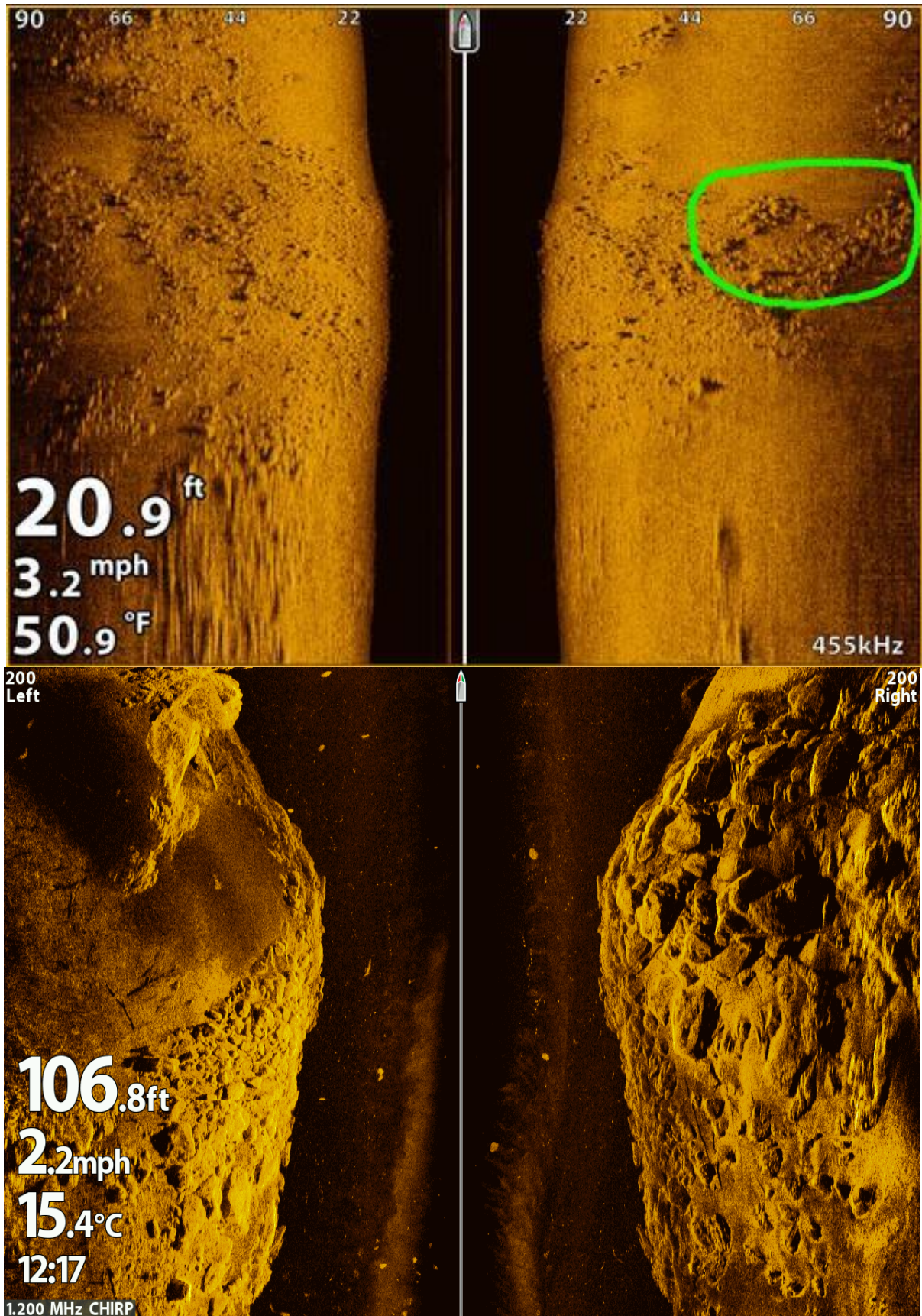Fig. 1. Grading levels for recording the complexity of a woody habitat

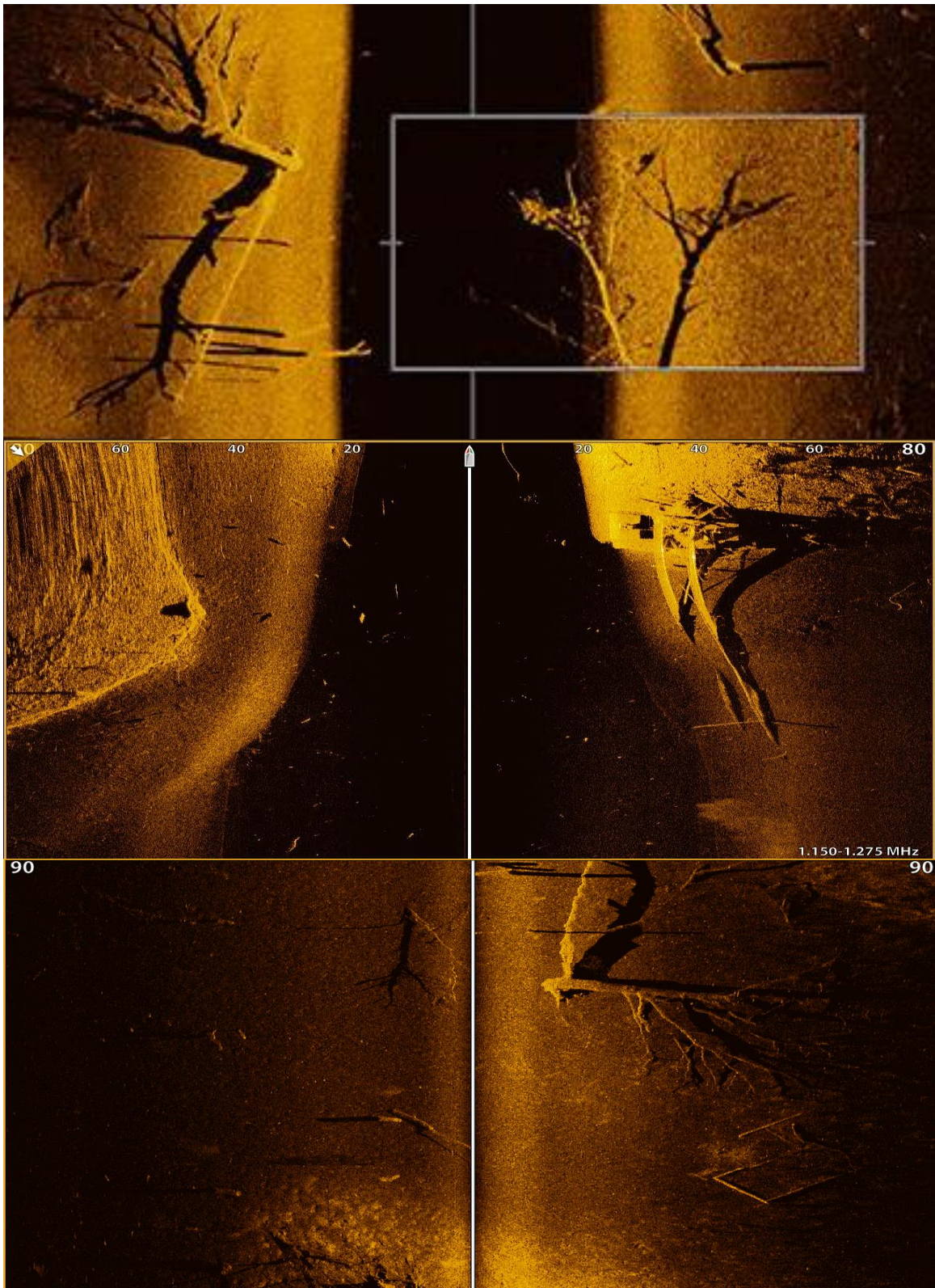Fig. 2. Example of rocks as they would appear on a Humminbird side scan.

Fig. 3. An example of a large woody habitat as it would appear on the Humminbird side scan.

Plotting GPS

Individual woody habitats should be plotted with the GPS way point features on the Humminbird unit. To do this, follow the step by step procedure below.

1. To plot a waypoint (or mark) of a woody habitat, use the cursors to scroll across the screens until the pointer (⊕) hovers over the habitat.
2. Press the "mark" button.
3. Select "waypoint" by pressing the "mark" button again.
4. A banner across the top of the screen will then read "waypoint created".

Deleting a waypoint

If a waypoint needs to be deleted due to incorrect placement or accidental creation, follow the steps below.

1. Press "menu" twice to access the main menu.
2. Using the right cursor, scroll to navigation.
3. Scroll down to "waypoints, route, tracks" and use the right cursor button to enter this screen.
4. Using the scrolling options, hover over the waypoint that you wish to delete and press right to access the options for this particular mark.
5. Scroll and select delete.
6. NOTE: Take care to ensure the "select all" button is not selected as this will delete all waypoints on the unit.

Setting up Humminbird fish finders

The below links should be watched before you set up the Humminbird fish finders. The links are in order of preference.

1. https://m.youtube.com/watch?v=YRm2MKnkYZA - menu
2. https://m.youtube.com/watch?v=zMa_QcXcV9Q
3. https://m.youtube.com/watch?v=r512N-iG72w
4. https://m.youtube.com/watch?v=IhmwDfVIZkM
5. https://humminbird.com.au/technology/mega-imaging/