

## SURVEY METHODS

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Initial characterisation of habitat types and selection of sampling stations was done using colour aerial photography (DOLA; 850096; runs 1-3; 1:25000; 5/8/85) and Landsat imagery (DOLA; merged SPOT 12/01/92 and TM 27/12/91). Twelve colour prints of the Landsat image, covering the area at a scale of 1:25000 were produced. The aerial photography proved to be more useful, as ground truthing showed the satellite imagery to be unreliable for distinguishing habitat types. Manipulation of wave bands to try to eliminate spurious habitat signatures caused by water depth was not successful. The satellite image, captured in digital form was, however, used interactively to produce amended habitat distributions. The final colour habitat map was generated using a combination of MICROSTATION and CADSCRIPT software. Ground truthing of habitats was undertaken by spot dives from the vessel 'Nor Don' and an inflatable dinghy, and by manta tows.

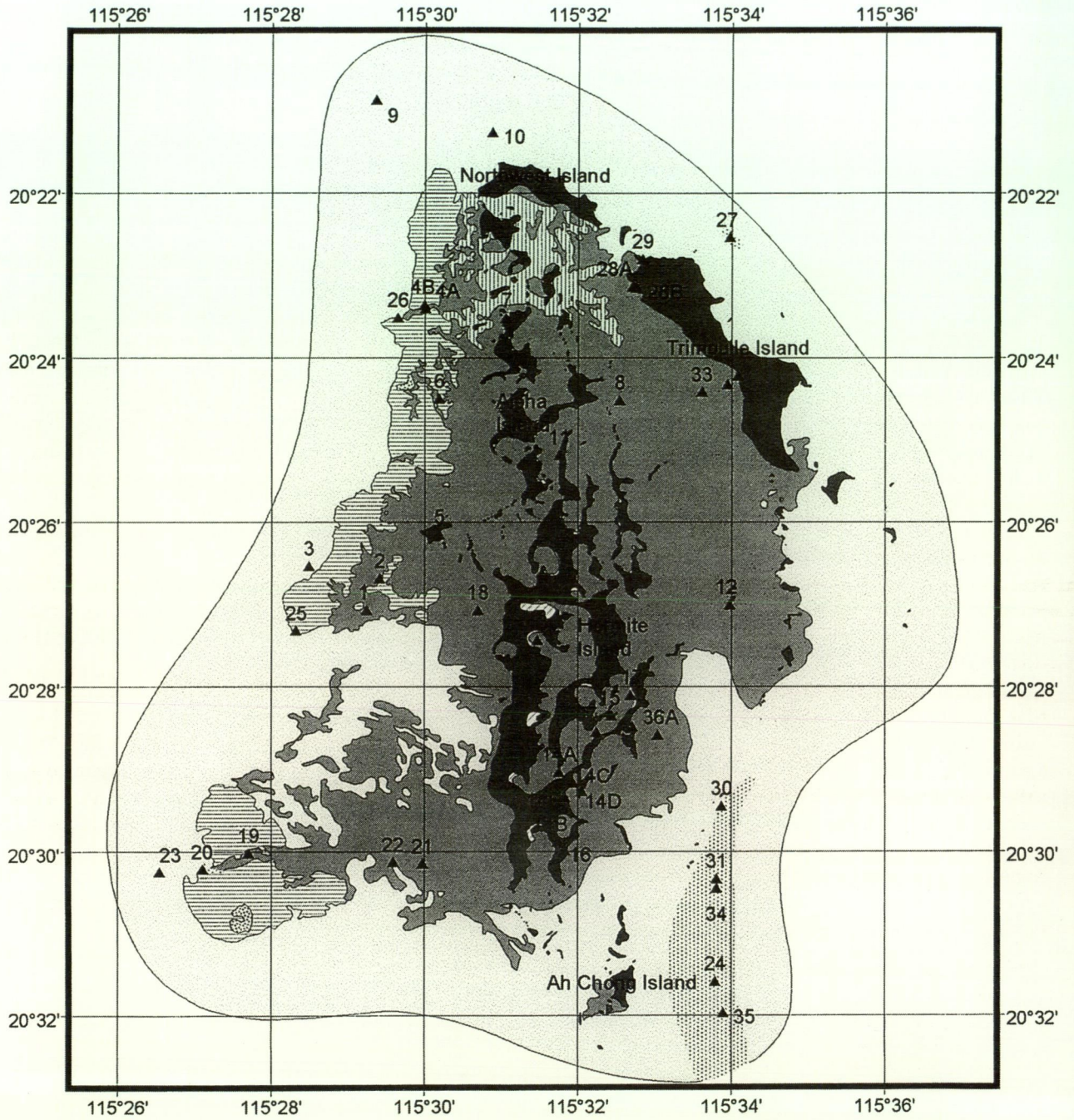
Forty-five specimen sampling stations were selected to give representative coverage of all major habitat types represented in the Montebellos. A specially designed proforma was used to record habitat at each sampling station. Voucher specimens

were collected by diving (SCUBA or snorkel), dredging, or in intertidal areas, by walking. Most fish identifications were based on visual observations. Specimens collected were preserved for subsequent examination at the Western Australian Museum. This report includes records of specimens from the Montebellos collected on earlier Western Australian Museum expeditions, the literature, and records made since the 1993 expedition.

Localities of sampling stations are summarised in Table 1. Most positions were obtained using the ship's satellite navigation system, but as the hand-held GPS system did not function, coordinates of stations away from the vessel were derived using the Landsat image and maps.

Most dredges covered only a short distance (100-200 m) and were recorded as a single fix. However for Station 12, in which approximately 2,000 m was covered, fixes at the start and end are recorded.

The positions of Stations 14A and B are based on fixes taken in Stephenson Channel adjacent to the CALM camp on Hermite Island. In fact, extensive areas of intertidal sand (4C) and rocky shore (4D) habitat in the vicinity of the camp were sampled as far as Sherry Lagoon (14E).



▲ Montebel.dbf

- Barrier reef / high coral / (*Acropora*) cover (21-100 %)
- Barrier reef / low coral / (*Acropora*) cover (0-20 %)
- Limestone pavement or reef / sand veneer / macroalgae / scattered hard and soft corals / sponges
- Mangal
- Other coral reef (patch / fringing / bomboras)
- Sand / coral rubble, coral slabs / dense macroalgae (*Turbinaria* and *Sargassum*) / isolated living corals
- Sand / coral rubble, coral slabs / scattered macroalgae / sparse seagrasses / isolated living corals
- Supratidal (land)

Figure 1 Map of the Montebello Islands, Western Australia, showing habitat types and sampling stations.

Table 1 Sampling station numbers, dates, location, habitats and sampling methods.

No	Date	Location	Habitat	Sampling Method
1	10/8/93	20°27'04"S, 115°29'15"E;	isolated patch reef inside barrier reef; 6 m	SCUBA
2	10/8/93	20°26'41"S, 115°29'25"E;	patch reef inside, W barrier reef; 10 m	SCUBA
3	11/8/93	20°26'32"S, 115°28'30"E;	outside W barrier reef; flat algal covered pavement; 5–8 m	SCUBA
4A	11/8/93	20°23'24"S, 115°30'01"E;	channel through W barrier reef; sand bottom, steep sides with corals; 8 m	SCUBA
4B	11/8/93	20°23'21"S, 115°30'00"E;	intertidal reef flat adjacent channel through W barrier reef	Snorkel
5	11/8/93	20°26'09"S, 115°30'12"E;	intertidal sand E of Brooke I.; 0–4 m	Snorkel
6	12/8/93	20°24'30"S, 115°30'12"E;	backreef of W barrier reef; steep slope into lagoon; 8 m	SCUBA
7	12/8/93	20°23'31"S, 115°31'04"E;	narrow channel NW of Bluebell I.; 9 m	SCUBA
8	13/8/93	20°24'31"S, 115°32'33"E;	NW lagoon; fine silty, grey sand; 3.5 m	Dredge
9	13/8/93	20°20'52"S, 115°29'22"E;	outside NW end of W barrier reef; flat algal covered pavement; 17 m	SCUBA
10	13/8/93	20°21'16"S, 115°30'53"E;	N of Northwest I.; flat algal covered pavement; 4 m	SCUBA
11	14/8/93	20°25'11"S, 115°31'46"E;	channel between Crocus I. And N end of Hermite I.; coarse sand; 4 m	Dredge
12	14/8/93	20°27'00"S, 115°33'59"E;	Gannet I. to entrance of Stephenson Channel; fine grey sand; 4–6 m	Dredge
13	14/8/93	20°27'26"S, 115°31'29"E;	mangal	Walk
14A	14/8/93	20°29'02"S, 115°31'46"E;	intertidal sandbank in Stephenson Passage opposite CALM camp.	Walk
14B	14/8/93	20°29'53"S, 115°31'45"E;	intertidal rocky shore in Stephenson Channel near CALM camp.	Walk
14C	15/8/93	20°29'10"S, 115°31'57"E;	intertidal sand flats between Buttercup and Hermite Is.	Walk
14D	15/8/93	20°29'16"S, 115°32'04"E;	intertidal rocky shore of Hermite I. from CALM camp to Chamberlain Peninsula.	Walk
14E	15/8/93	20°29'20"S, 115°31'50"E;	Sherry Lagoon; intertidal embayment, rocky edge and muddy sand.	Walk
15	15/8/93	20°28'21"S, 115°32'27"E;	Stephenson Channel; coarse sand and shell; 4 m	Dredge
16	15/8/93	20°29'59"S, 115°31'50"E;	Stephenson Channel; coarse sand and rubble; 4 m	Dredge
17	17/8/93, 24/8/93	20°28'06"S, 115°32'42"E;	Stephenson Channel; fringing reef and sandy bottom of channel; 6 m	Dredge
18	18/8/93	20°27'04"S, 115°30'42"E;	western lagoon, W of Hermite I.; coarse sand and rubble; 6 m	Dredge
19	18/8/93	20°30'01"S, 115°27'43"E;	patch reef on edge of channel through isolated W barrier reef; 8 m	SCUBA
20	18/8/93	20°30'13"S, 115°27'07"E;	intertidal reef flat on isolated W barrier reef.	Walk
21	19/8/93	20°30'09"S, 115°29'59"E;	S of western lagoon, top of sandbank; coarse sand; 3 m	Dredge
22	19/8/93	20°30'08"S, 115°29'36"E;	S of western lagoon; coarse sand, rubble; 5 m	Dredge
23	19/8/93	20°30'15"S, 115°26'33"E;	outside isolated W barrier reef; flat algal covered pavement; 20 m	SCUBA
24	19/8/93	20°31'35"S, 115°33'48"E;	E of Ah Chong I.; high relief coral reef; 15–18 m	SCUBA
25	20/8/93	20°27'19"S, 115°28'20"E;	intertidal flat on W barrier reef.	Walking
26	20/8/93	20°23'31"S, 115°29'39"E;	high intertidal mound on outer reef flat, W barrier reef.	Walking
27	20/8/93	20°22'32"S, 115°33'59"E;	high relief coral reef E of Trimouille I.; 9 m	SCUBA
28A	21/8/93	20°23'08"S, 115°32'43"E;	eastern lagoon, W of Trimouille I.; flat sandy bottom; 3 m	SCUBA
28B	21/8/93	20°23'09"S, 115°32'46"E;	NW tip of Trimouille I.; intertidal with beach rocks and sand.	Walking
29	22/8/93	20°22'48"S, 115°32'51"E;	rocky intertidal isthmus connecting Trimouille I. and Hollyhock I.	Walking
30	22/8/93	20°29'27"S, 115°33'53"E;	coral reef with large bomboras E line of islets S of Flag I.; 11–14 m	SCUBA
31	22/8/93	20°30'20"S, 115°33'49"E;	same as 30; 7–13 m	SCUBA
32A	23/8/93	20°24'19"S, 115°33'57"E;	lagoon W of Main Bay Trimouille I.; Steep sandy slope – possibly of bomb crater; 8–17 m	SCUBA
32B	23/8/93	20°24'13"S, 115°34'05"E;	sandy intertidal and beach of Main Bay, Trimouille I.	Walking
33	23/8/93	20°24'25"S, 115°33'37"E;	lagoon W of Trimouille I.; sand and rubble; 6 m	SCUBA
34	24/8/93	20°30'27"S, 115°33'49"E;	same as 30; 7–13 m	SCUBA
35	24/8/93	20°31'58"S, 115°33'54"E;	E of Ah Chong I.; high relief coral reef drop-off to sand; 4–13 m	SCUBA
36A	24/8/93	20°28'35"S, 115°33'03"E;	lagoon E of Hermite I.; flat with clean, coarse sand; 4 m	SCUBA
36B	24/8/93	20°28'29"S, 115°32'43"E;	sandy intertidal and narrow rock platform below intertidal cliff; 0–2 m	Snorkel
37	25/8/93	20°28'33"S, 115°32'15"E;	embayment with mangal in Stephenson Channel; intertidal rock and sand.	Walking