

- 9 FEB 1995

John Wallace

DIVISION OF FISHERIES

1995 RESEARCH VESSEL PROGRAM

CRUISE PLAN

**FRV SOUTHERN SURVEYOR
CRUISE SS2/95**

13 FEBRUARY - 10 MARCH 1995

**CSIRO DIVISION OF FISHERIES
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ITINERARY

DEPART: WEIPA 18:00 HRS MONDAY, 13 FEBRUARY 1995

RETURN: WEIPA 08:00 HRS MONDAY, 27 FEBRUARY 1995

AREA OF OPERATION

West of Weipa, Gulf of Carpentaria between 12°S - 13°S, and 140° 50'E and 141° 35'E.

RESEARCH BACKGROUND

The Bycatch Reduction project (FRDC) has been investigating methods of reducing the catch of non-target species in prawn trawls in the Gulf of Carpentaria since July 1993. Reducing the catch of juvenile commercial fish species and smaller prawns makes ecological sense for protection of the prawn and finfish fisheries, while increased survival of other non-commercial species may help restore the ecosystem that supported the original fishery. Economic benefits include less trash to sort, less damage to valuable prawns in the codend from large species or excessive amounts of bycatch. In addition, reducing bycatch will enhance the trawling industry's image which is that of a destructive fishery where up to 90% of the catch is discarded as trash.

Other aspects of the study include the development of an environmentally friendly fish trawl net suitable for the Gulf of Carpentaria. Fishery managers have recommended the use of an 'environmentally friendly' net which avoids contact with any bottom structure. A previous cruise tested a semi-pelagic fish trawl where the footrope avoided contact with the sea bed. The SS2/95 cruise will test the same trawl – a McKenna wing trawl fished semi-pelagically – but with reduced sweeps; leaving only the trawl boards in contact with the sea bed.

The first cruise of this project in October 1993 compared square mesh codends and standard diamond mesh codends in tiger prawn trawl nets. This second cruise will be testing various exclusion devices and codend modifications designed to divert larger, unused species from the codend or allow some fish species to actively escape from the body of the net. Seven net types of the prawn nets (14 fathom Florida Flyers) and two net types of the EFN (McKenna wing trawl fished semi-pelagically) will be assessed. In addition, seven nights of trawling with the Multi-level Beam Trawl (MBT) will be undertaken using a 'verandah panel' set at different heights.

CRUISE OBJECTIVES

1. To test various prawn net modifications for their effectiveness in reducing the catch of non-target species in the tiger prawn fishery off Weipa without significant loss of commercial prawns.
2. To obtain daytime video images of these devices and their effects on fish behaviour in the net during trawling.
3. To test the catchability of fishes using reduced sweeps in a semi-pelagic fish trawl.
4. To test the effect on reducing bycatch and maintaining prawn catches of a verandah panel set at different levels of the MBT.
5. To collect whole specimens and flesh samples for the Hobart Fish Taxonomy Group's *Handbook of Commercial Fishes*; and miscellaneous taxonomic specimens for the ISR Munro Ichthyological Collection (Ross Daley).
6. To collect representative specimens of cephalopods for QDPI Fisheries in the sample areas (Julie Robbins).
7. To collect museum specimens of sponges and invertebrates for Queensland Museum (Steve Cook).
8. To opportunistically collect genetic samples of *Thenus* spp. (University of Queensland), and scombrid/sillaginid species (QDPI Fisheries).

CRUISE PLAN

This plan is only a guide to the sequence of intended procedures on the cruise. Changes will be made as required depending on the performance of various untested net exclusion and escape devices and catch rates. *Southern Surveyor* will leave Weipa at 1800 hrs and prepare to commence night-time MBT work during the 2.5 hour steam to prawn grounds 5 nm west of Duyfken Point. The approximate time allocations for each prawn trawling treatment are listed below. During the day, the various prawn trawl exclusion/escape devices will be tested to ensure they are functioning correctly prior to committing them to night-time sampling. This will be done in conjunction with video cameras on the nets to visually check the proper functioning of the devices and to observe fish behaviour associated with the devices.

TRAWLING TREATMENTS

NIGHT-TIME SAMPLING

PROPOSED GEAR TRIALS	NO. NIGHTS	NO. SHOTS ANTICIPATED*
1. MBT (3 treatments)	7 nights	70 shots
2. Prawn gear shakedown/debugging	2 nights	10 shots
3. Square mesh windows (hummer device)	2 nights	14 shots
4. Square mesh windows (black cylinder)	2 nights	14 shots
5. Square mesh windows (glow netting + hummer)	2 nights	14 shots
6. Supershooter	4 nights	28 shots
7. Nordmore grid	4 nights	28 shots
8. Fish eyes	2 nights	14 shots
9. Radial escape section	2 nights	14 shots
Total	27 nights	206 shots

* anticipated from previous cruise information and are likely to be minimal.

DAY-TIME SAMPLING

PROPOSED GEAR TRIALS	NO. DAYS	NO. SHOTS ANTICIPATED*
1. EFN gear shakedown/debugging	2 days	10 shots
2. EFN standard Vs square mesh codend/window	8 days	48 shots
3. Square mesh windows (hummer device#)	2 days	14 shots
4. Square mesh windows (black cylinder)	2 days	14 shots
5. Square mesh windows (glow netting + hummer)	2 days	14 shots
6. Supershooter	4 days	28 shots
7. Nordmore grid	4 days	28 shots
8. Fish eyes	2 days	14 shots
9. Radial escape section	2 days	14 shots
Total	28 days	284 shots

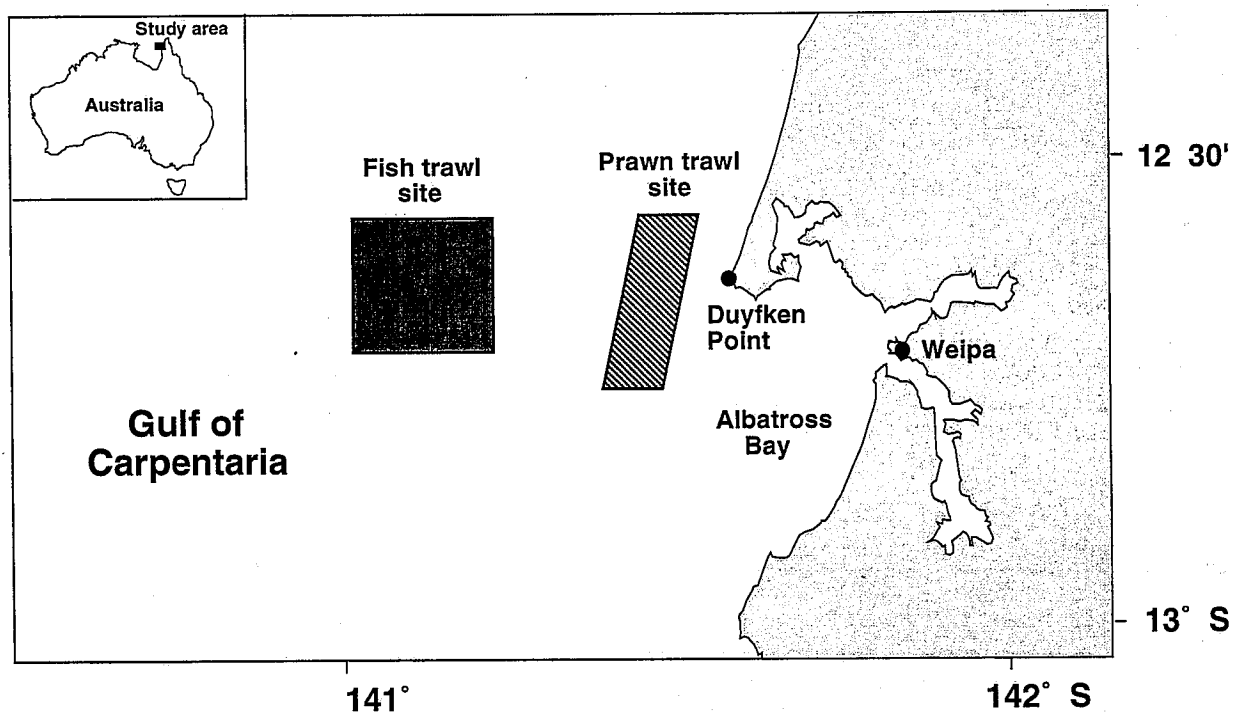
* anticipated from previous cruise information and are likely to be minimal.

Square mesh windows may be tested with and without hummer - ie 1 day of each.

The EFN treatments will also be tested during the day-time as a second priority to the testing of the prawn net devices. The fish trawl grounds for the EFN work are about 2 hours steam from the prawn grounds and this steam will be synchronised around dawn and dusk to avoid twilight effects on prawn catches. This procedure was successfully employed during the last cruise (SS7/93). Figure 1 shows the locations of the fish and prawn trawling grounds during this cruise.

All scientific crew embark and disembark at Weipa. Frozen samples and other gear will be offloaded in Cairns and consigned to Cleveland and/or Hobart as required (Vessel Operations Manager will supervise this procedure).

FIG. 1. LOCATION OF FISH TRAWL SITE (ENVIRONMENTALLY FRIENDLY NET) AND PRAWN TRAWL SITE (FLORIDA FLYERS AND MULTI-LEVEL BEAM TRAWL).



PERSONNEL

LEG 1: 13-27 FEB 95

1	John Salini	Cruise & shift leader/biology/data
2	David Brewer	Shift leader/biology/sample design/data
3	Nick Rawlinson	Biology/gear technology
4	Marcus Strauss AMC	Gear technology
5	Steve Eayrs AMC	Gear technology
6	Lyndsay MacDonald	Electronics
7	Emma Hopkins	Biology/volunteer
8	John MacCartie NT	Gear technology
9	Julie Robbins QDPI	Biology
10	Ted Wassenberg	Biology/data
11	Robert McCauley AIMS	Invertebrates/PhD student
12	Michael O'Neill	Biology/volunteer

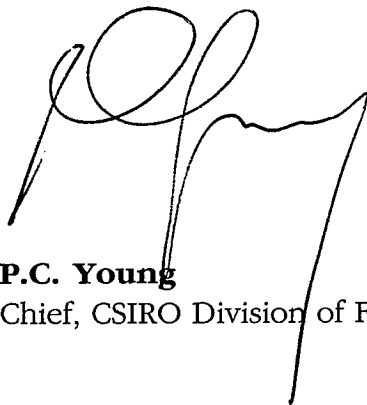
LEG 2: 27 FEB-10 MAR 95

1	John Salini	Cruise & shift leader/biology/data
2	David Brewer	Shift leader/biology/sample design/data
3	Nick Rawlinson	Biology/gear technology
4	Steve Eayrs AMC	Gear technology
5	Fiona Manson	Biology/volunteer
6	Liz Cameron	Biology/volunteer
7	Neville Gill NT	Gear technology
8	Rik Buckworth NT	Biology/gear technology
9	Clive Liron	Gear technology/Vessel Operations Manager
10	Ross Daley	Fish Taxonomy
11	Jeff Cordell	Electronics
12	Steve Cook QM	Invertebrate taxonomy

CONTACTS

For further information about this cruise contact:

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A handwritten signature in black ink, appearing to be 'P.C. Young', written over the printed name and title.

P.C. Young
Chief, CSIRO Division of Fisheries

February 1995