

FISHERIES DIVERSIFICATION PROGRAM

Emerging Fisheries Development

Project Summary: FDP 286

Shrimp Resource Identification Survey

(Pandulus borealis)

Burgeo/Ramea Area

November 2000



GOVERNMENT OF
NEWFOUNDLAND
AND LABRADOR

Canada 

Introduction:

For many years, fishers on the southwest coast of Newfoundland have noted the presence of substantial quantities of Northern Pink Shrimp. Given the lack of scientific data on the resource, coupled with the fact that there has never been a directed shrimp fishery on the southwest coast, three surveys were conducted: one in 1996 by the Department of Fisheries and Oceans (DFO) and two in 1998 and 1999 by the Department of Fisheries and Aquaculture (DFA). All surveys produced encouraging but inconclusive results with regard to the abundance of shrimp species. All surveys showed the presence of very large shrimp in the area.

There are several species of shrimp found in the waters around Newfoundland and Labrador. The species for which there is a commercial fishery is the Northern Pink Shrimp, *Pandulus borealis*. A small quota exists for *Pandulus montagui* and it is mostly pursued as a by-catch. *Pandulus borealis* are usually found in areas with a soft, muddy bottom and at depths ranging from 10-500 meters (5-300 fathoms). The preferred water temperature range is 2°-14° Celsius, while shrimp are most commonly found at temperatures of 2°-8° Celsius. This species has a normal overall length ranging from 35 mm (1.5") up to a maximum of 150 mm (6"), with the average carapace length for males being 14 mm and that of females being 16 mm.

In response to considerable demand from small vessel owners for assistance to develop a commercial inshore shrimp fishery (using technology such as shrimp pots and beam trawls), DFA determined that additional research on the shrimp resource in the Burgeo/Ramea area was needed. With funding assistance from the Fisheries Diversification Program, a shrimp resource identification survey was designed and conducted during November 2000.

Fishing Vessel and Equipment:

The vessel selected to conduct the survey was the *Avalon Mist*, a fully rigged shrimp otter trawler, 19.5 m in length and powered by a 470 horsepower engine. The otter trawl was model 980 and equipped with a Nordmore Grate with a bar spacing of 25 mm. Temperature devices (Timbits) were attached to the head rope of the otter trawl to record water temperatures.

Survey Parameters:

Based on a variety of information, eighteen potential sites were identified for dragging. The *Avalon Mist* was contracted to survey over a period of ten days, a survey day being defined as nine hours of actual fishing time which included the surveying of the bottom stratum for suitable tows. From November 20-30, 36 tows were completed, all tows conducted in waters exceeding 100 fathoms, one hour in duration or less and at a normal tows speed of 2 knots.

Survey Data:

Figure 1 denotes the general area where all three DFA surveys were undertaken. The results of the 1998 and 1999 DFA surveys can be summarized as follows:

September 1998: Burgeo/Ramea

- Ten 1 hour tows, using otter trawl technology, catch rates from 2-36 kg/1 hour tow.
- Good, large commercial size shrimp, count - 99/kg.
- Abundance of small redfish by-catch.

March 1999: Burgeo/Ramea

- Twenty-five 1-2 hour tows, using beam trawl technology, catch rates from 73 kg/1 hour tow to 136 kg/2 hour tow.
- Large commercial size shrimp, count - 77 to 99/kg.

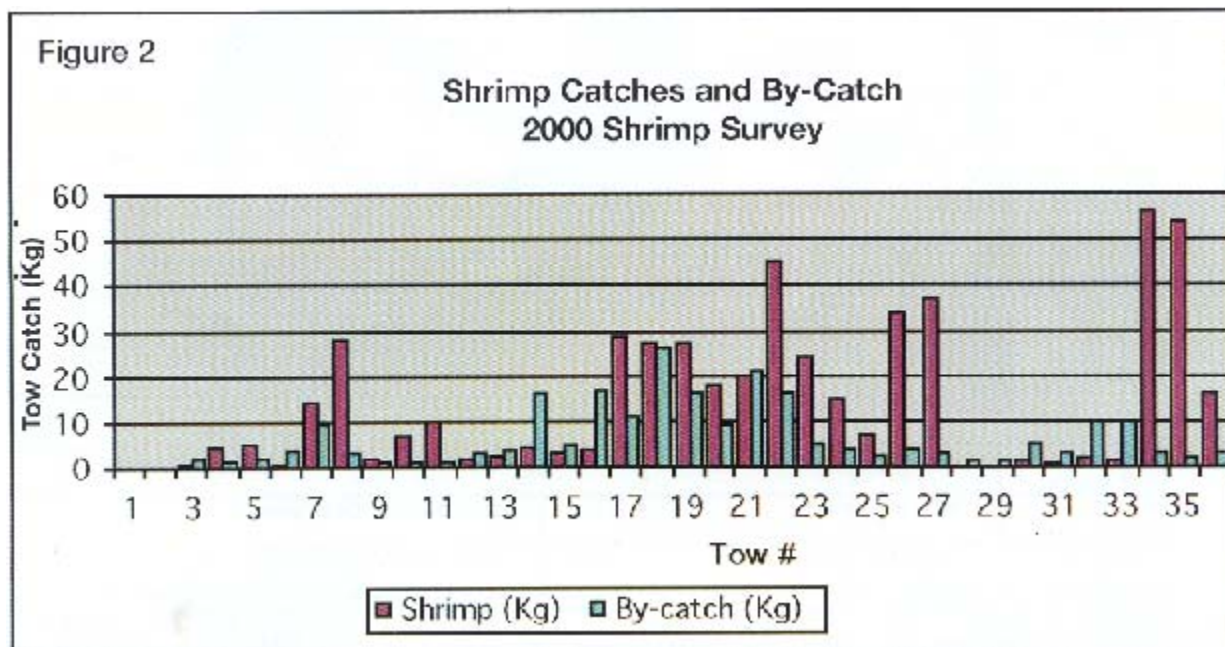
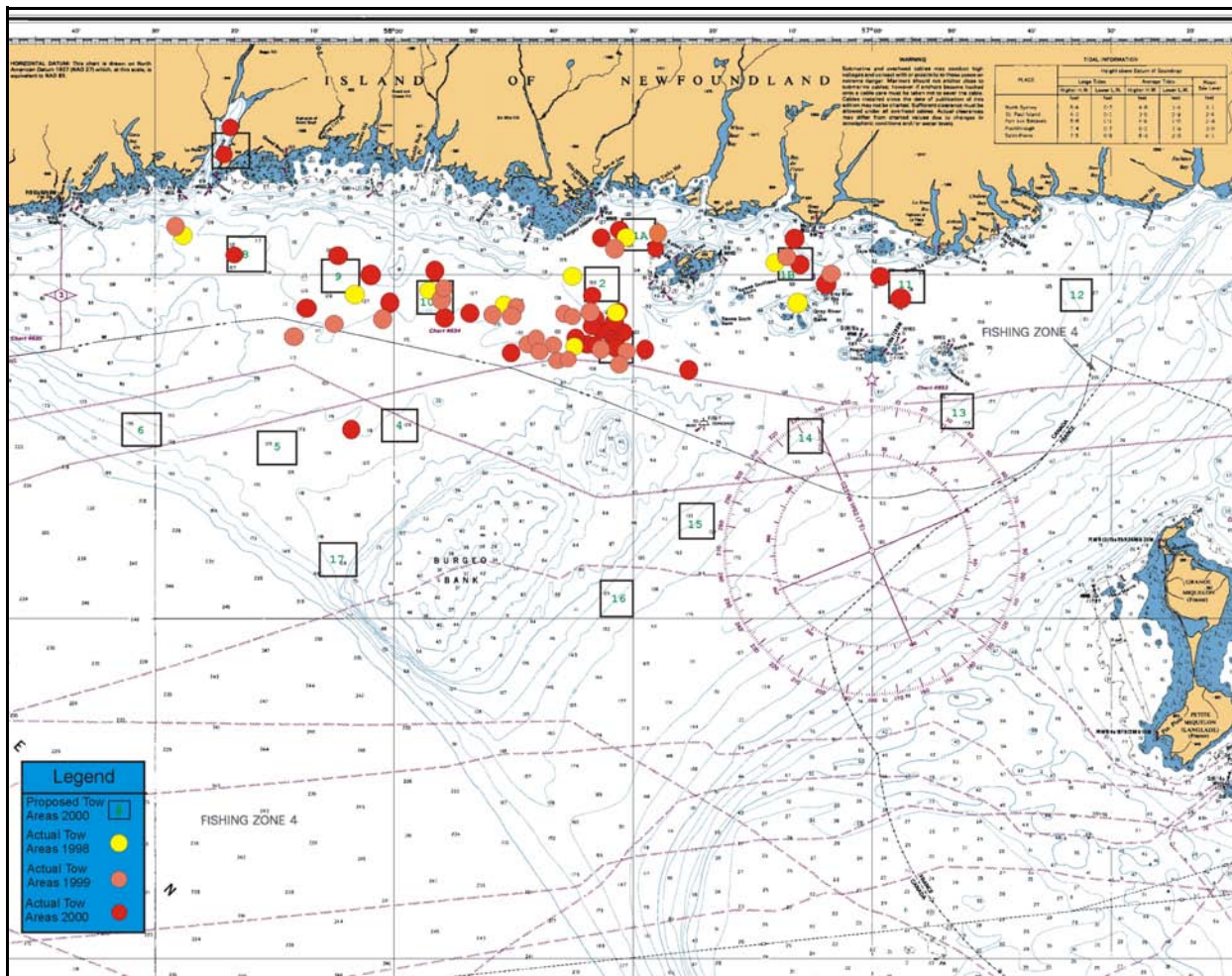
For the 2000 survey, a Seawatch Observer was contracted to record the results of each tow, including recording position, water depth, bottom stratum, actual tows time, quantities harvested, shrimp size and amount of by-catch. **Table 1** illustrates the 2000 survey log. **Figure 2** lists the actual catches of shrimp by tow, while also illustrating the relationship between shrimp catches and the amount of by-catch for each tow.

Conclusions:

It appears that only small amounts of *Pandulus borealis* shrimp are present in most of the suitable fishing areas on the southwest coast between Francois and Lapoile Bay. The volumes caught suggest that a commercial inshore shrimp fishery during the fall period would not be economically viable for either otter trawl or beam trawl technology.

Considering that the tows area of a beam trawl is significantly smaller than that of an otter trawl, the results of the March 1999 survey, as compared to the present survey, would suggest that the winter or early spring may be the best time periods to pursue any future surveys or a directed shrimp fishery.

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Survey Log - Burgeo/Ramea Shrimp Resource Identification Survey (November 2000)

Tow #	Position	Water Depth (Fathoms)	Bottom Stratum	Tow Time	Shrimp (Kg) and Count (/kg)	By-catch (kg)
1	47-29-46 Lat. 56-57-91 Long.	120-128	Smooth, muddy	35 min.	NIL	NIL
2	47-29-68 Lat. 56-58-04 Long.	120-128	Level, hard	47 min.	NIL	0.1 kg red fish
3	47-30 Lat. 57-07 Long.	132-135	Very hard	n/a	0.9 kg, 63/kg.	2.1 kg red fish, turbot, marlin spike & white hake
4	47-30-84 Lat. 59-09-40 Long.	126-135	Very hard	46 min.	4.5 kg, 68/kg.	1.2 kg red fish, white hake & witch flounder
5	47-34-64 Lat. 57-10-18 Long.	148-138	Hard, uneven	45 min.	4.75 kg, 65/kg.	0.5 kg red fish, 0.1 kg white hake & witch flounder, 1.0 kg white shrimp
6	47-22-01 Lat. 57-22-13 Long.	110-117	Very hard	1 hour	0.9 kg, 68/kg.	4 kg red fish
7	47-23-73 Lat. 57-28-61 Long.	119-126	Very hard	1 hour	14 kg, 87/kg.	9 kg red fish
8	47-24-94 Lat. 57-31-69 Long.	137-127	Hard with mud	1 hour	28 kg, 95/kg.	2 kg red fish, 1 kg plaice
9	47-27-67 Lat. 57-32-39 Long.	120-128	Rough and jagged	34 min.	2 kg, 86/kg.	1 kg red fish, 0.2 kg squid
10	47-32-24 Lat. 58-07-97 Long.	133-145	Hard with mud	1 hour	6.5 kg, 105/kg.	1 kg red fish, turbot & white hake
11	47-31-85 Lat. 58-08-05 Long.	120-160	Hard with mud, inconsistent depths	1 hour	10 kg, 100/kg.	1 kg red fish
12	47-28-72 Lat. 58-02-35 Long.	124-135	Muddy	1 hour	2 kg, 83/kg.	3 kg red fish, 0.3 kg herring
13	47-30-49 Lat. 57-56-65 Long.	126-135	Hard, inconsistent depths	55 min.	2.2 kg, 87/kg.	4 kg red fish
14	47-26-26 Lat. 57-56-04 Long.	124-133	Hard with mud	1 hour	4.5 kg, 83/kg.	15 kg red fish, 1 kg turbot & argentine
15	47-26-38 Lat. 57-52-79 Long.	125-130	Hard with mud	1 hour	3 kg, 79/kg.	4 kg red fish, 1 kg turbot & argentine
16	47-24-32 Lat. 57-47-98 Long.	126-134	Hard with mud	1 hour	4 kg, 99/kg.	16 kg red fish, 1 kg turbot & argentine
17	47-24-58 Lat. 57-39-26 Long.	130-133	Hard with mud	1 hour	28.7 kg, 87/kg.	10 kg red fish, 1 kg turbot, white hake & silver hake
18	47-25-34 Lat. 57-31-66 Long.	129-131	Hard with mud	1 hour	27 kg, 87/kg.	25 kg red fish, 1 kg witch flounder & silver hake
19	47-24-20 Lat. 57-36-07 Long.	128-132	Hard with mud	1 hour	27 kg, 83/kg.	15 kg red fish, 1 kg silver hake
20	47-24-47 Lat. 57-32-47 Long.	128-130	Hard with mud	1 hour	18 kg, 80/kg.	8 kg red fish, 1 kg silver hake
21	47-23-74 Lat. 57-36-19 Long.	131-138	Hard with mud	1 hour	20 kg, 83/kg.	20 kg red fish, 1 kg silver hake
22	47-26-10 Lat. 57-36-85 Long.	132-144	Muddy	1 hour	45 kg, 83/kg.	15 kg red fish, 1 kg silver hake
23	47-26-84 Lat. 57-32-22 Long.	138-141	Hard with mud	1 hour	24 kg, 80/kg.	5 kg red fish
24	47-26-92 Lat. 57-36-52 Long.	130-141	Muddy	1 hour	15 kg, 91/kg.	3 kg red fish, 1 kg turbot
25	47-28-18 Lat. 57-33-49 Long.	140-155	Muddy	1 hour	7 kg, 80/kg.	2 kg red fish, 0.5 kg marlin spike
26	47-26-33 Lat. 57-33-02 Long.	130-148	Hard with mud	1 hour	34 kg, 77/kg.	3 kg red fish, 1 kg hagfish & turbot
27	47-25-92 Lat. 57-36-54 Long.	131-150	Hard with mud	1 hour	37 kg, 80/kg.	2 kg red fish, 1 kg white hake
28	47-33-43 Lat. 57-35-37 Long.	127-144	Hard	32 min.	0.2 kg	1 kg red fish, 0.1 kg capelin
29	47-34-46 Lat. 57-33-73 Long.	138-147	Hard	1 hour	0.2 kg	1 kg red fish, 0.5 kg white hake, cod & capelin
30	47-32-49 Lat. 57-28-93 Long.	128-132	Hard	1 hour	1 kg, 55/kg.	4 kg red fish, 1 kg silver hake, cod, turbot & capelin
31	47-17-80 Lat. 58-05-88 Long.	127-131	Hard	1 hour	0.7 kg, 54/kg.	3 kg red fish, 0.2 kg marlin spike
32	47-27-78 Lat. 58-12-35 Long.	120-130	Hard	1 hour	2.1 kg, 106/kg.	10 kg red fish
33	47-32-08 Lat. 58-19-88 Long.	119-127	Hard	1 hour	1.5 kg, 83/kg.	10 kg red fish
34	47-44-33 Lat. 58-19-12 Long.	110-138	Muddy with kelp	52 min.	56 kg, 239/kg.	2 kg red fish, 1 kg capelin, cod, turbot & plaice
35	47-44-20 Lat. 58-19-19 Long.	110-137	Muddy with kelp	51 min.	54 kg, 300/kg.	1 kg red fish, 1 kg capelin, cod, turbot & plaice
36	47-41-49 Lat. 58-21-31 Long.	142-152	Muddy with kelp	30 min.	16 kg, 125/kg.	1 kg red fish, 2 kg capelin, witch flounder, turbot & plaice