

FISHING INDUSTRY RESEARCH TRUST ACCOUNT
FINAL REPORT

1. Title of project: Use of satellite imagery to predict occurrence of spawning aggregations of Blue Grenadier.
2. Project Number: 86/86
3. Organization: CSIRO, Division of Fisheries Research
4. Person responsible for program: F.R. Harden Jones, Chief, Division of Fisheries Research
5. Location of operation: CSIRO Marine Laboratory, Hobart, Tasmania
6. Work schedule:
Commencement date: 1.7.86
Completion date: 31.9.86
7. Final report: The proposed study consisted of two, largely independent components, a long term comparison of annual cycles of sea surface temperatures and the reproductive seasonality of Blue Grenadier in order to devise predictors of the latter based on the former, and a one-off short term survey off the northeastern coast of Tasmania for evidence of spawning by Blue Grenadier in that area. As funds were provided only for the latter component, no work was initiated on the former and there are no immediate plans to continue that work. This report, therefore, details only results of the survey of northeastern Tasmania.

Following consistent catches of small numbers of young (less than 15 days post-hatch) larval Blue Grenadier on ichthyoplankton transect number 1, off St. Helens, Tasmania, we hypothesized the presence of a spawning ground for the species in that area, in addition to the ground previously discovered on the west coast of Tasmania. This hypothesis was tested during the 1986 Blue Grenadier spawning season, by conducting an intensive ichthyoplankton survey on the continental shelf near St. Helens, in order

1) to determine whether spawning occurs consistently in the area, and if so, 2) to assess the size of the spawning aggregation and 3) to locate the spawning ground as precisely as possible. To this end, plankton tows were conducted along five transect lines across the continental shelf near St. Helens, between 41°S and 42°S. latitude. Each transect consisted of three sampling points (Figure 1), located at depths of 30, 60 and 120 m, respectively. This depth range covers that which we have previously documented to be inhabited by Blue Grenadier larvae at the west coast Tasmanian spawning ground. Each site was sampled twice, once on 12-13 August, 1986, and again on 25-27 August. Sampling procedures consisted on a 30 minute, continuous oblique tow beginning 10 m above the bottom and continuing to the surface. Tow speed was 2-3 knots. Sampling equipment consisted of a 1 m ring net, fitted with 500 micron mesh and a 333 micron cod end. Samples were preserved in 95% ethanol, and sorted at the CSIRO Marine Laboratory. We have previously demonstrated that this combination of procedures and equipment effectively samples larval Blue Grenadier.

In order to provide a base line for comparison, ichthyoplankton samples were also collected on 20-21 August, 1986 at the known spawning ground. Sampling procedures were identical to those outlined above. Twenty eight samples were collected on the west coast, as compared with 30 on the northeastern coast.

In contrast to the results of the 1984 and 1985 programs, no larval Blue Grenadier were caught off the northeastern coast in 1986. The only fish collected in any numbers were those of myctophids, and no larvae of any species of current commercial interest were caught. By comparison, an estimated 10,000 larval Blue Grenadier were collected during the 28 tows off the west coast.

On this basis, we conclude that spawning by Blue Grenadier on the continental shelf off northeastern Tasmania is a sporadic and small scale event, of limited significance to either the species' biology or the fishery. There appears to be no potential for development of even a small scale fishery in the area that is based on aggregations of spawning Blue Grenadier.

The results of this project have been incorporated into four technical manuscripts, in various stages of preparation, on the

reproductive biology of Blue Grenadier and the distribution of ichthyoplankton in Tasmanian coastal waters. The results will also be reported in an article, in preparation, for Australian Fisheries.

