

The main features of the life history of the parasite, *Bucephalus longicornutus*, which, at its sporocyst stage, infects the gonad of the mud-oyster, have been described elsewhere (Howell, 1966). The information contained herein was obtained concurrently with this life history study, and is divided into the following three sections:

1. Geographical distribution and incidence of infection of the sporocysts in the mud-oyster.
2. Effects of the sporocysts on the mud-oyster, prefaced by an historical account of previous observations of the effects of bucephalid parasites on their bivalve hosts.
3. Hyperparasitism of the embryonic cercariae within the sporocysts.

#### MATERIALS AND METHODS

Oysters used in this study were obtained from Foveaux Strait between June and October 1963, and March and June 1964, and on one occasion only from each of the localities indicated in Table I. Those from the latter localities were opened and their condition recorded. The majority of Foveaux Strait samples were set up in finger bowls as detailed elsewhere (Howell, 1966), which allowed the incidence of infection in a given sample to be determined within a week. Some samples, however, were opened immediately to determine both the incidence and state of the infection. This was followed by sectioning and staining of portions of the visceral mass of both infected and uninfected specimens using standard techniques to determine the histological effects of the parasite on the oyster.

Four hyperparasitised oysters from Tasman Bay were frozen, then thawed before being received by the author. The visceral mass of two specimens was sectioned and stained using standard techniques. Portions of infected sporocysts were teased out of the visceral mass and mounted in glycerine for examination of the spores of the hyperparasite.

Live oysters from Foveaux Strait were used for three separate mortality experiments. The oysters were set up separately in 7 in diameter finger bowls two-thirds filled with sea-water, and the water was changed once or, when time permitted, twice daily. Oysters that died during the experiment, and those that remained alive after the experiment was terminated, were opened and their condition recorded.

#### 1. GEOGRAPHICAL DISTRIBUTION AND INCIDENCE OF INFECTION IN *Ostrea lutaria*

##### DISTRIBUTION:

Known localities of *Ostrea lutaria* in New Zealand (Hollis, 1963), localities from which samples were received and the condition of these samples are indicated in Text-fig. 1.

The Foveaux Strait region is the major locality in which extensive oyster beds are known to occur. It is also the only region, disregarding minor operations in Golden Bay, where oysters are dredged on a commercial scale. Commercial operations have made possible more or less regular sampling from the Foveaux Strait region in contrast with only occasional sampling from the other known localities.

Hollis did not report *O. lutaria* from north of Tasman Bay. However, as shown in Text-fig. 1, oysters were recovered from the trawl net of the "Constanta", a Rumanian stern trawler, from approximately 173° 30' E, 40° 10' S during fishing trials in this area. The fact that only 53 oysters were taken suggests that oysters are sparse in this locality and not present in commercial quantities.