

lagoons and have often exceeded 1,000 lb./acre. The average size of eel caught is unexpectedly small, being usually between 2 lb. and 3 lb., while in a sample from the Waiau system only 9 per cent. were over 6 lb. and 1.5 per cent. over 10 lb. Studies are also being made on the relative efficiency of various forms of trap and on the amount of trapping required to clean out an eel population; but these are not yet far enough advanced to yield definite results.

Erosion and Flooding.—In this work, studies are being made of the effects of flooding and the shifting of river-beds on both the trout-food and on trout eggs and alevins before emergence from the gravel. The former studies are being made on the Horokiwi River, near Wellington, and the latter on the Ashley River, in Canterbury. In the investigations of effects on fish-food, observations are made regularly at a number of localities as to the exact position of the stream and shingle bed and the quantity of food animals present. From these observations the effects of each flood can be determined. Since the work began, several floods of moderate size have occurred and these have yielded some useful information. While in all parts of the river the floods have caused some destruction of fish-food, the loss has been much greater in the unstable regions where there has been considerable movement of shingle and shifting of the stream bed. As an example may be quoted the effects of two floods which occurred in July and September, 1947. In the unstable parts of the river the average quantity of food animals after each flood was only about one-seventh of what it had been before, while in the more stable parts an average of one-third survived. Although recovery seems surprisingly rapid, 60 per cent. of pre-flood numbers being reached six weeks after the July flood, it appears that frequent floods must reduce significantly the average amount of food present in a river. It is believed this work will ultimately make it possible to estimate the importance of this reduction and to judge how far it is affected by accelerated erosion of the water-sheds.

Angling Diaries.—A scheme is being developed for the collection of accurate information regarding the status of fish stocks in as many rivers as possible by means of standard angling diaries and Ranger's reports. Under this scheme printed diary forms are distributed to as many anglers as possible, collected at the end of the season, and carefully analysed to extract all useful information. The distribution and collection of diary forms is being undertaken by acclimatization societies, while the work of analysis and report is being done by the officers of the Marine Department. In the 1946-47 angling season the scheme was only in its infancy and only two societies took part. The limited number of diaries obtained in these cases did, however, yield useful information regarding the waters of these districts. It is understood, however, that many more societies have undertaken this work during the 1947-48 season, and that a correspondingly greater amount of data will be available for analysis.

Horokiwi Investigation.—A detailed account of the study of the trout stock of this stream is now in preparation, and it is hoped that it will be published during the coming year. This work, a brief account of which appeared as an Appendix to the 1945 annual report, had as its object the determination of the factors limiting the production of fish in a typical small trout stream.

MARINE RESEARCH

Throughout the year there was no Marine Biologist, but a new appointee commenced duty early in 1948. Preparations for certain classes of work with the research vessel "Ikaterere" were completed, and this vessel commenced work in the Hauraki Gulf.

By arrangement with Victoria University College, a graduate commenced preliminary work on crayfish research.