NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

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COMMERCIAL CATCH FIGURES AND SEASONALITY: A CAUTIONARY NOTE

David Butts
Manawatu Museum
Palmerston North

In a recent paper B.F. Leach (1979) has outlined a technique for calculating the seasonal availability of fish species for the inhabitants of particular archaeological sites in New Zealand using commercial catch figures. In this paper several specific objections to this method are outlined. The modern data used by Leach are the monthly catch figures given for individual species in the Reports on Fisheries up to 1971 and they refer to the quantities of fish landed at particular ports. They do not necessarily reflect the availability of species in close proximity to the port at which they are landed, since boats from most ports range far beyond the immediate area of the port at which they land their fish.

Research has been undertaken to establish the seasonality of the faunal material recovered from Rotokura, Cable Bay, on the eastern side of Tasman Bay, northern South Island (Butts,1977). On investigation of the sources of fish landed at Port Nelson it was found that boats landing fish at that port can range as far south as Stewart Island and as far north as Northland. Some fish has also been brought in from the Chatham Islands. The figures resulting from this sort of activity could hardly be suggested to reflect for certain the seasonal availability of fish in Tasman Bay. Equally certain is the fact that the local prehistoric inhabitants would not have had this sort of range.

The number of fishing boats landing fish at any given port may change from year to year. This is not fully compensated for in Leach's method. For example: if in year A 50 boats caught 3000cwt of snapper, and in year B 25 boats caught the same amount, the method proposed by Leach would not account for this.

The data given for Nelson in the fisheries reports show very clearly the effect of the retention of previously low value fish species after fish processing factories began to buy very large quantities. By applying Leach's method to the Nelson data recorded before and after 1967, the effect is clearly seen on a species such as gurnard (Butts, 1977:52-54). By retaining this species, which would previously have had only low commercial priority, the probability figures are altered. One might suggest that the latter figures are the more accurate reflection of seasonal availability since they come from a larger sample (though various factors mentioned below tend to negate this suggestion also). The more important implication must be, however, that the figures are

more an indication of the influence of the commercial viability of a species throughout the year, rather than an accurate reflection of the seasonal availability.

Thus there are two major criticisms of the data used by Leach; the fish landed at ports are taken from a very wide geographical area, and the data is closely tied to the commercial viability of particular species. It is thus suggested that the figures probably do not reflect the real seasonal availability of fish species in the area of the landing port.

Leach's main objective in proposing the method was to provide an initial attempt at the quantitative analysis of fish seasonality. The effort given to achieving the quantitative analysis of archaeological data over the last decade has been considerable, and has in many instances lead to considerable progress in analytical methodology. However such analysis must be done critically and with care being taken to ensure that the data being used are valid for the purpose to which it is being put (Flannery,1973:51). The data being used in the method proposed by Leach does not appear to have the required level of validity to support all the implications which may follow the analysis. Leach is obviously aware of the possibility of differences in the seasonal availability of species from one area to another, since he appears to try and get the data from ports as close to the area in which he is working as is possible.

Further comment is needed relating to the influence not only of the local commercial market on fishing retention strategies, but also that of the export trade. The growth of the export industry in fish products has had considerable influence on the data derived from the Nelson Port landing figures. There are at least four large fish processing companies within reasonable access of Nelson Port. Barracouta is now canned as a type of sea salmon; the influence of this upon the catch statistics has been considerable (see Report on Fisheries, 1966 and 1969). The requirements of these factories vary from month to month and this also affects the validity of the figures as a reflection of seasonal availability.

Changes in the abundance of fish species over time may also present problems. There is some evidence now to suggest that since the large fishing vessels from other countries have been concentrating on New Zealand waters (circa. 1973) to a much greater extent, fish numbers have dropped and fishermen are having to go further afield to catch their fish (R. Bray and G. Struick,pers. comm.,1977).

In fact data is available which is more location-specific than that given in the reports on fisheries. This is located in the Wetfish Report 1941-1970 (Ritchie et al,1975), which supplies figures in terms of the area in which the species was caught, rather than the port at which it was landed. Still, this data does not overcome most of the errors inherent in such statistics relative to seasonal availability. The introduction to this report has several pertinent comments to make in relation to the Reports on Fisheries used by Leach as his source of data:

> "Such information is of logistical use to fish processors and for showing the distribution of the fishing industry, but it is today of little use to commercial fishermen and the Fisheries Management and Research Divisions of the Ministry of Agriculture and Fisheries."
>
> (Ibid:2)

The report goes on to outline why this is so:

> "Prior to 1960 fishing returns data analysed by port of landing also gave an approximate picture of catch by area adjacent to the home port of the boat. However during the last decade boats have become bigger, more powerful, with greater range of freezing facilities and landings are likely to be made at considerable distances from port of registry and from area fished."
>
> (Ibid:2)

There are many other complicating factors. Availability of ice and the price being offered for each species are only two of the factors complicating fishing strategies.

Data from the Wetfish Report has similar problems to that with which it is being compared. Wasteage or throw back decreases with the increasing value of the species, and the problem of falsified returns "for self interest reasons cannot be discounted" (Ibid:4). The 1969 N.D.C. Fisheries Committee had this to say:

> "Many species are 'on limits' and therefore catches may only reflect demand by processors rather than abundance of the species in any given area. It has been shown that discards can vary from 0% in areas where the 'trash fish' can be utilized for pet food or meal...; to almost 50% in areas where no secondary industry is based."
>
> (Ibid:4)

The above discussion suggests quite strongly that the results of Leach's method of analysis does not reflect a location-specific pattern of seasonal availability which might be used with a high degree of confidence for fish bone assemblages from particular archaeological sites. Leach makes the statement that "....a similar overall seasonal pattern should be reflected in catches by both modern and prehistoric methods." (1979:4). Evidence in this paper suggests that in his assessment of

the modern data he as not taken sufficient cognizance of (1) what the landing figures actually reflect in terms of actual catch area nor (2) of motivation for individual species recovery strategies.

References

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