

New Zealand Fish Catch Related Factors Report Card

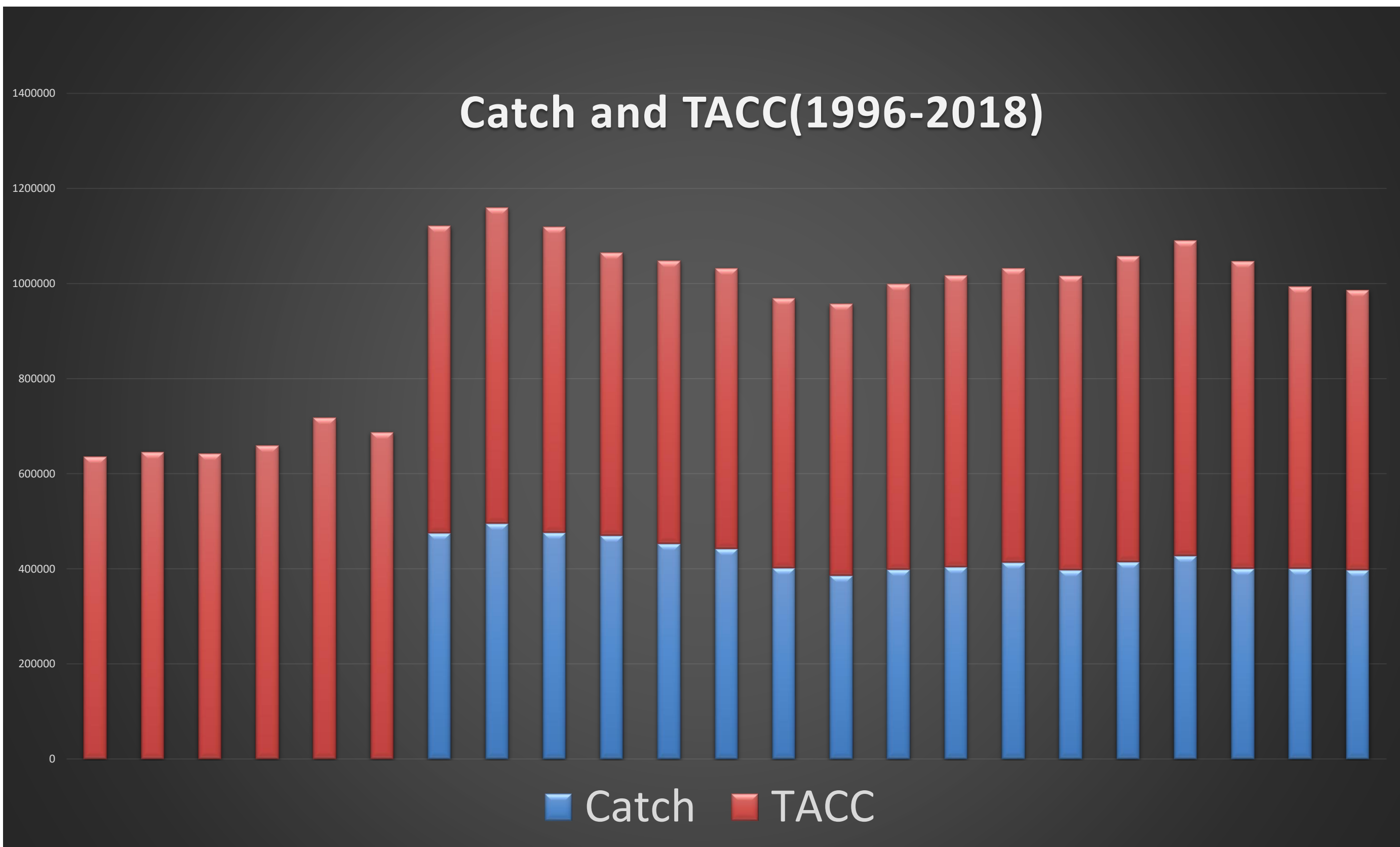
Introduction

Fisheries in New Zealand waters are a common pool resource. The Government’s role is to ensure utilisation and sustainability are appropriately balanced, while also balancing the competing demands of user groups. Commercial fisheries in New Zealand are managed under the quota management system (QMS) where individual transferrable quota for fish stocks is owned by private interests.

Materials & Methods

Regression model predicts the relationship between fishing volume and TACC,TCEPR and landing fish below soft limit.

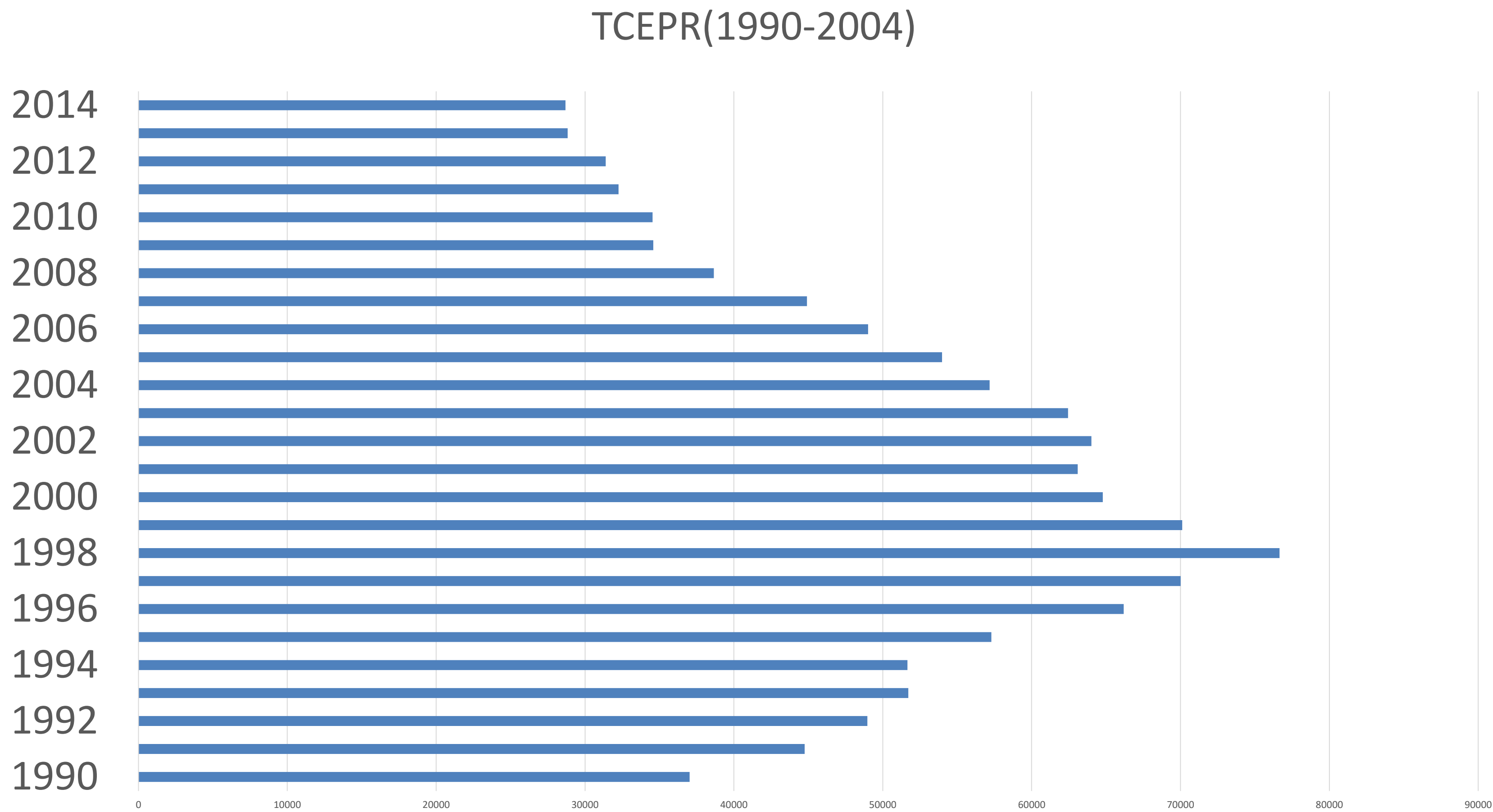
Results & Discussion



Graph 1.The quantity of fish that can be taken by commercial fishers, for each stock in a fishing year, is the total allowable commercial catch (TACC).

As shown in the figure, the fish catch is closely related to the commercial allowable capacity. It does not exceed the quota management.

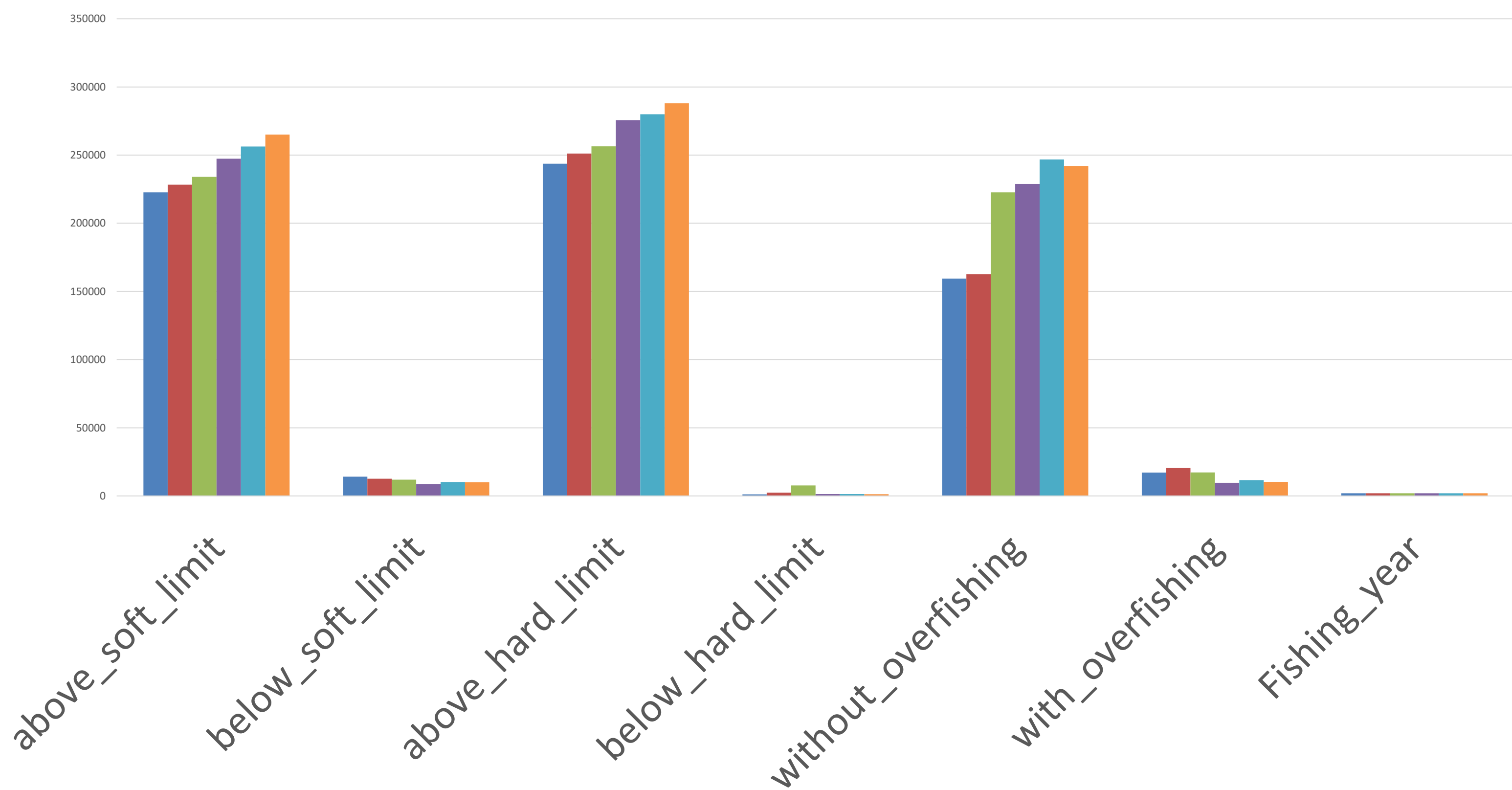
Results & Discussion



Graph 2. TCEPR(Fishing effort (number of trawl tows) by year

Seabed trawling is the practice of towing fishing nets near or along the ocean floor. The towing process can physically damage seabed (benthic) habitats and species.

The number of trawl has decreased since 1998,however the environmental pressure on the seabed caused by trawls due to their nature cannot be ignored.



Graph 3.Landings from stocks meeting or exceeding performance thresholds(2009-14)

Results & Discussion

Note: below means a rebuilding plan is required. fish below soft limit is relatively small , the forecast shows that it has large negative correlation with catch, thus it would be considered in controlling catch in a reasonable range level.

Linear Regression Model

Catch =

$$\begin{aligned} & 8.6831 * \text{Asset value} + \\ & 0.2294 * \text{TACC} + \\ & -0.0621 * \text{Seafood exports value} + \\ & -0.4012 * \text{Seafood exports quantity} + \\ & -4570.7197 * \text{year} + \\ & -0.7282 * \text{From_stocks_above_soft_limit} + \\ & -5.6796 * \text{From_stocks_below_soft_limit} + \\ & 0.2842 * \text{From_stocks_without_overfishing} + \\ & 0.6759 * \text{CELR} + \\ & 9868822.9636 \end{aligned}$$

The regression model predicts the trend of catch with year , which reduces the fishing amount by 4570 units per year.

Conclusions

As New Zealand's export industry, fisheries have contributed to the domestic economy. However, the impact of large-scale fishing on fish resources cannot be ignored. The correlation between fish catch and other factors, which can provide reliable indicator for fishery manager to plan and utilize rationally and maintain sustainable development of ecology and fishery.