would be provided to management

Comment 23. Given the inadequacy of biological, social, and economic information to ascertain the status of the scallop stocks or the condition of the fishery, the available data do not support closure of Federal waters to fishing for scallops. If the FMP is implemented, NMFS will have to underwrite a large and expensive research program. If the research program has not yet begun, it will be a long time before a good FMP can be developed for the fishery.

Response. For the reasons described above, NMFS acknowledges that limited information on the Alaska scallop resource justifies a conservative approach to the management of this resource. This approach is based on the premise that uncertainty should lead to greater caution, not recklessness in the hope of short-term economic gain.

ADF&G has conducted resource assessments in Cook Inlet and intends to pursue a survey of part of the Prince William Sound stock this summer. An assessment of stock condition does not necessarily require expensive and longterm research. For example, observer data on catch, effort, and age composition could be analyzed to assess a stock's sustainability to exploitation. ADF&G plans to use these observer data in a geographic information systems analysis to provide a fishery-based assessment of stock status and productivity. NMFS is considering possible cooperative arrangements with the State of Alaska to make use of the information made available from ADF&G's assessment program.

Comment 24. The proposed FMP specifies an OY of 1.1 million lbs (499 mt), which equals the highest estimated harvest from Federal waters off Alaska. NMFS inappropriately based the proposed OY on historical landings because the landings have been sporadic, not indicative of a fully exploited resource, and regulated by quotas. In fact, historical landings reflect opportunities in other fisheries as well as those in the weathervane scallop fishery. Bourne (1991) argues that the resource tends to be exploited when opportunities in other fisheries are diminished. As a result, the landings series do not coincide with periods of full exploitation and the resulting guideline harvest ranges implemented by the State of Alaska and the proposed OY is likely to be artificially low.

Response. NMFS agrees that historical landings could have been affected as opportunities in other fisheries flourished or diminished. However, available data also support the premise

of management agencies that fluctuating landings in the Alaska scallop fishery are reflective of the reduced availability of scallops resulting from the pulse nature of the fishery and the "boom and bust" cycles of resource abundance. Furthermore, the State of Alaska only recently (1993) implemented quotas for the Alaska scallop fishery. Prior to this time, scallop harvests were regulated only with gear restrictions, area closures, and fishing seasons. Last, analyses upon which ADF&G's guideline harvest ranges are based do not include very high or very low annual harvests to dampen the effect of annual variation on the calculation of sustainable yield estimates.

Comment 25. Using information contained in the draft FMP and a simple analysis of landings and number of trips using a surplus production model of the form of Schaefer (1957) indicates that the MSY for weathervane scallops off Alaska is approximately 6.3 million lbs (2,857 mt) of meats. The model is statistically significant, although the coefficient for the effort squared, measured by number of landings, is not statistically significant. This estimate is based on the best scientific information available—landings and number of trips over time. If the number of vessels is used instead of number of landings, the MSY is estimated to equal 1.3 million lbs (590 mt) of meats.

Response. The Schaefer model for estimating surplus production and MSY has been considered invalid since the 1960's (Larkin 1977). Furthermore, neither the number of landings nor the number of vessels are adequate variables to use because scallop vessel size and capacity has changed greatly over the past 20 years. Similarly, vessels have gone from a part-time engagement in the Alaska scallop fishery to full-time participation. Thus the vessels used to participate in the scallop fishery in the late 1960's and 1970's cannot be compared to the 15–17 vessels currently participating in the fishery because their levels of participation are not comparable. Even if the Schaefer model were appropriate, NMFS would seriously question the commenter's preferred alternative of using the highest MSY estimate of 6.3 million lbs (2,857 mt), instead of a more conservative amount, given the wide range (1.3 million-6.3 million lbs (590 mt-2,857 mt) calculated from the commenter's efforts, and the uncertainty of the data used by the commenter.

Comment 26. The proposed FMP states that a major reason for the interim closure and a Federal FMP is to prevent the "boom and bust" syndrome historically exhibited by other scallop

fisheries. There is absolutely no evidence that a "boom and bust" fishery is bad. In fact, many U.S. fisheries, particularly shellfish fisheries, exhibit cyclic patterns in resource abundance and fishing activity. A good example of this is the Calico scallop (Argopecten gibbus) fishery in the State of Florida. Moreover, pulse-fishing is a strategy often adopted by fishermen to maximize net returns over time. In general, management strategies have not been able to prevent "boom and bust" episodes in fisheries that are naturally

*Response.* The Calico scallop fishery is a poor example for justifying a "boom and bust" fishery for weathervane scallops off Alaska. Contrary to the longlived weathervane scallop, the Calico scallop has a short life span (less than 2 years). Species of short life span typically are less vulnerable to overfishing, unlike weathervane scallops, which have a long life span and are more susceptible to recruitment overfishing. Published literature cites many examples where a relatively brief intense period of fishery exploitation has resulted in stock collapse (see response to Comment 9).

Under the proposed FMP, as well as the State of Alaska management program, harvest constraints will have some effect in dampening the natural fluctuations in resource abundance. A constant supply of scallops would also dampen economic impacts on the weathervane scallop industry relative to the cyclic abundance pattern that can wreak havoc on established markets.

Comment 27. Under the proposed FMP, there will be unprecedented scallop fishing effort by vessels in State waters because Federal waters will be closed. Evidence exists that the State will allow increased harvest levels in State waters in response to the closure. Therefore, the likelihood exists that fishing activity in State waters will be unprecedented unless controlled by strict harvest quotas. Thus, the same argument used to close Federal waters will have to be used to close State waters to the harvesting of weathervane scallop fishing. The only way to guarantee that the risk of recruitment failure or growth overfishing will be minimal is to close the entire weathervane scallop fishery.

*Response.* Under the proposed FMP, as well as the State of Alaska management program, harvest constraints will help dampen the natural fluctuations in resource abundance, will better prevent recruitment overfishing, and will promote sustainable and predictable fishery-related employment on a