Joint Position of the States of New Jersey and Delaware on the Proposed Introduction of *Crassostrea ariakensis* on the U.S. Atlantic Coast and the E.I.S. Process Supporting That Introduction

BACKGROUND

Since 1989, the states of New Jersey and Delaware have been continuously involved in Asian oyster research issues in Delaware and Chesapeake Bays. On an annual basis, we have been involved in review of research proposals and commented on research permit applications. New Jersey has issued permits for experimental field deployment of *Crassostrea gigas* on several occasions. Delaware, as a signatory of the Chesapeake Bay Exotic Species Plan, has provided technical input to annual *ad hoc* exotic oyster panels, convened to review field research proposals and commercial trials, focusing on bio-security issues. In the mid-1990's, both states petitioned the International Council for the Exploration of the Seas (ICES) Workgroup on Transfers of Marine Organisms regarding bio-security issues involved in exotic oyster research, the only U.S. states to do so. Initially on opposite sides of the exotic oyster issue, New Jersey and Delaware have been in agreement on this issue since 1995.

When the concept of using non-native species to offset the decline of American oyster in Chesapeake Bay arose approximately 15 years ago, the primary candidate was *Crassostrea gigas*. This oyster is a native of Asia, where it is the major commercial oyster. It has been introduced extensively around the world, including Europe, North America and Australia and its biology and ecology are well documented in the scientific literature. Despite this, it took almost a decade of field experiments to conclude that its growth and survival was no better than that of the native oyster in the moderate and low salinity waters of Chesapeake Bay. Furthermore, its thin shell and susceptibility to the commensal polychaete, *Polydora websteri*, as well as various predators make it a poor choice for introduction in the mid-Atlantic region.

In marked contrast, the current exotic oyster of interest is a virtual unknown. There has been very little published regarding the biology and ecology of *Crassostrea ariakensis*. To make matters worse, the historical literature on the species, which might have served as input information for predictive population models, has been cast into doubt. Recent genetic testing indicates that more than a single species was used in these studies, making their value questionable (King, personal communication, 2004). In addition, recent trips to Asia, by oyster researchers to study *C. ariakensis* in Asian habitats, which form the basis of current opinions of reef building characteristics, are now in doubt. On-going genetic testing of 210 oysters collected at two sites has shown that over 94% of putative *C. ariakensis* are actually *C. gigas*, a known reef builder (Luckenbach *et. al*, 2004). This work, conducted, in part, to determine whether *C. ariakensis* is a reef builder, failed to make that determination, at this time. The reef building characteristics of *C. ariakensis* remain unknown.

Although the use of triploid oysters is not a major issue in this proposed diploid introduction, the issue provides a good example of how long it can take to learn about biological issues, even when we think we know all the facts at the outset. In the early 1990's, chemically-induced triploids were proposed as a means of inducing sterility and ensuring bio-security.

Triploid oysters were thought by some researchers to be 100% stable. Reversion from triploid to the normal diploid was said to be "unknown in the animal kingdom." (Allen, personal communication,(1994). In January 1995, in an *in situ* study in Virginia, 26.5% of triploid oysters were found to have begun the reversion process, seven months after deployment. Six percent had become "virtual diploids." (Outten, personal communication, 1995) As a result, chemically-induced triploids were replaced as a bio-security measure with "mated" triploids. These tetraploid-diploid crosses were also thought to be 100% triploid and 100% stable. Subsequent research has shown that neither of these presumptions is true (Kern, personal communication, 2000, 2003). "Mated" triploids revert at a lower rate and each batch contains an undetectable level of normal diploid individuals. The characteristics of triploidy are among the most important issues impacting bio-security during the work over the last 15 years, yet it has taken over 10 years to get to our current, imperfect level of understanding and important questions remain. It is not unrealistic to expect that it may take a similar amount of time to adequately examine the biology and ecology of *C. ariakensis.* This process may reveal fatal flaws in the candidacy of *C. ariakensis* for introduction, as was the case with *C. gigas.* Certainly the extreme susceptibility of *C. ariakensis* to *Bonamia*, a naturally occurring parasite on the Atlantic coast, is one example of an unanticipated risk associated with introducing an exotic species into a new habitat. How *Bonamia* will affect C. ariakensis and, in turn, how *C. ariakensis* may serve to spread *Bonamia* if the proposed exotic oyster introduction is carried out in the mid-Atlantic is completely unknown at this time. Answering this question with the confidence necessary to prevent a potential ecological disaster would certainly take several years.

In the past several years, a number of high level expert panels has grappled with the problem of the introduction of a non-native oyster species. Each has developed recommended research needs and a projected timeline for their completion. The National Academy of Sciences has recommended studies over a five year period (2003). In 2003, the Chesapeake Bay Program Scientific and Technical Advisory Committee (STAC) has made specific research recommendations, also covering a five year time span. The federal cooperating agencies have recommended research needs for a defensible environmental impact statement (E.I.S) which extend through 2007, the end point of a five year federally-funded research effort which began in 2003. Maryland alone proposes another timeline, proposing to review its single year of studies in December 2004, with a possible decision to unilaterally introduce the non-native in February 2005.

STATEMENT OF POSITION

The states of New Jersey and Delaware oppose the proposed diploid introduction of *Crassostrea ariakensis* on the U.S. Atlantic coast, at this time, for two reasons. First, in our view, there is inadequate knowledge of the biology and ecology of this oyster. A responsible decision to introduce this exotic species should not be made under these circumstances. Second, we believe that no single state has the right to impose the introduction of an exotic oyster on neighboring jurisdictions Public policy issues which have interstate ramifications call for overriding federal or regional approval, as is the case in pollution-related situations where there are interstate impacts. In addition, given its role in interstate fishery management

issues, the Atlantic States Marine Fisheries Commission must play a more active role in this matter and convene the Shellfish Transport Committee in a series of meetings to review the proposed introduction throughout the E.I.S. process.

The states of New Jersey and Delaware oppose any departure from the research framework outlined by the Federal Cooperating Agencies in support of E.I.S. development. Moreover, we believe the decision to conclude the E.I.S. process should be made when there is consensus that adequate supporting research has been conducted, rather than being tied to an arbitrary timeline. It is possible this process may take more than five years.

Maryland officials have been quoted in recent press releases as saying that the reasons for considering an exotic oyster introduction are disease and over fishing. The states of New Jersey and Delaware recommend that Maryland enhance and expand efforts to employ traditional fisheries management techniques, such as total allowable catch (quotas) and area closures when stock assessment information collected by the state indicates that spawning stock biomass is critically low on particular oyster beds, as suggested in Jordan and Coakley (2004). The authors modeling efforts suggest that a 40% reduction in fishing mortality over a period of a decade would virtually assure stock restoration and an enhanced fishery.

The states of New Jersey and Delaware are concerned about recent statements by Maryland officials and Corps of Engineers personnel regarding the N.E.P.A. process. It would appear that these individuals may have pre-judged the issue and are not considering all E.I.S. alternatives, but rather are moving to expedite the introduction of the non-native oyster with an abundance of optimism and a relative dearth of information. The N.E.P.A. process must remain an objective, data-based, professional decision making process.

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