Summary

AFS Policy Statement #15:
Introductions of Aquatic Species
(Abbreviated)

The increased frequency of inter- and intranational transfers of aquatic species has prompted concern relative to the potential for debasement of aquatic community integrity. Natural resource managers concur that substantially improved measures can and should be taken to increase the odds that benefits of a given introduction will exceed risks. Impacts of introduced aquatic organisms on native aquatic communities in North America can be classified into five broad categories: habitat alteration, trophic alteration, spatial alteration, gene pool deterioration, and introduction of diseases.

Habitat impacts produced by introduced plants which produce excessive growth include interference with swimming and fishing activities, disruption of predator-prey relationships by providing too much cover, and disruption in water quality by plant growth and decomposition. Fish, such as grass carp, introduced to control vegetation can overly decimate exotic as well as non-target native vegetation which in turn limits fish nursery areas, causes bank erosion, and accelerates eutrophication through release of nutrients previously stored in the plants.

Introduction of any species into a novel environment may alter community trophic structure, and the nature and extent of such changes are complex and unpredictable. There is little doubt that when an introduced fish exhibits explosive population increases, substantial changes in native communities must occur. Documentation of predation by introduced species on native species serves as the most definitive example of impacts on communities. Concomitant overlap in use of space by non-native and native fishes may lead to competitive interaction if space is in limited supply or of variable quality. High densities of introduced fish have been shown to exert negative effects on native fishes.

Reduction of heterogeneity through inbreeding is clearly a threat to any species being produced in a hatchery. The risk is most acute with species of intercontinental origin because the initial broodstock invariably represent limited gene pools at the outset. The larger the stocking program, the more inbreeding among original broodstock is necessary. Thus species introduced to a novel habitat may or may not have the genetic characteristics necessary to adapt and perform as predicted. The possibility of native gene pools being altered through hybridization also exists.

Diseases caused by bacteria, viruses, and parasites are all too often conveyed along with introduced aquatic species. This aspect represents one of the most severe threats that an introduced species may pose to a native community.

The AFS policy regarding introduction of aquatic species is to:

1. Encourage fish importers, farmers, dealers, hobbyists, and shipowners to prevent the accidental or purposeful introduction of aquatic species into local ecosystems.

2. Urge that no city, county, state, province, or federal agency introduce, or allow to be introduced, any species into any waters within its jurisdiction which might contaminate any waters outside its jurisdiction without official sanction of the exposed jurisdiction.

3. Urge that only ornamental aquarium fish dealers be permitted to import such fishes for sale or distribution to hobbyists. The "dealer" would be defined as a firm or person whose income derives from live ornamental aquarium fishes.

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4. Urge that importation of fishes for purposes of research not involving introduction into a natural ecosystem, or for display in public aquaria by individuals or organizations, be made under agreement with responsible government agencies. Such importers should be subject to investigatory procedures currently existing or to be developed, and species so imported shall be kept under conditions preventing escape or accidental introduction. Aquarium hobbyists should be encouraged to purchase rare ornamental fishes through such importers. No fishes should be released into any natural ecosystem upon termination of research or display.

5. Urge that all species considered for release be prohibited and considered undesirable for any purposes of introduction into any ecosystem unless that species has been evaluated upon the following bases and found to be desirable:

• Rationale. Reasons for seeking an import should be clearly stated and demonstrated. It should be clearly noted what qualities are sought that would make the import more desirable than native forms.

• Search. Within the qualifications set forth under Rationale, a search of possible contenders should be made, with a list prepared of those that appear most likely to succeed, and the favorable and unfavorable aspects of each species noted.

• Preliminary Assessment of the Impact. A preliminary assessment should go beyond the area of Rationale to consider impact on target aquatic ecosystems, on game and food fishes or waterfowl, on aquatic plants, and on public health. The published information on the species should be reviewed and the species should be studied in preliminary fashion in its biotype.

• Publicity and Review. The subject should be entirely open and expert advice should be sought. It is at this point that thoroughness is in order. No importation is so urgent that it should not be subject to careful evaluation.

• Experimental Research. If a prospective import passes the first four steps, a research program should be initiated by an appropriate agency or organization to test the import in confined waters (experimental ponds, etc.).

• Evaluation or Recommendation. Complete reports should be circulated among interested scientists and presented for publication.

• Introduction. With favorable evaluation, the releases should be effected and monitored, and the results should be published or circulated.

6. Urge that international, national, and regional natural resource agencies endorse and follow the above stated AFS policies.

7. Encourage international harmonization of guidelines, protocols, codes of practice, etc., as they apply to introduction of aquatic species.

8. Urge fisheries professionals and other aquatic specialists to become more aware of issues relating to introduced species.