

**DRAFT**  
**IMPORTED LIVE BAIT PERMIT REQUIREMENTS**

July 5, 2006

**I. ISSUE**

Several complaints have been received of live eels being shipped into North Carolina and being sold as bait for the recreational striped bass fishery. Nine bait dealers reported selling live eels for bait and five of those identified NC as the source of their eels. The other four dealers did not specify a source. Bait eels are not currently certified to be free of disease and many of the fishermen are releasing live, unused eel bait into NC waters. There is concern that the out-of-state eels could be diseased and have a negative impact on NC stocks if this practice continues.

**II. BACKGROUND**

The eel bait industry has greatly expanded in recent years. Approximately 200,000 eels are produced in NC culture operations annually. The operations obtain wild elvers from out-of-state as the source of their production and these small eels must be tested and found disease free before being used in NC aquaculture operations. The operators of the eel aquaculture operation raised questions when they learned that their competition, bait shops, was receiving and selling eels from out-of-state sources with no disease free certification.

NC Fisheries regulations have required a permit to introduce or transfer live aquatic organisms into the State's coastal waters or hold them for broodstock and growout since 1991. The permit requirements have been applied to aquaculture operations but not to the bait market. **In order to apply the current rule to live bait use, the responsible party for the introduction or transfer would be the fishermen using the bait.**

**III. ORIGINATION**

North Carolina Division of Marine Fisheries, in-state eel producers.

**IV. CURRENT RULES**

**15A NCAC 03I**

**.0104 INTRODUCTION AND TRANSFERS OF MARINE AND ESTUARINE ORGANISMS**

- (a) In order to protect the marine and estuarine resources of North Carolina from undesirable predators, pests, parasites, and disease, it is unlawful, without first obtaining a permit from the Fisheries Director:
  - (1) To introduce into the coastal waters of the state live aquatic animals or plants not native to the state.

- (2) To transfer into the coastal waters of the state species which are native but which originated outside the State's boundaries.
- (3) To hold or maintain any imported marine or estuarine organism in a quarantine or isolation system for brood stock or growout.
- (b) Any person desiring to obtain a permit for introductions or transfers must make written application to the Division of Marine Fisheries, P.O. Box 769, Morehead City, NC 28557-0769. The application must contain sufficient information for the Fisheries Director to determine that the action will not pose a significant danger to any native marine resource or the environment. If such information is not available, the applicant may be required to have necessary analyses performed.
- (c) The Fisheries Director may hold public meetings prior to granting permits for activities specified in Subparagraphs (a)(1), (2), and (3) of this Rule and shall issue permits only after applicants have shown that such activities will not pose a threat to native species or environments.

*History Note: Authority G.S. 113-134; 113-182; 143B-289.52;  
 Eff. January 1, 1991;  
 Amended Eff. November 1, 1991;  
 Recodified from 15A NCAC 03I .0004 Eff. December 17, 1996.*

## V. PROPOSED RULE CHANGE

**Amend 15A NCAC 03I .0104 in a permanent action as follows:**

### **.0104 INTRODUCTION AND TRANSFERS INTRODUCE, TRANSFER OR HOLD OF MARINE AND ESTUARINE ORGANISMS**

- (a) In order to protect the marine and estuarine resources of North Carolina from ~~undesirable unacceptable risks from~~ predators, pests, parasites, and disease, it is unlawful, without first obtaining a permit from the Fisheries Director or without obtaining live marine and estuarine organisms from a permit holder:
  - (1) To ~~introduce~~ place into the coastal fishing waters of the State live ~~aquatic animals or plants~~ marine and estuarine organisms not native to the State. For purposes of this rule, this action is an introduction.
  - (2) To ~~transfer~~ place into the coastal fishing waters of the State ~~species~~ live marine and estuarine organisms which are native but which originated outside the State's boundaries. For purposes of this rule, this action is a transfer.
  - (3) To hold or maintain any ~~imported~~ live marine or estuarine organism imported into the State in a quarantine or isolation system for ~~brood stock, or growout~~ live bait or use in an aquaculture operation as defined in 15A NCAC 03I .0101 (b) (19).
  - (4) To sell for bait any live marine or estuarine organism imported into the State.
- (b) Any person desiring to obtain a ~~permit for introductions or transfers~~ Permit to Introduce, Transfer or Hold Imported Marine and Estuarine Organisms must make written application to the Division of Marine Fisheries, P.O. Box 769, Morehead City, NC 28557-0769. ~~The application must contain sufficient information~~ In order for the Fisheries Director to determine ~~that the action will not pose a significant danger~~ level of

risk to any native marine resource or the ~~environment.~~ environment, the applicant shall provide:

- (1) A certification from a pathologist that a sample of 60 organisms from proposed shipments are disease free or a certification from a governmental veterinary service that the organisms to be shipped were produced in an area or facility free of diseases of concern; and
- (2) A certification from a biologist or veterinarian that macroscopic and microscopic examination indicates the shipment contains only those species identified on the permit application.

~~If such information is not available, the~~ The applicant applicant, at their own expense, may be required to have ~~necessary~~ additional analyses performed.

- (c) The Fisheries Director may require disinfection, quarantine or destruction of organisms and transfer materials as a condition of the permit.
- ~~(e)~~ (d) The Fisheries Director may hold public meetings prior to granting permits for activities specified in Subparagraphs Paragraph (a) (1), (2), and (3) of this Rule to gather information concerning risks to native marine resources or the environment. and shall issue permits only after applicants have shown that such activities will not pose a threat to native species or environments.

*History Note: Authority G.S. 113-134; 113-182; 143B-289.52;*

*Eff. January 1, 1991;*

*Amended Eff. November 1, 1991;*

*Recodified from 15A NCAC 03I .0004 Eff. December 17, 1996*

## **VI. DISCUSSION**

The current problem has been identified due to concerns about live, imported eels for bait but the problem is generic to any type of marine or estuarine organism used for live bait. The proposed solution would apply to all types of live bait sales. Concerns over other types of live bait include bloodworms (*Glycera dibranchiata*) and sandworms (*Nereis virens*) that are typically shipped with local (usually Maine) seaweed (rockweed) and sediment. There is a high probability that other organisms on or in the seaweed and sediment survive shipping and pose threats of disease transfer or unintended introductions (Carlton and Cohen 1998; Cohen et al. 1995; Lau 1995). A total of 59 of the 83 NC bait dealers surveyed in fall of 2005 reported purchasing 1.5 million blood worms from Maine and Canadian sources. These worms were shipped in 150,000 bags containing non-native seaweed and sediment. Lau (1995) reports that surveys in California revealed that about a third of recreational fishermen dispose of the seaweed and unused baitworms in coastal waters or intertidal areas. It has been documented that mud snails (*Littorina saxatilis*), a seaweed (dead-man's-fingers, *Codium fragile tomentosoides*), and the green crab (*Carcinus maenas*) were introduced into Pacific coast waters via this pathway. Live bait shrimp imported from South Carolina are another example where there is increased concern due to possible escapement of nonnative shrimp species from SC shrimp farms and shrimp diseases in those operations. However only one bait dealer reported an out-of-state source (SC) for live bait shrimp.

Under the current rule, bait dealers are not typically required to obtain a permit from the Fisheries Director because they are not the ones placing out-of-state bait into the coastal waters of NC or holding them for culture or growout purposes. Except for large menhaden bait tanks that use water pumped from coastal creeks, most live bait is held in recirculating systems. The bait must be in contact with water connected to a coastal water source before it is considered a transfer or, if a non-native species, an introduction. Non-connected bait tanks normally do not require a permit because the bait is not being held for broodstock or growout. The proposed rule amendments will also require a permit for holding imported live bait even if it is in a quarantine or isolation system.

Bait Dealers sell to fishermen that likely allow live, imported bait to enter NC coastal waters through escapement during fishing activities and by discard at the end of the fishing trip. Therefore, the fishermen are required to obtain a permit to use imported live bait under current rules. However, it is too burdensome to require each fisherman to obtain a permit each time he purchases live bait imported from out-of-state and uses it in a fishing activity. A new permit could be required for each purchase if the bait originated from different areas or there was extended lag time between purchases. The proposed changes in 3I .0104 would require a bait dealer to obtain the permit and exempt fishermen from obtaining a permit if they buy from a permitted bait dealer.

The other changes in the rule are to better define the terms that are used on the permit and to clarify rule language.

The proposed rule changes were presented to the Finfish Committee on January 19, 2005. There was considerable concern expressed by the committee over the economic impacts of the proposed changes. The committee requested an assessment of the economic impacts of the proposed rule changes prior to making a recommendation to the MFC. A survey of bait dealers was undertaken in October 2005 and reported in January 2006. Further investigation of the impact of permitting on the bloodworm trade was examined due to the likelihood of an economic impact on such a large segment of the NC live bait market.

Blood worms are shipped from Canada into the US and from Maine to France, Italy and Mexico, as well as the US, so international requirements were examined to see if the worms shipped from Canada to NC already meet our requirements for disease testing and if Maine conducted disease testing for foreign shipments that meets our requirements. The International Aquatic Animal Health Code of 2005 specifies that animals shipped into an importing territory must meet adopted health certification standards or originate from a country or zone declared free from infection as established by the Office International des Epizooties (OIE). The OIE is an intergovernmental organization created by an international agreement in 1924 to ensure transparency in the global animal disease situation. There are 167 member countries.

Contact with C&S Bait, Coinjock, NC, which imports bloodworms from Yarmouth, Nova Scotia, indicates that testing is performed on those shipments. However, there was no documentation as to the type of disease testing in the materials received. Contact with

the Maine Division of Marine Fisheries also indicated that routine testing was performed by a US Dept. of Ag. Animal and Plant Health Inspection Service (APHIS) certified lab to meet international shipping requirements (pers. comm. Pete Baer, Maine DMF). No information on the tests performed has been received as yet.

It is important to find out what diseases were monitored because the OIE only requires that certain fish, mollusk and crustacean diseases be monitored for imported aquatic animals. Bloodworms and sandworms are Annelid, Polychaete worms and any diseases of this class of worm, if any, are not covered in the testing. Interestingly, testing performed on a shipment of eels from Maine to NC included a declaration of freedom of infection for the state of Maine but the diseases that Maine is free of are primarily diseases of ruminants (cows, oxen, buffalo and their close relatives). The certification for the eels also included an inspection of the shipment for any clinical signs of disease and an inspection of the facilities of the producer company so there was an investigation for external signs of disease. Bloodworms are native to NC but sandworms are not. A transfer of any disease of Polychaete worms could affect NC Polychaete worm populations.

One major question that needs to be answered before an accurate economic analysis can be done is: Will NC allow shipments of bloodworms from disease free zones established according to OIE specifications, or our own, instead of requiring disease testing of each shipment? This is extremely important because the “shelf life” of harvested bloodworms is only 7-10 days and any delays can cause significant losses of product. Assessments on current bloodworm shipments cost around \$200 per inspection and shipments run in the 100-200 pound range (10-20 boxes) (pers. comm. Peter Merrill, Micro Technologies Inc.). Worm dealers sell a box of worms for \$109 on average to retailers (range = \$100-125) or around \$5.89 per bag (Range= \$5.25-7.50). A more detailed test would be more expensive and could run as much as \$1000 based on some figures charged for shellfish histopathology. Even if tests were required and could be performed on each shipment, the increased cost (\$800) applied to the whole shipment would raise the cost between \$40.00 and \$80.00 per shipment or between \$0.10 and \$0.40 per bag. Retail prices run between \$8.00 and \$10.00 per bag so the maximum increase in price would be around 5% and the minimum increase in price would be around 1% assuming no additional worm mortality or costs due to the disease assessments. A disease free assessment for the harvest area would incur some costs but would reduce long term testing requirements. The long term cost of the disease free designation is beyond the scope of this analysis.

Even though the disease testing logistics seem complicated, the larger problem may be dealing with the possible transfer or introduction of species with seaweed used as part of the packaging. Pete Baer with Maine DMF indicated that his agency and Sea Grant met with the 20 marine worm dealers and discussed the possible problems with the use of seaweed. He reported that the dealers were resistant to changing the medium used for shipping the worms. The worms must be kept moist and refrigerated to keep them alive and seaweed has been the traditional material used for shipping. Seaweed is supplied by approximately 10 harvesters in Maine. The documented evidence of transfers and introductions from the use of seaweed is referenced above. There are readily available alternatives to the use of seaweed such as the un-inked newsprint currently being used in

live soft crab shipments. The un-inked newsprint is used for sanitary reasons at the urging of public health officials but it would serve the purpose of reducing the risks of unintended introductions and transfers. A representative from C&S Sports stated that she has added moistened newspaper to worm bags they received from Canada and received comments from local retailers that it extended the shelf life of the product. Even though alternatives are available, barring the shipment of bloodworms with seaweed could shutdown the bloodworm market in this state for the short or long term and have a significant adverse economic impact.

All of the references (including World Trade Organization, NATO) located while searching for information on this issue led back to the International Aquatic Animal Health Code of 2005 of OIE and/or the ICES (International Council for the Exploration of the Sea) Code of Practice on the Introductions and Transfers of Marine Organisms 2005. The ICES code addresses this situation in the following:

*Introductions of marine organisms occur in the course of many human activities, including but not limited to aquaculture, stocking, live trade (e.g., species used for aquaria, ornamentals, bait and food), research, biocontrol, and the use of genetically modified organisms. Even species introduced intentionally into closed systems can be released accidentally. Thus, introductions can result whenever live organisms are moved, regardless of the original intent. As a result, a risk of introduction and subsequent impacts exists with any movement and should be considered explicitly.*

*This Code of Practice provides a framework to evaluate new intentional introductions, and also recommends procedures for species that are part of current commercial practices to reduce the risk of unwanted introductions, and adverse effects that can arise from species movement.*

Section IV of the Code gives specific guidance on measure that should be taken in these situations:

- IV) Recommended procedure for introduced or transferred species which are part of current commercial practice
  - a) All products should originate from sources in areas that meet current codes, such as the OIE International Aquatic Animal Health Code or equivalent EU (European Union) directives.
  - b) Live products destined for consumption, processing, and aquarium or display should not be placed into the natural environment.

- c) For organisms to be released into the natural environment, there should be documented periodic inspections (including microscopic examination) of material prior to exportation to confirm freedom from exotic accompanying (non-target) species including disease agents. If an inspection reveals any undesirable development, it must be immediately reported and importation must be immediately discontinued. Findings and remedial actions should be reported to ICES.
- d) If required, there should be inspection, disinfection, quarantine or destruction of the introduced organisms and transfer material (e.g., transport water, packing material, and containers) based on OIE or EU directives.
- e) Consider and/or monitor the genetic impact that introductions or transfers have on indigenous and previously introduced species or distinct genetic stocks, to reduce or prevent detrimental changes to genetic diversity.

Note: It is recognized that different countries will have special requirements for the inspection and control of the consignment in the donor and recipient countries.

The FAO (Food and Agriculture Organization of the United Nations) Technical Guidelines for Responsible Fisheries - Precautionary Approach to Capture Fisheries and Species Introductions states that the risk to capture fisheries can be reduced by the use of internationally accepted codes, such as the ICES Code of Practice.

The OIE International Aquatic Animal Health Code of 2005 contains specifications for certifying an area free from infection and is the likely basis for that health determination for the elvers shipped to NC from Maine:

#### A. INTERNATIONAL RECOGNITION OF FREEDOM FROM INFECTION

##### 1. General Principles

General principles are provided below for declaring a country, zone or aquaculture establishment free from infection in relation to the time of last occurrence, and in particular for the recognition of historical freedom.

An essential prerequisite to provide the guarantees required for the recognition of freedom

from infection is that the particular Member Country complies with the requirements of Chapter 1.4.3 of the *Aquatic Code* for the evaluation of the Competent Authorities.

The general principles are:

- . in the absence of infection or vaccination, the animal *population* would be] susceptible to clinical disease, or infection, over a period of time;
  - . the disease agents to which these provisions apply are likely to produce identifiable clinical or pathological signs in susceptible animals;
  - . an animal *population* may be free from some specified pathogens but not from others
  - . there are competent and effective personnel of the Competent Authority able to investigate, diagnose and report disease or infection, if present;
  - . the absence of infection over a long period of time in susceptible *populations* can be substantiated by effective disease investigation and reporting by the Competent Authority of the Member Country.
2. Requirements to Declare a Country, Zone or Aquaculture Establishment Free from Infection with a Specified Pathogen

The requirements to declare a country, zone or aquaculture establishment free from infection differ depending on the previous infection status of the country, zone or aquaculture establishment, namely:

- . Absence of susceptible species;
- . Historically free;
- . Last known occurrence within the previous 25 years;
- . Previously unknown infection status.

## **VII. DMF RECOMMENDATION**

DMF recommends taking the proposed rule change to the appropriate MFC committees for comment after economic impacts are assessed. It is recommended that DMF undertake an investigation of the costs to implement disease free certification for Maine bloodworms, periodic macroscopic examination of representative shipments/facilities, and disinfection of bloodworm shipments. Disinfection to be defined as removing the worms from native material used in packaging, rinsing the worms in sterile water, and repackaging in sterile materials.

Drafted October 23, 2003  
Revised January 27, 2004  
Revised March 3, 2004  
Revised April 15, 2004  
Revised July 1, 2004

Revised July 12, 2004  
Revised March 10, 2005  
Revised February 24, 2006  
Revised April 3, 2006  
Revised July 5, 2006

Compiled by Harold Knudsen, Craig Hardy, Doug Mumford, Joshua Murauskas and Mike Marshall

Application Date: \_\_\_\_\_

Permit Number: \_\_\_\_\_

FIN Participation No: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

**PERMIT TO INTRODUCE, TRANSFER OR HOLD IMPORTED MARINE AND ESTUARINE ORGANISMS**

APPLICANT: \_\_\_\_\_

TELEPHONE NO: \_\_\_\_\_

AQUACULTURE OPERATION PERMIT NO: \_\_\_\_\_

FACILITY and LOCATION: \_\_\_\_\_

SIGNATURE OF APPLICANT: \_\_\_\_\_

In determining whether the proposed activity will pose a threat to native species or environments pursuant to 15A NCAC 031 .0104, the following information is requested:

SPECIES: \_\_\_\_\_

Please complete as fully as possible. Attach additional information as necessary.

1) SOURCE: \_\_\_\_\_  
(Name and address of supplier)

2) NUMBER OF YEARS IN BUSINESS FOR THIS PURPOSE: \_\_\_\_\_

3) WATERBODY OF ORIGIN: \_\_\_\_\_

4) DISEASE HISTORY FOR SUBJECT SPECIES: \_\_\_\_\_

5) RECORD OF DISEASE ASSESSMENTS PERFORMED ON SHIPMENT AND QUALIFICATIONS OF INVESTIGATORS (IF ANY): \_\_\_\_\_

6) PART OF AN ONGOING PROGRAM FOR WHICH DOCUMENTATION IS AVAILABLE? \_\_\_\_\_

7) ESTIMATED SIZE AND NUMBER OF ORGANISMS TO BE SHIPPED: \_\_\_\_\_

8) PLANNED DATES FOR SHIPPING \*AND PLACEMENT IN STATE WATERS:  
\_\_\_\_\_

\* 9) STATE WATERS WHERE ORGANISMS WILL BE PLACED: \_\_\_\_\_

1) IF INTRODUCTION OR USE OF A NONNATIVE SPECIES IS PLANNED, A DETAILED DESCRIPTION OF THE COMPLETE OPERATION, INCLUDING FACILITIES, HANDLING, SAFEGUARDS AGAINST UNWANTED ASSOCIATED SPECIES, JUSTIFICATION FOR USE OF A PARTICULAR SPECIES, AND ANY OTHER INFORMATION DEEMED NECESSARY BY THE DIRECTOR WILL BE REQUIRED. \_\_\_\_\_

APPROVED: \_\_\_\_\_

DENIED: \_\_\_\_\_

ADDITIONAL INFORMATION REQUESTED: \_\_\_\_\_

PRESTON P. PATE, JR., DIRECTOR

\* Not required for live bait sales or isolation /quarantine facilities

## ECONOMIC IMPACT ASSESSMENT

The proposed rule changes were presented to the Finfish Committee on January 19, 2005. There was considerable concern expressed by the committee over the economic impacts of the proposed changes. The committee requested an assessment of the economic impacts of the proposed rule changes prior to making a recommendation to the MFC.