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DIVISION OF FISH AND WILDLIFE

MARINE FISHERIES

Division of Fish and Wildlife rules

Horseshoe Crabs

Proposed Amendment: N.J.A.C. 7:25-18.16

Authorized By: Bradley M. Campbell, Commissioner, Department of Environmental Protection

Authority: N.J.S.A. 13:1B-3, 13:1D-9, 23:2A et seq., and 23:2B-1 et seq., in particular, 23:2B-6, 23:2B-14

Calendar Reference: See Summary below for explanation of exception to calendar requirement.

DEP Docket Number: 01-06-01/581

Proposal Number: PRN 2005-___

Submit written comments by April 7, 2006 to:

Gary J. Brower, Esq.
Attn: DEP Docket Number: 01-06-01/581
Office of Legal Affairs
Department of Environmental Protection
401 East State Street
PO Box 402
Trenton, NJ 08625-0402

The Department of Environmental Protection (Department) requests that commenters submit comments on disk or CDs as well as on paper. Submission of a disk or a CD is not a requirement. The Department prefers Microsoft Word 6.0 or above.

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MacIntosh formats should not be used. Each comment should be identified by the applicable N.J.A.C. citation, with the commenter's name and affiliation following the comment.

The agency proposal follows:

Summary

As the Department has provided a 60-day comment period on this notice of proposal, this notice is excepted from the rulemaking calendar requirement pursuant to N.J.A.C. 1:30-3.3(a)5.

The Division of Fish and Wildlife (Division) is proposing an amendment to N.J.A.C. 7:25-18.16 in order to provide for a moratorium on the horseshoe crab commercial bait fishery for the calendar years 2006 and 2007. The purpose of the two year moratorium on the harvesting of horseshoe crabs is to improve conditions for the red knot (*Calidris canutus rufa*), as well as other migratory shorebirds whose survival depends upon an abundant supply of horseshoe crab eggs in Delaware Bay.

The Atlantic States Marine Fisheries Commission (ASMFC) was formed by the 15 Atlantic coastal states in 1942 for the promotion and protection of coastal fishery resources. The ASMFC serves as a deliberative body of the Atlantic coastal states, coordinating the conservation and management of nearshore fishery resources. In 1998, the ASMFC adopted the Interstate Fishery Management Plan for Horseshoe Crab (Plan) to conserve and protect the horseshoe crab resource to ensure its role in the ecology of coastal ecosystems. The goal of the Plan includes management of horseshoe crab populations for their continued use by current and future generations of the fishing and non-fishing public, migratory shorebirds, and other dependent wildlife, including Federally listed sea turtles. The Plan recognizes that the commercial horseshoe crab fishery competes with fish and wildlife resource needs, particularly shorebirds and sea turtles. The plan further recognizes that identifying and maintaining optimal sustainable yield for the horseshoe crab population may not be adequate to meet the needs of both fish and wildlife resources and the commercial fishery. Since shorebirds primarily feed on horseshoe crab eggs exposed on the beach surfaces, adequate horseshoe crab spawning densities must be maintained to

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ensure availability of horseshoe crab eggs for shorebirds. Since the Plan recognizes the horseshoe crab as an important component of the ecosystem, objectives within the Plan require maintaining sufficient horseshoe crab spawning biomass to sustain the horseshoe crab resource as well as adequate spawning stocks to supply the needs of migratory shorebirds.

The Plan has recognized from its development and implementation that the Delaware Bay population of horseshoe crabs is by far the largest population of horseshoe crabs on the Atlantic coast and serves a critical ecological role in the Delaware Bay because, among other things, it is a critical source of food for migratory shorebirds each spring. Because of the horseshoe crab's critical ecological role in the Delaware Bay, the 1998 Plan and three addenda implemented in following years have placed more restrictive management measures on states where harvesting would negatively impact the Delaware Bay population of horseshoe crabs. Consequently, New Jersey, Delaware, and Maryland have historically had the most restrictive horseshoe crab management measures of the Atlantic coastal states, including more severe quota reductions, a springtime seasonal closure during the migratory bird feeding stopover, and many more resource monitoring requirements to assess the biological condition of the horseshoe crab resource.

The ASMFC also recognized that, due to the unique ecological role the horseshoe crab serves for other dependent fish and wildlife resources, a Shorebird Technical Committee needed to be formed to advise the ASMFC Horseshoe Crab Management Board (Board) on how existing horseshoe crab management measures were meeting the needs of the shorebirds. While the ASMFC relies upon its own Horseshoe Crab Technical Committee and Horseshoe Crab Stock Assessment Subcommittee to advise the Board on the biological condition of the horseshoe crab resource in sustaining the horseshoe crab itself, neither of these committees could advise the Board on horseshoe crab egg production in meeting the needs of the migratory shorebirds. Hence, the United States Fish and Wildlife Service formed a Shorebird Technical Committee comprised of worldwide shorebird experts to advise the ASMFC Board on the ability of existing horseshoe crab spawning biomass to meet the needs of feeding migratory shorebirds. The Shorebird Technical Committee has met over the past several years and completed many studies to assess horseshoe crab egg availability on Delaware Bay beaches in meeting the

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needs of migratory shorebirds. In May 2004, as reported in Addendum III to the Plan, the Shorebird Technical Committee reported to the Board that a lesser proportion of red knots were achieving minimal departure weights, which suggests that food resources in Delaware Bay may not be adequate. As recently as November 2005, the Shorebird Technical Committee reported to the Board that the red knot, one of many shorebird species that feed upon horseshoe crab eggs, is at low population levels. Red knots have shown no sign of recovery over the years despite a four-fold reduction in horseshoe crab landings since 1998. The Shorebird Technical Committee concluded a moratorium of horseshoe crab harvest could provide more horseshoe crab eggs for the birds to feed upon.

Consequently, at its November 1, 2005 meeting, the ASMFC's Horseshoe Crab Management Board authorized the development of an addendum to the Interstate Fishery Management Plan for Horseshoe Crab to reduce or eliminate harvest of the Delaware Bay population of horseshoe crabs. The Draft addendum being prepared for public hearings along the entire Atlantic coast will propose a two-year moratorium in New Jersey and Delaware on the harvesting of horseshoe crabs for the commercial bait market. The Department's proposal is consistent with the recommendations of the ASMFC. Whereas, New Jersey horseshoe crab landings have decreased in response to ASMFC requirements from New Jersey's landings in 1996 of slightly over 600,000 horseshoe crabs harvested to the current allowable annual quota of 150,000 horseshoe crabs, horseshoe crab egg production has not been sufficient to allow migratory shorebirds to achieve their minimal departure weights.

The number of horseshoe crab eggs available to red knots and all migrating shorebirds has declined to a level that is insufficient to support this migration of birds. Evidence of this insufficiency is found in the condition of shorebirds prior to leaving Delaware Bay to continue their migration, and in the recent population trends of these bird populations.

The red knot population in Delaware Bay declined from counts exceeding 95,000 in the 1980's (as late as 1989) to 13,000-15,000 in 2004-2005. In the face of this drastic decline in the threatened red knot, the Department reduced the quota and harvest season of horseshoe crabs in 2003-2005. However, there has been continued decline of the red knot

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population, and no improvement in their condition in Delaware Bay, indicating that the harvest reductions were inadequate.

The red knot population that passes through Delaware Bay winters in Patagonia, South America. The wintering population has also declined during the same period as the above-noted declines in migratory populations, from 67,500 in 1985 to 17,653 in 2005, a 74 percent drop. In 1985, red knot range extended northwards along the Argentinian coast as far as Río Negro province¹. Recent surveys have shown that red knot range has contracted so that nearly the entire population (97 percent in 2004) is now confined to the main island of Tierra del Fuego. Counts at the main Tierra del Fuego wintering site at Bahía Lomas fell from about 45,000 in 2000 (similar to counts in the 1980s of about 42,000) to less than 10,000 in 2005.

Demographic studies² show that the reason the Tierra del Fuego red knot population fell by almost 50 percent between 2000 and 2002³ was because adult survival declined from 85 percent to an average of only 56 percent during 1999-2001. There are predictable trends in the population that could be expected if adult survival either recovered to 85 percent or remained at 56 percent. If the adult survival rate returned to 85 percent, the population would remain fairly constant at the year 2000 level. If, however, the adult survival rate remained at 56 percent, the population would approach extinction as early as the year 2010². Subsequent counts in 2003-2005 showed that although population size remained steady in 2003-2004, the sudden drop to only 17,653 in 2005 substantiated the lower survival rate and an increased risk of extinction, possibly by 2010. At this lower population size and current survival rate estimate, the continued existence of the red knot is in jeopardy.

Conditions in other parts of the red knot's range have not changed significantly, and other bird populations within the same range using the same habitat, but not dependent on horseshoe crab eggs, have remained steady or increased in the period red knots have declined. Concurrently, the red knot's food resource of horseshoe crab eggs in Delaware Bay has declined significantly, from a high of 50,000 eggs per square meter in the early 1990's to approximately 3,000 eggs per square meter in 2000, where it has remained since then. Studies have shown that red knots need to reach at least 185 grams prior to departing from the Delaware Bay feeding areas in order to successfully complete their migration and

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nest². The decline in horseshoe crab eggs has resulted in fewer red knots leaving Delaware Bay in adequate body condition to complete the migration to Arctic nesting grounds and carry out successful nesting. Between 1997 and 2001, the proportion of red knots that reached 185 grams averaged 45 percent, translating to approximately 20,000 red knots based on the total number of red knots in the Bay. Between 2002 and 2005, only 17 percent of red knots reached 185 grams, approximately 3,000 red knots based on the Baywide population. Consequently there was a decline in both adult survivorship and productivity, leading to a severe and abrupt population decline.

Without action to improve survival and productivity of the red knot population, this species faces the possibility of extinction within five years. The proposed amendment is the single most important action for increasing the number of horseshoe crab eggs available to red knots in Delaware Bay. This action is necessary to improve the red knot's survival prospects for the short and long terms.

The red knot's northbound Arctic flight to the breeding grounds is physically demanding. After shorter flights along the South American coast, the birds make a single, non-stop flight to Delaware Bay. Many birds arrive in depleted condition with no fat reserves and, at the extreme, having lost muscle during their flight causing them to weigh up to 30 percent less than normal fat-free weight. The red knots stop over for about two weeks in Delaware Bay, where they feed on horseshoe crab eggs and roughly double their body weight. At the end of May, they prepare to depart for the Arctic by nearly ceasing to feed and undergoing physiological changes, including reduction of their digestive organs and increasing the size of their flight muscles⁴. The birds leave Delaware Bay heading along a route across the boreal forest and low tundra of Canada, which in early spring remains frozen and unsuitable for shorebirds.

Upon arrival at their breeding grounds in the Arctic, the red knot's digestive systems recover, but there is very little food available, so their survival depends on any surplus fat resources gained in Delaware Bay. Eggs are laid in a shallow scrape created in a patch of arctic grass. Throughout the three weeks of incubation, the parents take turns to brood the clutch, and each brooding session can last for up to 24 hours at a time. The off-duty parent may fly as much as 10 km in search of unfrozen wetlands in which to find food (L. Niles unpubl. data). Without sufficient fat reserves gained during the stopover in the

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Delaware Bay, the red knot's ability to survive as well as their ability to establish nests during the first one to three weeks in the Arctic may be impacted. By the time the young hatch, the weather is usually warmer and an abundance of invertebrate food becomes available to sustain the chicks.

Numerous studies have shown that of all the sites visited by the *rufa* subspecies of the red knot, Delaware Bay is the most critical^{5, 6}. Without the ability to gain weight rapidly in Delaware Bay, both the survival of the adult birds and their productivity will decline¹.

Other shorebird species that rely on horseshoe crab eggs, such as ruddy turnstone (*Arenaria interpres*), semipalmated sandpiper (*Calidris pusilla*) and sanderling (*Calidris alba*) have also declined in number on the Delaware Bay migratory stopover. Comparing 1986-2002 average counts with 2003-2005 average counts, ruddy turnstones declined 40%, semipalmated sandpipers declined 38%, and sanderlings declined 20%⁷. The breeding populations of all three of these species, as well as Delaware Bay migrants dunlin (*Calidris alpina*) and short-billed dowitcher (*Limnodromus griseus*), have declined according to the Canadian Wildlife Service's breeding bird survey⁸. These species and red knots make up 99 percent of the shorebird concentration in Delaware Bay. All are dependent upon horseshoe crab eggs for all or most of their diet during the stopover, and all have declined in population.

The Department has taken other actions to improve conditions for migrating shorebirds on Delaware Bay. In 2003-2005 selected beaches were closed to human visitation for portions of May and early June to minimize disturbance, allowing birds to feed on the available horseshoe crab eggs. These beach closures were enforced by conservation officers. In 2005 the beach at Stone Harbor Point was closed to prevent human disturbance to roosting flocks of shorebirds. In May 2005, Division personnel experimented with physical barriers to limit the number of laughing gulls on Delaware Bay beaches, to make more beach area and horseshoe crab eggs available to red knots; those efforts will continue in 2006. These measures will only be effective if there is an adequate supply of horseshoe crab eggs in the Delaware Bay beaches.

Footnote references:

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- ¹ Morrison, R. I. G. and R. K. Ross. 1989. Atlas of Nearctic shorebirds on the coast of South America. 2 vols. Special Publication, Canadian Wildlife Service, Ottawa, Ontario. 325 pp.
- ² Baker, A. J., P. M. González, T. Piersma, L. J. Niles, I. L. S. do Nascimento, P. W. Atkinson, N. A. Clark, C. D. T. Minton, M. K. Peck, and G. Aarts. 2004. Rapid population decline in red knot: fitness consequences of decreased refueling rates and late arrival in Delaware Bay. *Proceedings of the Royal Society B* 25:125-129.
- ³ Morrison, R. I. G., R. K. Ross, and L. J. Niles. 2004. Declines in wintering populations of red knots in southern South America. *Condor* 106: 60-70.
- ⁴ Piersma, T. and R. E. Gill Jr. 1998. Guts don't fly: Small digestive organs in obese bar-tailed godwits. *Auk* 115: 196-203.
- ⁵ Myers, J. P. 1986. Sex and gluttony on Delaware Bay. *Natural History* 95(5): 68-77.
- ⁶ Harrington, B. and C. Flowers. 1996. *The flight of the red knot*. W.W. Norton and Company. New York. 192pp.
- ⁷ NJ DEP Division of Fish and Wildlife, Delaware Bay aerial survey, peak counts.
- ⁸ Morrison, R. I. G., and P. Hicklin. 2001. Recent trends in shorebird populations in the Atlantic Provinces. *Bird Trends* 8:16-18.
- ⁹ Eubanks, T. L., Jr., J. R. Stoll, and P. Kerlinger. 2000. Wildlife-associated recreation on the New Jersey Delaware Bayshore: The economic impact of tourism based on the horseshoe crab-shorebird migration in New Jersey. Report prepared for the NJ DEP Division of Fish and Wildlife. 91p.

Social Impact

The proposed amendment to N.J.A.C. 7:25-18.16 will have a positive social impact on tourists and residents who travel to Delaware Bay specifically to observe the shorebird migration and horseshoe crab spawning. According to a 1998 study, 6,000 to 10,000 people visited Delaware Bay in spring to see the concentration of shorebirds and horseshoe crabs⁹. Positive impacts are also expected in educational programs for children and families conducted by several environmental institutions in Cape May and Cumberland counties. Some of those educational programs focus on horseshoe crabs and include field

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trips to see horseshoe crab spawning. Shorebird and horseshoe crab ecotourist operators are also likely to benefit from the moratorium.

The Delaware Bay is the center of the Western Hemisphere's only horseshoe crab population. The uniqueness of Delaware Bay's ecosystem, because of horseshoe crabs and the marine and terrestrial wildlife that depend on them, has intrinsic value to future generations from natural, cultural and economic perspectives.

The proposed amendment to N.J.A.C. 7:25-18.16, however, may have a negative social impact on horseshoe crab permittees who will not be able to harvest horseshoe crabs during the two year moratorium, as well as on participants in the other commercial fisheries that rely on horseshoe crabs as bait. These other commercial fisheries include, but are not limited to, the American eel pot fishery, the conch pot fishery, and the minnow pot fishery. Other negative social impacts are likely to be experienced in many recreational fisheries that rely on eels and minnows for bait, such as the striped bass sportfishery, if sufficient alternative bait is not available for recreational fishermen to pursue their fishing activities.

Economic Impact

The proposed amendment to N.J.A.C. 7:25-18.16 will have a positive economic impact on tourism associated with the horseshoe crab and shorebird concentration in Delaware Bay. An economic study conducted in 1998⁹ estimated the gross economic value of this tourism to New Jersey's Delaware Bay region to be between \$25 and \$41 million annually, based on 1998 visitation levels. Alternatively, taking no action would risk a substantial decline in the size of this shorebird concentration and many of the related benefits to the local economies. The 1998 economic survey asked visitors what amount of decline in shorebirds and horseshoe crabs would cause them to cancel their trip to the region, and the answer was 50 percent. Thus the trends observed in recent years may already be affecting local shorebird-related tourism.

The proposed amendment to N.J.A.C. 7:25-18.16 may have a negative economic impact on horseshoe crab permittees who may lose income from not being able to harvest horseshoe crabs during the two year moratorium. According to the National Marine

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Fisheries Service (NMFS), horseshoe crab landings in New Jersey in 2003 amounting to 367,553 pounds had a dockside value of \$193,605.

Additionally, the lack of horseshoe crabs as bait in other commercial fisheries could have a negative economic impact on these fisheries, as well. For example, horseshoe crabs are one of the types of bait used for American eel and conch. NMFS reported landings for American eel in 2003 of 100,699 pounds had a dockside value of \$154,145 and for conch landings of 434,167 pounds, with a dockside value of \$634,374. Because horseshoe crabs are only one of the types of bait used in these fisheries and it is likely those who utilize horseshoe crabs as bait will switch to using one of the other available alternate types of bait, it is not possible to provide an exact estimate of the impact, if any, on the landings of these fisheries or the costs incurred by those engaged in the fisheries.

The moratorium on the harvest of horseshoe crabs for two years may also have some impact on the surf clam fishery since horseshoe crabs that otherwise would have been harvested may feed on juvenile surf clams. The New Jersey surf clam landings of 51,336,955 pounds in 2003 according to the NMFS had a dockside value of \$27,431,645. However, given the magnitude of the ocean's surf clam resources and the relatively small increase in the number of horseshoe crabs resulting from the two year moratorium that may feed on juvenile surf clams, the impact on the surf clam resource should not pose a serious threat to the sustainability of the ocean's surf clam resources.

The potential decrease in the availability of American eels may result in an increase in prices for these bait fish as supplies become limited. The striped bass sportfishery utilizes American eels as bait. The total estimated 2003 value of the striped bass sportfishery in New Jersey was \$234,660,325. While it is not possible to calculate the portion of this sportfishery's economic value that is dependent on using eels as bait, it could be significant as eels become less available in the bait market.

Environmental Impact

The proposed amendment to N.J.A.C. 7:25-18.16 will have major positive environmental impacts on red knots and all shorebirds that rely on the Delaware Bay stopover in the spring migration. A moratorium on New Jersey harvest in 2006 and 2007

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could result in up to 150,000 additional adult crabs surviving to spawn in 2007, and another additional 150,000 adult crabs surviving through 2007 to spawn in 2008. This would result in greater numbers of spawning horseshoe crabs, and thus more eggs available in bay beaches, beginning in 2007. More horseshoe crab eggs would be available to shorebirds, creating better feeding conditions for red knots and other shorebirds. A larger spawning population of adults would at some point cause crabs to compete for space on the beach and would result in horseshoe crabs reoccupying more of their former range along bay beaches.

A larger area of occupied shoreline and higher density of horseshoe crab eggs would improve feeding conditions for red knots and other shorebirds beginning in 2007. A greater number of red knots would be able to make adequate take-off weight to successfully reach the Arctic, nest and raise young. Improved productivity and increased adult survival will increase the red knot population, and slow down and reverse the trend toward extinction of this population.

Other shorebird species that rely on horseshoe crab eggs, such as semipalmated sandpiper (*Calidris pusilla*), sanderling (*Calidris alba*) and ruddy turnstone (*Arenaria interpres*) have also declined in number on the Delaware Bay migratory stopover and would also benefit from an increased number of horseshoe crabs. The smaller species (sanderling and semipalmated sandpiper) often get out-competed for foraging space when horseshoe crab egg density is suboptimal. Improved feeding conditions resulting from a greater number of spawning horseshoe crabs over a greater area of beaches would improve the ability of shorebirds to gain weight and depart Delaware Bay in good condition.

More adult horseshoe crabs available to spawn in 2007 and 2008 would also result in more crab eggs available for fish in the estuary, particularly the back bays where fish nursery areas are critical to maintain and enhance fish populations. Under these conditions, natural fish production would be expected to increase. Some Federal and State endangered sea turtles found in Delaware Bay in low numbers (e.g., loggerhead, Kemp's ridley) also eat horseshoe crabs and might be expected to benefit from a larger horseshoe crab population.

The proposed amendment to N.J.A.C. 7:25-18.16 could have a negative environmental impact on the surf clam resource since horseshoe crabs are predators on

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juvenile surf clams and the increased abundance of horseshoe crabs in coastal marine waters could increase predation on the surf clam resource. However, the surf clam population has coexisted with horseshoe crabs at current and higher levels, thus this is not a significant concern, particularly in light of the unstable red knot population. The positive environmental impacts on the ecosystem, particularly migratory shorebirds, and especially the red knot, far outweigh the anticipated negative environmental impact on the surf clam resource.

Federal Standard Statement

Executive Order No. 24 (1994) and N.J.S.A. 52:14B-1 et seq. require State agencies which adopt, readopt or amend State regulations that exceed Federal standards or requirements to include in the rulemaking document a comparison with Federal law.

Federal regulations do not currently address horseshoe crabs outside the Carl N. Shuster, Jr. Horseshoe Crab Reserve where harvesting is prohibited. Accordingly, no Federal Standards analysis is necessary.

The Department has determined that regulations in the area outside the Carl N. Shuster Jr. Horseshoe Crab Reserve are essential for the management, conservation and protection of migratory shorebirds. The survival of these shorebirds depends on horseshoe crab eggs available in Delaware Bay beaches and marshes. The density of horseshoe crab eggs, as the shorebird food resource, has declined to a level inadequate to sustain the shorebird migration. The proposed amendment is necessary to increase the number of horseshoe crabs spawning in Delaware Bay habitats, thus improving conditions therein for migratory shorebirds, and reversing declining trends of red knots and other Delaware Bay shorebirds. Without such action, the red knot has an increased likelihood of extinction within five years.

The proposed amendment to N.J.A.C. 7:25-18.16 establishing a two year moratorium on the harvesting of horseshoe crabs may initially be more stringent than the required management measures of the ASMFC interstate fishery management plan for horseshoe crabs on the harvesting of horseshoe crabs. The ASMFC is not a Federal agency but rather a compact of the 15 Atlantic coastal states coordinating the conservation and

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management of nearshore fishery resources. The ASMFC is developing an addendum to the interstate fishery management plan for horseshoe crab that includes a two year moratorium on the harvesting of horseshoe crabs by the States of New Jersey and Delaware in 2006 and 2007 to accomplish the objectives defined in this regulatory proposal. This New Jersey regulatory proposal is being developed simultaneously with the desired management objectives of the ASMFC's addendum. Should the ASMFC addendum be implemented before the adoption of the New Jersey regulatory proposal, New Jersey would be required to adopt the horseshoe crab management measures defined in the ASMFC addendum to the interstate fishery management plan for horseshoe crab. If New Jersey fails to adopt the required ASMFC management measures, the ASMFC would recommend to the Federal agencies the imposition of a horseshoe crab moratorium in New Jersey marine waters.

Notwithstanding the Department's determination that standards or requirements of this rule proposal do not exceed or are the same as those imposed by Federal law, this regulatory proposal's moratorium on horseshoe crab harvesting is consistent with Department policies in the management of natural resources and the proposed moratorium is achievable under current technology. The Department has conducted an appropriate cost/benefit analysis, as explained in the Economic Impact section of this regulatory proposal, and has determined that the proposed amendment should proceed.

Jobs Impact

The proposed amendment to N.J.A.C. 7:25-18.16 will directly impact the currently eligible participants in the commercial horseshoe crab bait fishery since none of these fishermen will be allowed to harvest horseshoe crabs during the two year moratorium. For the period, 1998 through 2005, on average, 35 horseshoe crab permits have been issued to eligible participants. The average number of horseshoe crabs harvested by each permittee varies from year to year. There is considerable variability in harvesting among permittees. Horseshoe crab permittees rely to varying degrees on the harvest of horseshoe crabs for their livelihood; many participate in other fisheries or have jobs outside the commercial fishing industry. To what degree these permittees can find alternate bait or redirect their

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effort into other fisheries or other jobs would dictate whether any jobs are lost as a result of this regulatory proposal. Additional jobs impacts may be experienced by commercial fishermen in the American eel pot fishery, the conch pot fishery, and the minnow pot fishery, as these fishermen rely, to some extent, on the availability of horseshoe crabs as bait in their commercial fishing activities. In 2004, 250 lobster and fish pot licenses were issued, most are issued to conch pot fishermen. Additionally, in 2004, 166 licenses were issued for miniature fykes and pots which allow for the commercial harvesting of eels. It is impossible to predict exactly the impact on jobs in these commercial fisheries that currently utilize horseshoe crabs as bait, but any impact could be offset to some extent by the use of alternate baits in these other commercial fisheries. New Jersey horseshoe crab landings have been steadily decreasing from 1996 and the landings of conch, eels, and minnows have not declined to any noticeable extent.

Positive benefits will be expected for those who operate ecotourism-based tours on water and land. Other Cape May and Cumberland county businesses would benefit, including those that rely on tourism in the early spring, such as hotels, motels and other renters, and restaurants and stores.

Agriculture Industry Impact

Pursuant to N.J.S.A. 52:14B-4(a)2, the Department has evaluated this rulemaking to determine the nature and extent of the proposed amendment on the agriculture industry. The proposed amendment applies solely to the marine fishing industry and will have no impact upon the agriculture industry.

Regulatory Flexibility Analysis

In accordance with the New Jersey Regulatory Flexibility Act, N.J.S.A. 52:14B-16 et seq., the Department has reviewed the proposed amendment for reporting, recordkeeping, or other compliance requirements on small businesses. The proposed amendment applies to commercial fishermen eligible to obtain horseshoe crab permits to commercially harvest horseshoe crabs. The proposed amendment will require no

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reporting, recordkeeping or other compliance requirements because the fishery will be closed and no permits will be issued during the two year period. Previously, all permitted fishermen were required to report weekly and monthly during the open horseshoe crab season.

The proposed amendment may impact small businesses engaged in the horseshoe crab fishery and fisheries that use horseshoe crabs as bait. In proposing these amendments, the Department has balanced the expected economic impacts of the rules upon small businesses against the need to protect the environment and public health. The Department has determined that any attempt to relax the requirements for small businesses would endanger the environment. Therefore, no exemption from the rule is provided for small businesses.

Smart Growth Impact

Executive Order No. 4(2002) requires State agencies which adopt, amend or repeal any rule adopted pursuant to N.J.S.A. 52:14B-4(a) of the Administrative Procedure Act to describe the impact of the proposed rule on the achievement of smart growth and implementation of the New Jersey State Development and Redevelopment Plan (State Plan). The Department has evaluated this rulemaking to determine the nature and extent of the proposed amendment's impact on smart growth and the implementation of the State Plan. The proposed amendment concerns various marine fisheries provisions at N.J.A.C. 7:25-18.16 and does not involve land use policies or infrastructure development and, therefore, will not have any impact on the achievement of smart growth. The amendment is intended to conserve the State's natural resources, which is one of the overall goals of the State Plan. Accordingly, the conservation of the shorebird resources is supportive of the goals of the State Plan.

Full text of the proposal follows (additions indicated in boldface **thus**; deletions indicated in brackets [thus]):

7:25-18.16 Horseshoe crab (*Limulus polyphemus*)

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(a) An individual shall not catch, take, or attempt to catch or take, land or possess horseshoe crabs from any beach or shoreline or from the marine waters of this State unless such individual has in his or her possession a valid permit to take horseshoe crabs issued by the Commissioner of Environmental Protection. **Subject to the limitations of this section, including any quotas specified in (d) below,** [A]any individual who wishes to harvest horseshoe crabs, may be eligible to obtain a permit by completing an application available from the Division of Fish and Wildlife, Bureau of Marine Fisheries, PO Box 400, Trenton, N.J. 08625-0400. The following persons, in the following circumstances, are not subject to this [prohibition] **section:**

1. - 3. (No change.)

(b) - (c) (No change.)

(d) **The annual horseshoe crab harvest quota for New Jersey from (effective date of this amendment) to December 31, 2007 shall be zero or as modified by the Commissioner pursuant to (h) below. Thereafter,** [T]the annual horseshoe crab harvest quota for New Jersey shall be no more than 150,000 or as modified by the Commissioner pursuant to (h) below. All landings of horseshoe crabs in New Jersey shall be applied to the New Jersey annual horseshoe crab quota.

1. - 5. (No change.)

(e) - (j) (No change.)