



## DE Regulations to Protect Horseshoe Crabs

September 24, 2007

Lisa Vest, Hearing Office  
Department of Natural Resources and Environmental Control  
89 Kings Highway,  
Dover, DE 19901

RE: New Emergency "Male-Only Harvest" Regulations (Order No. 2007-F-0037)

Dear Mr. Miller:

Delaware Riverkeeper Network urges DNREC to re-instate an immediate full moratorium on horseshoe crab harvests and we are opposed to the proposed "male-only" harvest that is currently in affect. We believe that a full moratorium is the only effective way to ensure that the Red Knot *rufa* shorebird has a super abundance of eggs available during its critical stop-over along the Delaware Bay. The Red Knot makes a critically timed 5,400 km. non-stop hop from Brazil to the Delaware Bay, each year in late spring when the horseshoe crab is spawning and it requires a super-abundance of horseshoe crabs eggs to gain weight and be able to make it the rest of its journey to the Arctic. We have to act now to re-instate a full moratorium to give the Red Knot a chance. We cannot jeopardize this bird's existence by settling for anything less than a full moratorium on the food supply for which it relies on for survival. Furthermore, a "male only harvest", which was put into effect after crabbers challenged the full moratorium in court, does not adequately protect female crabs or juvenile crabs and surely these individuals that are supposed to be protected under the current regulations, are put in jeopardy with male only harvest techniques.

We have no more time to cater to the interests of the few who profit off of the horseshoe crab harvest and continue to jeopardize the survival of an entire species of bird that has frequented the Delaware Bay shores. A moratorium is clearly within the statutory authority of DNREC and DNREC is obligated to manage the resources from a holistic perspective that considers the bird/crab interrelationships. From an enforcement perspective, of which DNREC is charged, and due to the historic and continued under-reporting of crab takings that continues to jeopardize the population, a full moratorium is logistically much more reliable and easy to enforce for the agency. Furthermore, scientific evidence is clear and valid to support a full moratorium on horseshoe crab harvest to provide a super abundance of eggs for the red knot during its migration. While there is no science to defend or support a male only harvest approach.

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The Red Knot, unlike other birds that eat horseshoe crab eggs, is not able to dig in the sand to feed on eggs. Therefore it is crucial to the Red Knot that there be a "superabundance" of eggs on the sand. A superabundance of horseshoe crab eggs exists when the sand in the spawning area is brimming with eggs, making it easy for the Red Knots to replenish their energy stores. Because of the serious decline in horseshoe crab egg densities over the past ten to twenty years, the Red Knot population has dramatically declined and is projected to become extinct by 2010. [1] If we do not act now to protect the horseshoe crabs, we will not be successful at saving the Red Knot *rufa*.

Consider these facts from the scientific literature:

1) According to the recent 2007 USFWS report, the Red Knot population decline is tied to low adult survival. Demographic studies covering 1994-2002 showed that the population decline over that period was related to a drop in annual adult survival from 85% during 1994-1998 to 56% during 1999-2001. Population models showed that if adult survival remained low, *rufa* would go extinct within about ten years. The crucial importance of Delaware Bay is demonstrated by studies that show that lower weight Knots in Delaware Bay have lower survival than heavier birds and that over the period 1998-2002 the proportion of birds there at the end of May that weighed more than the estimated departure mass of 180 grams declined by over 60%. The reduced availability of horseshoe crabs eggs in Delaware Bay arising from elevated harvest of adult crabs for bait in the conch and eel fishing industries has been repeatedly identified in the literature as the primary threat to the *rufa* population, denying them the food they need for proper weight gain to support their migration and reproduction. Since 1990, there has been a substantial decline in the crab population. Although significant uncertainty regarding the extent of the decline of the horseshoe crab population remains, there is general agreement that horseshoe crab stocks have declined to a level where increased management of the fishery is necessary and appropriate. The decline in crabs has led to a decrease in the density of eggs available to shorebirds [2].

2) There are a number of actions the USFWS reports could help the Red Knot population -- officials in the Delaware Bay need to institute these tactics immediately. The first action is 1) Recovery and maintenance of Delaware Bay horseshoe crab egg densities to levels sufficient to sustain stopover populations of all shorebirds including 100,000 red knots; and second 2) Control impact of disturbance at all stopovers and wintering areas, particularly in high-importance, high-disturbance areas like Delaware Bay and the west coast of Florida.

3) There is available a wealth of primary research regarding the importance of satellite males to horseshoe crab spawning, as well as research indicating that mating is strongly associated with differences in male age and condition. And there is no science to not support the male-only harvest option as a viable option that protects the female and juvenile crabs and therefore the species as a whole. This "male only harvest" proposed rule has been offered as a "conservation equivalent" to a moratorium on the basis that there will be no mortality of female horseshoe crabs, nor impacts to juvenile crabs. This is by far not the case. For example, because beach collection only accounted for the harvest of 60,000 crabs, this past June four of the five dredging permits issued for horseshoe crabs were active and another 40,000 horseshoe crabs were allowed to be harvested through detrimental dredging practices. Allowing dredging as a mechanism for male harvest, is not responsible or protective -- dredging practices make no distinction between adult males, adult females, juvenile horseshoe crabs, and other benthic megafauna which the crabs rely on for food and as a result a tremendous number of non-males are injured or killed as a result of the practice. Numerous scientific papers indicate the negative impacts of scallop and tooth bar dredging techniques. Mortality rates are not only high for bycatch species but also for species that are left behind and not taken up in the dredging net as bycatch. Results of a 2001 study indicate that the majority of damage done to large benthic invertebrates during scallop dredging occurs unobserved on the seabed, rather than in the bycatch [3]. Therefore, DNREC has no way of knowing how many female crabs and juvenile crabs are injured or killed during routine dredging for male crabs. Studies have shown that mortality rates on the bay bottom behind dredging operations can be so immense that fast moving opportunistic scavenger species move into the dredged areas to feed on the dead left behind [4]. Changes in community composition can be lasting. Furthermore, of the fishing gears currently used, toothed scallop dredges that dig into the substrate, may be amongst the most damaging. [5] This detrimental tooth bar

technique is what crabbers use in the Delaware Bay to catch horseshoe crabs. We also know that dredging operations often re-dredge over areas where there is abundant crab populations. An area may be dredged 3 or 4 times in the same location, digging into the substrate deeper and deeper and ultimately destroying anything in that area. In this same study, researchers found that of two crab species studied, *Cancer pagurus* and *Liocarcinus* spp., the proportion of crushed or dead animals left behind the dredge on the seabed was nearly twice as high as in the bycatch. Note that the study indicates that not only are small benthic invertebrates injured but crabs like *Cancer pagurus*, with adult sizes of 25 cm and 3 kg are injured and killed by dredging practices.

Beach collection is currently monitored by DNREC teams several hours before and after high tide but again, teams move from beach to beach and they cannot be at all places at once ensuring accurate reporting by crabbers. There are also no central weighing stations for crab harvesters. Oversight to ensure crabbers do not under-report their findings using the telephone call-in system and the manpower out in the field by enforcement officials, is far from ideal. DNREC enforcement officials, while attempting to track down under-reporting, are also not able to access records of large buyers of horseshoe crabs to determine in fact, how many crabs were taken by a fisher who has not self-reported his catch. Currently enforcement officials can only inspect live crabs and cannot see frozen crabs or past records of transactions on file at these businesses. If these businesses continue to demand crab harvests, they should be forced to cooperate with officials on all fronts and completely disclose their records at any time. By not allowing any crabs to be harvested, compliance is more easily enforced and these issues of compliance could be largely avoided.

## Summary and Recommendations

In light of the science, the historic nature of under-reporting by fishers, and the logistics of enforcement, we demand a full moratorium be re-instituted by DNREC. A full moratorium is justified and necessary and anything less is a failure exemplifying how politics so often takes precedence over the strong national and international scientific evidence that is available. We incorporate by reference the background data and analysis published by the New Jersey Division of Fish and Wildlife documenting and demonstrating the need for this action.

We suggest that rather than establishing a two year time period for a moratorium on the horseshoe crab harvest as New Jersey has done, that a threshold level of horseshoe crab egg densities should be met before the moratorium is lifted (ie. the current 3,000 eggs per square meter should meet or exceed the 50,000 eggs per square meter to match the egg densities of the early 1990's).

However, if a full moratorium is not granted and male harvesting is continued to be allowed, **at a minimum**, Delaware Riverkeeper Network requests the following mechanisms be put in place immediately.

- a) Collection must be limited to **beach collection permits only** and there should be absolutely no dredging permits issued to collect horseshoe crabs.
- b) Large crab buyers in the area should be the site of checking or weighing stations and these businesses (Charlie Altman for example who operates out of Cedar Creek by the lighthouse) must be required to disclose records to DNREC enforcement personnel on request. Enforcement officials should be posted at these business locations during the crabbing season to better track illegal takes. A standard DNREC reporting sheet needs to be developed by DNREC and businesses must be required to use this reporting sheet during transactions with fishers to help with inadequate receipt keeping. These reports would be available to DNREC at its request but also supplied to DNREC on a weekly basis. A weigh station or multiple mandatory weigh stations could also be required to help with under-reporting.
- c) Enforcement officials need more authority, manpower, and tools available to them to be able to better police crab takings.

- d) Larger fines need to be enforced when permit holders under-report or fail to report their takings and the telephone self-reporting system must be used by crabbers on a daily reporting schedule. Offenses should be followed by immediate suspension of crab licenses - first offenses could result in suspension of the license for the rest of that year's season, a second offense should result in loss of the license permanently.
- e) More enforcement of eelers, who are allowed to take horseshoe crabs for their eel pots only, is necessary to discourage eelers and their alternates from collecting crabs and selling them for uses other than their own baiting of eel traps.
- f) Enforcement efforts need to continue to be strengthened to coordinate and allow records of buyers of horseshoe crabs in Virginia and Maryland to be accessed by enforcement personnel on demand.

Clearly, a full and immediate moratorium is warranted by the scientific evidence and is by far, a simpler regulation to enforce. By re-instating the full moratorium, DNREC can focus its enforcement efforts elsewhere.

Delaware Riverkeeper Network does not support any other strategies less protective than the full moratorium. If DNREC insists on proceeding on the less protective path we have made recommendations that are vital for strengthening that proposal and its enforcement.

The reality we face - the reality that Secretary Hughes so wisely has recognized -- an entire subspecies of bird may go extinct because of the inaction/inappropriate actions of our government and our communities. The whole world cares, the whole world will be impacted by our decision here, the whole world is watching - as evidenced by the tremendous outpouring from the overseas scientific community on this issue. Please, do what is right for the crabs, the birds, and the whole world. It is not just the bottom line of the crabbers at issue here. If we are unsuccessful at fully protecting the crabs and the birds then all those dependent upon them will be impacted - this includes other critters in the ecosystem as well as a tremendous number of ecotourism businesses and their associated communities.

As the Delaware Riverkeeper, and on behalf of the Delaware Riverkeeper Network and our over 7,000 members, I request that DNREC re-instates the full moratorium for the protection of our community as a whole.

The Delaware Riverkeeper and the Delaware Riverkeeper Network stand as vigilant protectors and defenders of the Delaware River, its tributaries and its watershed, including the Delaware Bay, and have been committed to restoring the natural balance where it has been lost and ensuring its preservation where it still exists since 1988. The Delaware Riverkeeper, Maya van Rossum, advocates for the protection and restoration of the ecological, recreational, commercial and aesthetic qualities of the Delaware River, its tributaries, habitats and watersheds, including the Delaware Bay and shores.

Respectfully submitted,

Maya van Rossum

the Delaware Riverkeeper

cc. Roy Miller, Fisheries Administrator

enclosed:

a: Petition to List the Red Knot (*Caladris canutus rufa*) as Endangered and request for Emergency Listing under the Endangered Species Act, August 2, 2005

b: scientific literature on dredge impacts (3 cited papers)

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[1] Niles, L.J., A. Dey, H. Sitters & C. Minton, June 2005 presentation and slide show reporting on the status of red knots on the Delaware Bay with recommendations for the 2005 field season.

[2] Niles, Larry et. al, Status of the Red Knot in the Western Hemisphere, USFWS Report. May 2007.

[3] Impact of scallop dredging on benthic megafauna: a comparison of damage levels in captured and non-captured organisms. Jenkins, S.R., B.D. Beukers-Stewart, A.R. Brand. University of Liverpool. Marine Ecology Progress Series. Vol 215: 297-301. 2001.

[4] Changes in megafaunal benthic communities in different habitats after trawling disturbance. Kaiser, M.J., D.B. Edwards, P.J. Armstrong, K. Radford, N.E. L. Lough, R.P. Flatt, and H.D. Jones. ICES Journal of Marine Science, 55:353-361. 1998.

[5] The impact of habitat disturbance by scallop dredging on marine benthic communities: what can be predicted from the results of experiments? Simon Thursy, et.al., Marine Ecology Progress Series. December 14, 1995.