



STATE OF MICHIGAN DEPARTMENT OF NATURAL RESOURCES

FR07

July 2015

Commercial Reptile and Amphibian Regulation in Michigan and Recommendations for the Future

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Suggested Citation Format

Gonia, T. M. 2015. Commercial reptile and amphibian regulation in Michigan and recommendations for the future. Michigan Department of Natural Resources, Fisheries Report 07, Lansing.

NOTE: As this paper was developed, a separate report was compiled on recreational turtle harvest in Michigan. In addition to snapping turtles, that report provides the background and current status for the other noncommercial turtle species and regulatory recommendations for their recreational use. "Michigan turtles: with recommendations for conservation and recreational use" will be published as a Fisheries Technical Report.

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Commercial Reptile and Amphibian Regulation in Michigan and Recommendations for the Future

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Abstract.—Reptiles and amphibians were almost entirely unregulated in Michigan when the Department of Natural Resources received management authority from the legislature in 1988. Between 1989 and 1998, as recommended by experts in the field of herpetology, a series of progressively restrictive Fish Orders were enacted until the current regulation allowing commercial harvest of snapping turtles (*Chelydra serpentina*) and green frogs (*Rana clamitans*) was finalized. In 2004, the Natural Resource Commission was asked to liberalize the commercial harvest of snapping turtles and in turn requested Fisheries Division review the state's current regulations and recommend changes. Snapping turtle biology, commercial harvest statistics, and Michigan's amphibian and reptile regulatory development were researched, compiled, and reviewed to support recommendations for future commercial harvests of snapping turtles and green frogs. From annual reporting, it was clear the commercial harvest is comprised exclusively of snapping turtles. Quickly it became apparent that a conservative approach was warranted regarding commercial take of snapping turtles, due to the species' limited ability to recover from increased mortality. Research showed stable populations depend on high adult annual survival (>93%) and cannot withstand adult annual mortalities greater than 10%. Noncommercial threats including abnormally high juvenile predation, habitat degradation, and recreational harvest, as well as incidental mortality due to increased human activity (cars, development, etc.) may already be inflicting an unacceptable level of mortality on localized snapping turtle populations around the state. Therefore, based on such a high adult survival requirement, it is the Fisheries Division's judgment that snapping turtles are not an appropriate candidate for commercial harvest and continuing their exploitation is not a sound wildlife management strategy. This report recommends amending the current Fisheries Order 224 to prohibit the commercial harvest of all reptiles and amphibians in Michigan. Such a change brings our current commercial regulations in line with several other Great Lake states and the province of Ontario, Canada which completely prohibit the commercial harvest of their native reptiles and amphibians.

Introduction

Reptile and amphibian species are extremely susceptible to habitat destruction, pollution and over harvest, resulting in a noted worldwide decline in their populations over the last century. Michigan Department of Natural Resources (DNR) is responsible for managing Michigan's reptiles and amphibians (sections 43509, 48702, and 48705 of P.A. 451, being sections 324.43409, 324. 48702, and 324.48705 of the Michigan Compiled Laws). Over the last couple of decades, increased public awareness and a vocal research community have spurred states to initiate more conservative regulatory efforts in an attempt to ensure sustainable stewardship of reptile and amphibian resources.

However, in 2004, the DNR Natural Resource Commission was asked by public inquiry to liberalize the commercial harvest of snapping turtles and they in turn requested Fisheries Division review the state's current regulations and make recommends. This document was developed to summarize the available scientific research, state's regulatory history and the current commercial harvest statistics for snapping turtles (*Chelydra serpentina*) and green frogs (*Rana clamitans*) in support of recommendations for the future commercial take of reptiles and amphibians.

Biology

Due to their longevity, snapping turtles in the wild are extremely difficult to study (Tinkle 1979; Congdon et. al 1987; Congdon et. al 1994). Due to their evolved characteristics of slow growth, late maturation, and long lives when compared with other vertebrate species, studies must be of considerable length (20+ years) in order to adequately follow a cohort through time. This kind of research design requires a long-term commitment in terms of personnel and funding, and few studies of this nature have been undertaken. Fortunately, one of the snapping turtle studies of this breadth and scope has been conducted in Michigan on the University of Michigan's Edwin S. George Reserve in Livingston County since 1976 and provides the most complete look at Michigan snapping turtles available. As a reserve, the study area is closed to any kind of human harvest so all snapping turtle losses can be viewed as natural and either the result of predation, emigration, or old age. Data on the life history characteristics of snapping turtles on the reserve are the best information we have for extrapolation to other wild Michigan snapping turtle populations. This study, along with other smaller ones conducted throughout North America and another long-term monitoring effort in Ontario, Canada, provide high-quality information on the biological and habitat needs of this species.

Michigan snapping turtles mate and lay eggs during spring and early summer, with 85% of adult females age 12 and nesting each year. Average clutch size in Michigan is estimated at 28, with a population level 50:50 sex ratio in offspring. Annual fecundity, taking into consideration egg laying frequency and mean clutch size, is 12 female eggs laid per nesting adult female. During the approximately 90 days from laying eggs until hatching, nesting survival rate is 23%. Survival from the time of hatching through the end of a snapping turtle's first year is 47%. The net result is that each year, for each adult female in the population, an average of on 1.3 juvenile female turtles survive to the end of their first year of life [$1.3 = (0.85 \text{ of adult females produce eggs}) \cdot 28 \text{ eggs per reproducing adult female}) \cdot (0.5 \text{ of the eggs are female}) \cdot (0.23 \text{ survive to hatch}) \cdot 0.47 \text{ survive from hatching to year 1}$]. The annual survival rate of juvenile turtles between 1 and 12 years old (the average age in Michigan when eggs are first observed in female snapping turtles) is 77%. Therefore, of those 1.3 females, an average of 0.073 will survive 11 more years to reach full maturity ($0.073 = 1.3 \cdot 0.77 \cdot 0.77 \cdot 0.77 \cdot 0.77 \cdot 0.77 \cdot 0.77 \cdot 0.77 \cdot 0.77 \cdot 0.77 \cdot 0.77 \cdot 0.77$). This means that even if adult female survival were 100%, the average female would need to reproduce more than 13 times just to replace herself in the population ($13.7 = 1/0.073$). Because adult female survival is less than 100%, females need to reproduce many more than 13 times to sustain the population. All these population parameters were provided in Congdon et al. (1994), and are summarized in Table 3.

Besides humans, there are very few predators for adult snapping turtles. Annual survivorship is high, with the 95% confidence limits for two northern populations ranging from 88 to 97% (Galbraith and Brooks 1987; Brooks et al. 1991; Congdon et al. 1994). Congdon et al. (1994) found that the annual survival of turtles age 13 and over on the reserve in Livingston County ranged from 88% to 97%, which was very similar to the 89.8 to 96.8% survivorship estimates found for snapping turtles in Ontario (Galbraith and Brooks 1987). Since the Congdon et al. (1994) estimates are Michigan-specific, reflect demographics of a stable population, and are comparable to those reported in Ontario (the only other long-term study of a northern population), for the purpose of this report a 93% adult survival rate is assumed for a population in a natural state without harvest.

A high adult survival rate is typical of a long-lived species having many mating events to offset low relative clutch mass, high egg predation, high juvenile mortality, slow growth, long annual hibernation, and a late maturity. This life history pattern is often referred to as a “bet-hedging” strategy which relies on a long adult life to overcome the high likelihood of many failed mating events in order to propagate the species (Galbraith and Brooks 1987). The maximum age of snapping turtles remains unknown. Galbraith (1986), estimated ages of wild snapping turtles up to 71 years in Ontario using growth annuli on carapace scutes. However, in a later publication he wrote that using growth annuli is unreliable and often results in a “significant underestimate of age” (Galbraith and Brooks 1989). With maximum life span unknown, it is difficult to estimate how many successful mating events the average female snapping turtle should experience when subjected to natural mortality alone. However, snapping turtles in Livingston County have a generation time of approximately 25 years (Congdon et al. 1994). This means that, on average (based on an average age at first maturation of 12 years) a female Michigan snapping turtle must survive to age 25 to produce one successful clutch which results in a single female offspring surviving to adulthood. In other words, simply replacing herself in the population takes a female snapping turtle 25 years and 13 mating events.

The 1994 study of snapping turtles in Livingston County suggested that the E. S. George population could not support any level of harvest on adult females. If the annual adult survival of female turtles 14 years and over is decreased by 10% (from 0.93 to 0.83), the population would be cut in half in approximately 10 years. If harvest was limited to turtles 29 years and older (a possible effect of increasing size limits and protecting breeders longer) before decreasing survival to 83%, the population would still be cut in half in 30 years. This is a drastic response to a 10% annual harvest above expected natural mortality.

Studies also suggest an extended length of time is needed for populations to recover from adult harvest (Galbraith 1986; Brooks et al. 1991; Congdon et al. 1993a; Congdon et al. 1994). Snapping turtles provide no parental care to their young and only invest in their offspring through contributions to the size, condition, and amount of yolk in their eggs (Congdon and Gibbons 1985). While both clutch size and egg mass appear to be positively correlated to body size (i.e., larger/older turtles lay more eggs and provide more parental investment in terms of a greater yolk quantity, (Congdon and Gibbons 1985), only 40% of the variance in clutch size can be attributed to female body size (Congdon et al. 1987). Therefore, adult snapping turtle harvest may result in a density dependent response when adults are removed from populations in resource limited habitat (fewer adult competitors might result in more resources for an individual and a possible increase in clutch size or juvenile survival). However, studies of an oligotrophic northern system (Brooks et al. 1991) found no increase in reproductive effort, recruitment, or juvenile growth rates following a 65% decline in the adult snapping turtle population, indicating that snapping turtles may lack the capacity for a density-dependent response to increased adult mortality. While Ontario’s Algonquin Park could represent a unique habitat at the far northern edge of the species’ range, no other published snapping turtle study has attempted to test or disprove these results on other populations in more productive systems. Michigan snapping turtles should not be resource limited, because few (if any) populations are believed to be currently at or near carrying capacity (J. Harding, Michigan State University, personal communication).

In addition to demographic requirements, appropriate habitat is also critical to sustaining snapping turtle populations. People often think of snapping turtles as solely aquatic; however, quality riparian areas, and in some instances upland habitat, are imperative for successful reproduction. Semlitsch and Bodie (2003) defined the minimum and maximum core terrestrial habitat for 28 United States turtle species (including snapping turtles) as extending 123 to 287 meters from the waters edge. In Livingston County, snapping turtles select nesting sites between 1 and 183 meters from the nearest permanent water habitat, with an average distance of 37.1 meters (Congdon et al. 1987). The same study showed that snapping turtles wandered as far as 1,625 meters (both over land and water) in

preparation for nesting. This clearly indicates a direct and significant need for adequate natural riparian habitat surrounding the permanent water.

Snapping turtles require a variety of aquatic habitat as well. Juvenile snapping turtles in Michigan inhabit shallow vegetated waters; most likely due to food availability, predator avoidance, and limited swimming ability (Congdon et al. 1993b). The home ranges of adult male snapping turtles vary in size depending on location (Galbraith et al. 1987), which may indicate different use patterns based on available habitat or resources.

Snapping turtles are also considered to be opportunistic feeders whose diet includes vegetation, insects, mollusks, crustaceans, fish, amphibians, birds, small mammals, and carrion (Coulter 1957; Lagler 1943; Alexander 1943). Such a varied diet implies a wide array of habitats used, and therefore required, by healthy snapping turtle populations.

Regulatory Development

Reptiles and amphibians have been harvested both recreationally and commercially in Michigan over much of the last 100 years. Prior to 1988, these activities were almost entirely unregulated throughout the state. A movement to protect dwindling populations was spearheaded by DNR fisheries biologist Dr. Ned Fogle, the Recreational Fisheries Program Manager at that time. Unfortunately, records chronicling the early regulatory movement are lacking and therefore, not available for discussion in great detail. However, in 1989, Dr. Fogle wrote an interoffice communiqué to then Fisheries Division Chief, John Robertson, summarizing development of the statute and the first Director's Order on reptiles and amphibians:

The development of protection for reptiles and amphibians has been of concern for some time. Department employees such as Edward Bacon, Russell Lincoln and George Bruso were particularly concerned and voiced these concerns during the 1970's. In letters to Regional Fish Biologist David Weaver, in response to a memorandum of inquiry from Dr. Wayne Tody on the status of turtles and need for regulations, both Ed Bacon and Russell Lincoln advised that many resident turtle trappers were extremely concerned with turtle harvest by non-resident turtle trappers. They proposed a number of controls (season, sizes, limits, etc.) to tackle the problem. These concerns were forwarded through channels via Roger Rasmussen, then Regional Director, to George Dahl, then Chief of Law Enforcement.

Unfortunately, concern seemed to die on the vine despite the fact that Bacon and Bruso continued to push for a solution to what they and other herpetologically-tuned persons considered a problem.

I had concerns with Michigan's regulations (lack of) on frogs and turtles back in the late 1960s while at Plainwell and while living on Fawn Lake. For example, I've never approved of the shooting with firearms of turtles and frogs, as allowed in Michigan, because I've always considered it a manner of take to be unethical and also dangerous.

Bacon's and Bruso's concerns became my concerns. In March, 1981—and I don't know what stimulated it--Dave Weaver forwarded Bacon's 1976 discussion on turtles to Fisheries and suggested an update might be needed. I had (the previous fall, 1980) been in contact with District 12 Law personnel regarding over-harvest of snappers in their district. As a follow-up, I began to contact various District Law people, including Districts 13, 9, and 6 and eventually 4. The extent of the possible over-harvest by non-resident trappers really began to show with my contacts with District 4 Law Supervisor, Ranson Hill, who told me how non-resident trapping 'factories' had decimated snapping turtle populations in many areas of the eastern Upper Peninsula.

I then contact[ed] both the States of Ohio and Indiana to learn about their regulations and concerns over turtles - - in particular, the snapping turtle. Neither state expressed any concerns, with both stating there didn't appear to be any pressure in their respective states and they didn't feel more restrictive regulations were needed. Having been born and raised in southern Ohio where snappers were quite abundant when I was a kid, it became apparent to me that these agencies didn't feel any pressure because they no longer had a good population of turtles. Their trappers were coming to Michigan to rape our resources, because they had already done so in their own states. With our lax laws, the 'law of the commons' was definitely in force with these trappers when they were in Michigan.

I gathered all the information I could on snappers and especially on major research studies, such as Dr. Justin Congdon's study on the E. S. George [Reserve] in Livingston County (this is the U. of M.'s research area near Pinckney), Donald A. Hammer's study on the LaCreek Refuge in South Dakota and Martyn Obbard's study in North Central Ontario. Other sources of information were gleaned from Dr. Donald Thinkle's work at the U. of M., Dr. Marvin Hensely at M.S.U. and Jim Harding at the Cranbrook Institute of Science (now at the M.S.U. Museum), as well as discussions with numerous turtle trappers and various conservation officers.

In April, 1981, I met with M.U.C.C.'s Fish Committee to discuss the problem on snapping turtle harvest. The Fish Committee, at that time, included several turtle trappers, including one from the Upper Peninsula. I proposed a number of restrictions as follows (these were based on the information I had gathered from the various studies):

1. Possession limit of 10
2. Season from July 10 through October
3. Traps in possession – 10
4. Minimum size – 12-inch carapace length
5. Restricted to take with traps and hook and line
6. Turtles cannot be dressed in field or transport
7. Name and address I.D. tag on each trap
8. Eliminate reporting of trapping to Law personnel

The committee accepted my recommendations with one suggested change – that the opening date in the Upper Peninsula be set back to July 15 (the reason being that many turtles were still nesting in early July).

Eventually M.U.C.C. passed a resolution supporting the proposed regulations. I spent the next 4-5 years talking to various persons about the over-harvest of not only snappers and softshelled turtles, but also other reptiles and amphibians. I was finding out that there was quite a pet trade involving many Michigan herps species; that vast numbers were being harvested and being shipped out of the state.

In February, 1986, Representative Jerry Bartnik (and eight other representatives) introduced House Bill 5365 as an amendment to Act 165, to give the Director authority to regulate the taking of reptiles and amphibians. The bill, however, never made it out of committee during its existence. Subsequently, it was reintroduced as House Bill 4171. With Jerry Bartnik as Chairman of the House Conservation Committee, it was passed and sent to the floor. It passed both houses without any problem and was signed into law by the Governor late in 1988 as Act 373, P.A. of 1988. The act prohibits the take of reptiles, amphibians, mollusks, and crustacea except as authorized by the Director.

To formulate a Director's Order, as provided under this new act, I asked the expertise and services of a number of people (these were Mr. James Harding, Herpetologist with the MSU Museum [widely considered one of the foremost experts on turtles in Michigan, Jim has been chairman of the Technical Advisory Committee on Amphibians and

Reptiles consisting of academic experts in the field of herpetology from Michigan universities since the 1980s], Messrs. Art Ditmar, Mark DeCharme and John Taschner of M.U.C.C., Mr. Russ Lincoln, DNR Fisheries Interpretive Center at Wolf Lake Hatchery, Mr. Ray Shepherd, DNR Fisheries Biologist at Clare, Mr. Robert Hess, Wildlife Biologist in charge of the non-game program, Wildlife Division, Lt. Rex Schmeler, District 12 Law Supervisor at Plainwell and Sgt. Alan Marble and Lt. David Purol, Law Division Staff). Through this committee the first draft orders for the take of reptiles and amphibians were developed.

By this time word had gotten out to the various dealers and hobbyists, involved with the take of Michigan herps species, that restrictions were being looked at to regulate the take and sale of Michigan herps. Representatives of these groups requested to meet with us. Subsequently, two meetings were held with the various hobbyist and commercial representatives. In addition, many persons called and talked to both myself and Law Division personnel on the pros and cons of our regulations. I also telephoned a number of states and talked to their state herpetologists or law personnel about their regulations to get an idea of the standing of Michigan's proposed regulations relative to other states.

As the result of these discussions we made a number of modifications to the original order drafts. A series of four additional meetings between Harding, Hess, Marble, and myself were held to further refine the orders into one order covering both reptiles and amphibians...

In 1989, as a direct result of Dr. Fogle's work, the first Director's Order (No. DFI-166.89) regulating the take of reptiles and amphibians was signed into effect. The order created a prohibited species list of the most sensitive specimens, protected all eggs from collection, established legal methods of take, and limited the number of turtle traps per person while requiring the trapper's name and address to be attached. The order established seasons for all reptile and amphibian species as well as size limits on snapping and softshell turtles. Daily and possession limits were placed on recreational and commercial harvest and all harvested animals were required to be transported in a recognizable condition for both species and size. The order also made it against the law for anyone to buy or sell reptiles or amphibians harvested under a sport fishing license. It created a list of acceptable amphibian species available for commercial harvest, however all reptiles not on the prohibited species list could be sold for profit. Finally, a standard penalty and fine for violating the order were set (Appendix A).

During an interview in the spring of 2006, Jim Harding (MSU Museum curator and chairman of the Amphibian and Reptile Technical Advisory Committee in Michigan) and Dr. Fogle confirmed that the 1989 Director's Order was a real victory for protecting reptile and amphibian species from unregulated exploitation. However, both recalled that in 1989 Fisheries Division and the academic research community believed these first regulations were not restrictive enough to provide for long-term sustainability of reptile and amphibian populations. At that time, a cautious approach to regulation was taken believing that if too much was restricted too soon, the entire movement to protect these species might not succeed. Both stated that early commercial regulations were the outcome of negotiations with commercial interests and lacked scientific support. Also because conservation interests were so pleased to get protection of the more sensitive species (e.g., Blanding's turtles *Emydoidea blandingii*, eastern box turtles *Terrapene carolina*, spotted turtles *Clemmys guttata*, and wood turtles *Glyptemys insculpta*), there was willingness to compromise on commercial regulation of more common species, even though the science of the day suggested a stricter regulatory approach was needed. Dr. Fogle stated, at the time, the goal was to work incrementally through successive orders towards further limiting the take of reptiles and amphibians in the years following 1989.

In December 1990, Director's Order DFI-166.90 was signed, updating the 1989 order (Appendix B). There were two changes. The first, amended provision seven from "Reptiles and

amphibians shall be possessed and transported in the field in a manner that allows clear identification of size and species.” to “It is illegal to possess or transport in the field, dressed or processed reptiles or amphibians that cannot be measured or identified.”

The second change removed the bullfrog (*Rana catesbeiana*) from the list of amphibian species that may be taken for commercial purposes in provision 17B. All other provisions of the 1989 order remained unchanged. There is no further documentation of the rationale for these changes but Dr. Fogle expressed there was agreement between DNR management and the academic research community that the bullfrog needed further protection and could not support a commercial harvest (N. Fogle, Michigan DNR Biologist – Retired, personal communication).

In June 1991, Director’s Order DFI-166.91 was signed updating the 1990 order (Appendix C). There were three changes. The first amended provision number 9 regulating the snapping and softshell turtle harvest season to, “Snapping turtles and softshell turtles may only be taken each year from June 23 to September 30 in the Department’s Lower Peninsula Region III, from July 1 to September 30 in the Department’s Lower Peninsula Region II, and from July 15 to September 30 in the Department’s Upper Peninsula Region I.”

While no additional records discussing the change in seasons persist, this change was most likely an attempt to regulate the start of the harvest season to more closely reflect the end of spring nesting, which is temperature-dependent. The second amendment affected provision 17A(3), changing the commercial possession limit for snapping turtles from 30 to 50. When asked in 2006, Dr. Fogle had no recollection of how or why this increase occurred. However, he did recall that the Reptile and Amphibian Technical Advisory Committee chaired by Mr. Harding and representing the scientific community thought that snapping turtles needed stricter regulation of take and the committee would not have supported this increase. The third change affected provision 17C and lowered the daily and possession limits for frogs from 200 to 100. No additional records for this change could be found.

In April 1993, a letter was sent to Dr. Fogle from the Amphibian and Reptile Technical Advisory Committee. The letter outlined six recommended changes to the DFI-166.91, three of which dealt directly with the regulation of snapping turtles and amphibians. The following are excerpts from the ARTAC letter (Appendix D):

... In light of on-going research and new information on amphibian and reptile populations, we have some concerns and would like to propose changes to the present regulations as specified in Director’s Order No. DFI-166.91. Our specific recommendations, along with rationale for them, are outlined below....

- 2) Decrease the daily limit of snapping turtles (*Chelydra serpentina*) taken for personal use with a sport-fishing license to two, and the possession limit to six as for other reptiles species...

Rationale: Snapping Turtles are subject to the same population constraints as other long-lived, slow-maturing species... While the species has wide habitat tolerances and is locally common, it has proven vulnerable to over harvest. They should be managed as a valuable game species, with an eye towards population stability. Recent studies in Ontario indicate that northern snapper populations may be particularly sensitive to the loss of mature animals, due to exceptionally low recruitment. In addition, it would seem that a daily and possession limit of ten is more than anyone needs for their personal use, and may make it difficult for Conservation Officers to detect possible illegal (unlicensed) commercial harvest.

...

- 5) Decrease the [commercial] possession limit for Snapping Turtles to 10 ... Perhaps under special permit, a wholesaler or retailer could be allowed to hold larger numbers of these animals, if they were accumulating stock from widely dispersed sources.

Rationale: ... A limit of 50 is excessive, particularly if the turtles were taken from a single locality. This species is (according to many trappers) often harvested by 'cleaning out' a locality (lake, section of a river, etc.) and then moving on to another locality. This is contrary to any definition of 'sustained yield.'

- 6) [The authorized commercial species should be] The following reptile may be taken for commercial purposes: Snapping Turtle...

No amphibians may be taken for commercial purposes.

Rationale: The committee feels the State of Michigan should join the many other states (at least 20 at present) that prohibit the commercial taking and sale of native amphibians and reptiles. There is no ecological or economic justification for exploiting reptile or amphibian populations for profit; these animals play a critical role in the State's environment, and are not in any way expendable. *It is both reasonable and logical to manage this resource in the same way that the State manages wild birds and inland game fish.* The state does not allow game birds or inland fish to be harvested commercially, and the public appears to accept and support this management philosophy.

There are presently only a small number of people involved with commercial harvest of native amphibians and reptiles, and for nearly all of these it is only a sideline activity for supplemental income. A ban on commercial take would have no significant economic impact. While it might be argued that these few people do not threaten the resource, it is apparent that even one collector can have a local impact on populations of target animals. We feel that it is in the best interest of wildlife conservation to eliminate commercial exploitation, assuring that such trade does not increase. Additionally, we feel that commercialization promotes a false sense among the state's citizens that these animals are abundant and exploitable. Education of the public regarding the ecological values of amphibians and reptiles will be facilitated by granting these animals the same standing as most other vertebrate resources.

Because of the more widespread traditional harvest of snapping turtles, we are recommending that the commercial taking of this species be phased out over...a three year period, subject to the take and possession limits specified above. This should give market trappers and wholesalers ample opportunity to find alternate income sources. We realize that there will be some opposition to ending the commercial take of these animals, as there was undoubtedly opposition to ending the trade in songbirds and wading birds many decades ago. But ending commercial exploitation of amphibians and reptiles is scientifically and philosophically supportable, and is 'the right thing to do.'...

Although not outlined in the above letter, recent communiqués with Jim Harding in 2006 highlighted the reasons for removing softshell turtles from the commercial list in 1993. Most turtle populations rely on the presence of adult females to perpetuate the populations because one male can mate with multiple females during each breeding cycle. Evidently the 12-inch carapace length limit was meant to protect female turtles well into maturation while having the majority of the harvest consist of males. For snapping turtles this worked because males grow faster than females in the population so males made up a higher proportion of the harvest. However, in softshell turtles the females grow faster than the males and a larger percentage of the harvest was composed of females. This situation was not defensible biologically and therefore the reptile and amphibian advisory committee worked to have softshell turtles removed from the commercial list (J. Harding, Michigan State University, personal communication).

In December 1993, Director's Order DFI-166.93 was signed and substantially changed the 1991 order in structure, format, and content (Appendix E). The order was reorganized into a "GENERAL", "PERSONAL TAKE", and "COMMERCIAL TAKE" sections. It implemented several of the recommendations made by the Advisory Committee letter referenced above. The resulting changes

added several species to the list that may not be taken from the wild without permit, limited recreational harvesters to three turtle traps and reduced their possession limits for snapping turtles from 10 to 6 and for amphibians from 12 to 10. The order restricted commercial harvesters to snapping turtles and green frogs only with all other reptiles and amphibians previously listed as commercial species designated to recreational harvest only. Commercial limits on snapping turtles and green frogs were also adjusted. While the snapping turtle possession limit remained unchanged from the previous order at 50, a daily limit of 10 was imposed for the first time. Also the commercial green frog daily limit was lowered from 100 to 25, and the possession limit from 100 to 50. The following discussion and background was provided in a Memorandum to the Director at the time of signing on December 15, 1993:

Academia, numerous conservation groups and environmentalists are making a strong statement to curtail all commercial take of reptiles and amphibians on a nationwide basis. There is convincing evidence that many populations of these species are being decimated by the commercial pet trade.

In Michigan many reptile and amphibian populations appear to be in decline. Some losses are due to possible environmental contamination while others are the direct result of over harvest and habitat destruction. One long-running research study on turtles in the University of Michigan's E. George [Reserve] in Livingston County strongly suggests that populations of long-lived species may never recover from over-harvest.

Many species have been significantly reduced where habitats have been destroyed. As an example, small wetlands, not protected by wetland laws, but often critical to certain herps species, are being filled and lost at an alarming rate. Nesting and hibernation areas of many species are routinely eliminated through the cutting of woodlands and clearing of brushy habitat for residential developments. High numbers of snakes and turtles, and in certain cases, frogs and toads, are killed each year on roadways by automobiles. There is substantiating evidence that pet marketers often take all the breeding stock from areas of collection.

Michigan lags behind many other states who totally protect their respective species from all commercial take. For the above reasons we are proposing that all commercial take of reptiles and amphibians in the state, except for snapping turtles and green frogs, be prohibited. In addition, we also propose to reduce the personal take of most reptiles and amphibians. This change would make the personal take more reasonable in light of the population problems with many of the species.

These proposed restrictions have the endorsement of the Michigan United Conservation Clubs (MUCC) Fish Committee. They are supported by the State's Herpetological Advisory Committee and most herps researchers...

The limits on both the recreational and commercial take of reptiles and amphibians established in the 1993 Director's Order presently remain in effect. However, one important point is that this order did not incorporate the 10 snapping turtle commercial possession limit or prohibit the commercial take of green frogs as recommended by the Technical Advisory Committee on Amphibians and Reptiles. It did remove softshell turtles from the commercial list while at the same time lowering the possession limit for sport-caught snapping turtles from 10 to 6. However, the daily limit for sport-caught snapping turtles was set at three per day, whereas the Committee's recommendation was two.

A minor change was made to the order in November 1998 (see Appendix F for the full revised order DFI-166.98). The change was initiated to update several antiquated references to departmental regions and statutes. Most notably the authority to regulate reptile and amphibian species was now contained in sections 43509, 48702, and 48705 of P.A. 451, being sections 324.43409, 324.48702, and 324.48705 of the Michigan Compiled Laws. In addition to this update in references, the snapping turtle harvest region distinctions were eliminated and "GENERAL" provision #10 was amended from

“Snapping and softshell turtles may only be taken each year from June 23 to September 30 in the Department’s Lower Peninsula Region III, from July 1 to September 30 in the Department’s Lower Peninsula Region II, and from July 15 to September 30 in the Department’s Upper Peninsula region I.” to “Snapping and softshell turtles may only be taken each year from July 1 to September 30 in the Lower Peninsula, and from July 15 to September 30 in the Upper Peninsula.” The simplification of seasons to the upper and lower peninsula distinction was supported by the Michigan Herpetological Society and the Michigan Trappers Association.

In 2002, the current fisheries order FO-224.02 was signed into law (see Appendix G for the full order). The current order added several species of reptiles and amphibians to the prohibited species list under “GENERAL” provision #1, due to their listing as either “threatened” or “species of special concern” in Michigan. These changes did not affect the recreational or commercial regulation of snapping turtles or green frogs established in 1993, or the Upper and Lower Peninsula seasons set in 1998 listed above.

Recent Commercial Harvest

Since the initial push for regulation in the late 1980s and early 1990s, the commercial reptile and amphibian program has been one of lower priority within Fisheries Division, relative to other programs. Fisheries Division has no herpetologist on staff and our regular management biologists often lack the background knowledge and training in reptiles and amphibians to effectively survey and track snapping turtle and green frog population trends; these data are necessary for setting appropriate harvest regulations. Therefore, documentation of the commercial harvest reflects this lower priority and most records are lacking or incomplete. The description below represents the best available information.

A commercial license is available directly through DNR Customer Systems (a.k.a., license control) to any resident or nonresident who applies and costs \$150 per year. Between 6 and 16 individuals have been licensed annually since 1997; however, the number of annual licenses issued has trended upward in recent years (Table 1).

Beginning in 1989, all individuals obtaining a commercial license were required to submit an annual catch report on a form provided by the DNR; no harvest data is available prior to 1998. Since 1998, compliance with the reporting requirement has ranged from a low of 25% in 2004 to highs of 100% for 2005 and 2006 (Table 1). On average, 59% of people that obtain a license report their harvest. With such low compliance, gaps in the record obviously exist, but inferences can be made from the data that are available.

Since 1998, not one person has reported any green frog harvest. All filed catch reports, statewide, reflect that the Commercial Reptile and Amphibian License is used only for taking snapping turtles. With a 100% reporting rate in 2005 and 2006, the DNR believes there is no legally licensed commercial harvest of green frogs currently occurring in Michigan. This should not be unexpected because discussions with Jim Harding have led to the conclusion that green frogs are really too small to be marketed as either table fare or for laboratory dissections.

In contrast, between 1998 and 2006, the reported annual commercial harvest of adult snapping turtles has ranged from 95 in 2004 to 1,084 in 2005, with an average statewide take of 475 turtles per year. Over this period, a total catch of 4,271 snapping turtles was reportedly taken from 30 counties in six of the state’s eight management units (Table 2). Of the total reported harvest, 2,929 turtles (68.6%) were caught from the Southern Lake Michigan Management Unit, 599 (14.0%) from the Lake Erie Management Unit, 576 (13.5%) from the Northern Lake Huron Management Unit, 95 (2.2%) from the Southern Lake Huron Management Unit, 42 (1.0%) from the Central Lake Michigan Management Unit, and 30 (0.7%) from the Western Lake Superior Management Unit (Figure 1). The

highest reported harvest by county from 1998 to 2006 was in Berrien County, where 972 turtles, representing 22.8% of the total statewide harvest, were caught (Table 2). Because of low reporting compliance, the total harvest of 4,271 turtles should be viewed as an extremely conservative estimate. The true harvest from 1998 to 2006 was likely significantly higher. The annual average harvest of 989 reported in 2005 and 2006 (with a 100% reporting compliance), expanded over the nine year period of record, would result in a total estimated harvest of 8,901 snapping turtles.

Recommendations

Based on snapping turtle biology and the subsequent rationale, the following is recommended concerning the commercial harvest of green frogs and snapping turtles in Michigan: The commercial harvest of all species of reptile and amphibian should be immediately prohibited. Fish Order 224.02 should be amended to remove the “Commercial Take” section in its entirety, as well as any other references to commercial activity throughout the order.

Rationale Summary

1. There is no demand for the commercial harvest of green frogs in Michigan due to the green frog’s small size in relation to those desired for laboratory dissection or table fare (J. Harding, Michigan State University, personal communication). In the past eight years there has been no reported harvest of frogs by anyone with a commercial reptile and amphibian license. At least 4 other Great Lake states and the Province of Ontario, Canada prohibit the commercial harvest of native amphibians. The Amphibian and Reptile Technical Advisory Committee in Michigan has been recommending the prohibition commercial amphibian harvest since 1993. Furthermore, prohibiting the commercial harvest of green frog as well as all other amphibians would be consistent with how Michigan manages wild birds and inland game fish: no commercial harvest is allowed.
2. Based on the best available data for Michigan snapping turtles, it would be inherently risky to continue the commercialization of this species. Long-term studies of northern populations show that levels of annual harvest equal to or greater than 10 % of the adult population are not sustainable. Harvest reports over the last eight years show that the majority of harvested adults have been taken from the Southern Lake Michigan Management Unit and may have been locally excessive in this unit. According to the 1993 letter from the Amphibian and Reptile Technical Advisory Committee, commercial harvesters own accounts explain that “this species is often harvested by ‘cleaning out’ a locality (lake, section of river, etc.) and then moving on to another locality.” This practice is indisputably contrary to any definition of “sustained yield.”
3. The all too common sight of road-killed turtles throughout Michigan during spring makes researchers question if road mortality alone has not already increased mortality on some adult turtle populations to an unsustainable level, 10% or more of the adult population per year (N. Fogle, Michigan DNR Biologist - Retired and J. Harding, Michigan State University, personal communication).
4. Questions remain about whether Michigan snapping turtle populations increase clutch size (fecundity) or egg mass and juvenile survival in response to adult removal. However, as managers of the public trust, the DNR should err on the side of caution and accept that the Brooks et al. (1991) study results showing no density-dependent response in Ontario apply in Michigan as well. The DNR must also consider that most Michigan populations are probably not resource limited and therefore should not exhibit a competitive release following adult harvest. Michigan

snapping turtle populations likely lack the biological ability to recover in a timely fashion from a significant commercial harvest event.

To illustrate the significant time necessary for population recovery from a one-time harvest event, life history information from Congdon et al. (1994) was used to construct an age-based matrix model for a theoretical snapping turtle population (Table 3). This model assumes that the findings of Brooks et al. (1991) apply to Michigan and that the population will not exhibit a competitive release. Additionally, the model assumes that the populations will not be subjected to any further take after the initial harvest event. The model used 100 age classes, with first reproduction at age 12. Adult (greater than age 12) annual survival was 93% and juvenile (ages 2–12) annual survival after the first year was 77%. Reproduction was calculated to be 1.286 age-1 females per adult female per year. This was the result of assuming 85% of adult females lay eggs each year, 28 eggs are laid per nesting adult female, 50% of eggs are females, 23% of nests survive predation to produce hatchlings, and 47% of hatchlings survive to age 1.

If the vital rates (age-specific birth and death rates) are constant, a population will eventually attain a stable age distribution, with a constant proportion of the population in each age class. With the vital rates specified above, a population at the stable age distribution is expected to be about 16% adults and 84% juveniles. A population with 30 adult females is expected to have 158 juvenile females, for a total of 188 females in the population.

Based on this life history data, snapping turtle populations would be expected to increase by a factor of 1.001 per year, or by 0.1% per year. Because of the very slow population growth rate, if adult females are harvested it will take a very long time for the population to recover. The matrix model was used to calculate the time required for the population to return to the initial number of adult females following a one-time harvest of 10%, 25%, 50%, 75%, 90%, and 100% of the adult females. The predicted time (in years) to recovery was 42, 109, 238, 394, 507, and 593, respectively (Figure 2). These recovery times depend on the life history data and vital rates of the species, not on the initial population size.

5. While the snapping turtle is often thought of as a solely aquatic species, quality riparian habitat surrounding a permanent water source is required to complete a snapping turtle's life cycle. However, one only has to look at the level of development around Michigan's inland lakes and rivers in terms of homes, businesses, lawns, and road ways to see that habitat management of the public resource usually stops at the waters edge and terrestrial requirements of semi-aquatic species are often underappreciated or overlooked altogether. This lack of protection for the terrestrial requirements of the snapping turtle's life history places additional negative pressure on reproductive success, adult survival, and population stability, thus intensifying the need to conservatively limit adult harvest.
6. In the same respect as riparian protection, young snapping turtles need protected, vegetated, shallow water areas to survive (Congdon et al. 1993b). Yet, demand for recreational opportunity often results in grooming the shallows by either chemically or mechanically removing aquatic vegetation and resulting in less than ideal habitat. Such additional negative effects on juvenile survival further intensify the need to conservatively limit adult harvest.
7. The Amphibian and Reptile Technical Advisory Committee (consisting of experts from six Michigan universities and several zoological institutions) has never believed the snapping turtle was a good candidate for any level of commercial harvest, primarily because of its life history strategy (high juvenile mortality, late maturation, and long lived adults), a strategy similar to that of other long-lived species like the lake sturgeon (*Acipenser fulvescens*) and common loon (*Gavia immer*). Furthermore, Michigan's current commercial regulation was not based on science but instead developed as a compromise with too much emphasis given to commercial interests (J. Harding, Michigan State University, personal communication). In the 1993 letter to the DNR

(discussed in detail above; Appendix D), the Advisory Committee called for ending commercial exploitation of reptiles and amphibians in Michigan. Their recommendations stated in part:

There is no ecological or economic justification for exploiting reptile or amphibian populations; these animals play a critical role in the State's environment, and are not in any way expendable. It is both reasonable and logical to manage this resource in the same way the State manages wild birds and inland game fish.... Ending commercial exploitation of amphibians and reptiles is scientifically and philosophically supportable, and is 'the right thing to do.'

After 13 years the committee's position had not wavered. In 2006, Jim Harding remained the committee chair and was contacted to reassess the 1993 recommendations. On May 24, 2006 he wrote:

After reviewing the ARTAC letter of 1993, I will personally stand by those recommendations.

Michigan should definitely move to phase out the commercial harvest of Snapping Turtles. There would be negligible economic impact, as few residents are now drawing commercial licenses. These turtles clearly have the same demographic and biological characteristics of other studied species; the paper by Congdon et al. (1994) shows that despite higher clutch size, the turtle population is still constrained by the requirement for extremely high juvenile and adult survivorship to maintain population stability. Although this species is still relatively common statewide, this is a matter of good wildlife management and not (yet) one of preserving a declining species. (I note that the State long ago banned the commercial take of game birds, song birds, game mammals, and inland fish, yet many of these species are still abundant. I know of no evidence or biological justification to suggest that reptiles or amphibians are less important ecologically or should be regulated any differently.)

Snapping Turtles can probably withstand a widely dispersed and opportunistic "personal harvest" but proper management should strive for a viable, stable population. There is no ecological justification for purposely reducing their numbers as state policy. While these turtles will occasionally eat waterfowl and (probably rarely) game fish, there is no data to suggest that they have a depressing effect on populations of either ducks or game fish in "natural" situations. Subsidized, over-abundant mammalian predators such as raccoons must certainly have a far greater impact on waterfowl than do turtles. A state resident who has a small fish pond or is raising exotic waterfowl may understandably desire to remove Snapping Turtles, but this would be possible under "personal take" rules, or by special permit; such control does not require a commercial harvest.

I believe that we also need to take a broad world-view of turtle management. Snapping Turtles that enter the commercial trade are not just used for local sale; many are being shipped to other countries, including Asian countries that have already depleted or practically eliminated their own turtle populations (see <http://www.chelonia.org/articles/us/usmarketintropage.htm>).

I also suggest ending the legal commercial harvest of Green Frogs; there seems to be no demand for them anyway. As I recall the discussions, these frogs were left on the list mainly because they were still relatively common compared to the Bullfrog, which was noted by many people as declining locally, and as a "transitioning" to eventual ending of commercial take of all amphibians.

These (above) comments are my own opinion. I would be glad to discuss these further. Thank you for requesting and considering input from the Amphibian and Reptile Technical Advisory Committee.

8. A compelling argument can be made that the commercial harvest of snapping turtles in the United States and thus Michigan, directly supports the appetite of foreign countries that have already

decimated their own native populations without regard to conservation (J. Harding, Michigan State University, personal communication; Senneke 2006). Reed and Gibbons (2004) wrote: “Turtle dealers, biologists, and those otherwise involved with turtles have recently been inundated by email inquiring about purchasing snapping turtles...these emails appear to originate with commercial turtle farming operations in Asia, and especially China.”

The declared snapping turtle export from United States ports between 2003 and 2005 supports the belief that there has been an increased foreign demand in recent years. Total declared snapping turtle export has more than doubled from 129,499 turtles in 2003 to 275,896 in 2005, and the export of wild-caught individuals has increased more than three fold, from 18,927 in 2003 to 89,288 in 2004 before decreasing slightly to 65,018 in 2005 (Senneke 2006). Over this three year period, 173,242 wild-caught snapping turtles have been declared for export. In China, snapping turtles are reported to command about \$10/pound (\$100 to \$320 each) in the food markets (T. Asakawa, NOAA Fisheries Service Senior Commercial Specialist, personal communication).

9. Several Great Lake management agencies (outside Michigan) and state agencies managing the St. Lawrence River system have already designated reptiles and amphibians as game species for personal/recreational use only.
 - a. Illinois and New Hampshire completely prohibit the commercial take and sale of all native reptile and amphibian species from the wild.
 - b. Ontario, Canada prohibits the commercial take and sale of all native reptiles and amphibians. In 2007, Ontario instituted a ban on all commercial harvest of northern leopard frogs (*Rana pipiens*) for the bait industry.
 - c. Wisconsin limits commercial sale to dead turtles and enforces a restrictive statewide possession limit of 3 snapping turtles (exception: the possession limit is 10 on the Mississippi River).
 - d. Pennsylvania allows the commercial harvest of snapping turtles with a daily limit of 15 and season limit of 30. Season runs from July 1 to Oct 31. They admit they do not know how many turtles are taken annually.
 - e. New York allows the limited commercial harvest of snapping turtles with a daily possession of 5 and a seasonal limit of 30. Turtles must meet a minimum carapace length of 12 inches. The only legal methods of take are firearm or bow, which effectively limits the sale to dead snapping turtle meet only. New York also allows the commercial sale of the diamondback terrapin. All other turtles are protected from harvest.
 - f. Minnesota, from May 16 to March 31, allows anglers with a recreational fishing license and children under age 16 to take, use, buy, and sell as bait for personal and commercial purposes an unlimited number of frogs up to 6 inches long. They also allow a commercial harvest of frogs for purposes other than bait upon purchase of an additional frog license. In 2003, a state law banned any new turtle harvester licenses; however, all previously licensed turtle harvesters could continue to be licensed. Currently there are about 35 commercial turtle licensees allowed to harvest snapping turtles, soft shell turtles, and painted turtles without daily or possession limits. There is a closed season and minimum size limit on snapping turtles.
 - g. Ohio allows the unlimited harvest and sale of snapping turtles and softshell turtles greater than 13 inches for consumption as food with a recreational fishing license. There is a closed season from May 1st through the second Friday of June.
 - h. Indiana prohibits the commercial collection of turtles. It does allow a limited harvest of certain frog and snake species.

- i. Maine's Inland Fish and Wildlife Commission in 2002 banned the commercial harvest of snapping turtles to overwhelming public support. At the July 25, 2002 meeting Commissioner Lee Perry stated: "While I have no reason to believe that snapping turtles are threatened with extinction in Maine, there is reason to be concerned about the viability of the population" (Austin 2002). Another commissioner pointed out that a commercial ban is not imposing on the individual and a turtle can still be recreationally harvested for supper (Austin 2002). Maine does allow a commercial amphibian harvest.
10. Finally, although this species is still relatively common statewide in Michigan, DNR personnel have relayed accounts of seeing fewer snapping turtles during routine surveys as their careers progressed indicating the possibility of localized declines in certain areas. While few would argue that the Michigan snapping turtle is currently in peril, based on the species "bet-hedger" strategy of extremely low adult mortality and the fact that 40% of Michigan's other turtle species are listed as special concern or threatened, discontinuing commercial harvest of snapping turtles is a matter of good wildlife management. Fortunately, the state is currently in a position where it does not have to wait until amending restrictions becomes a matter of preserving a declining species.

Acknowledgments

I would like to thank the following people for their assistance in preparing this plan: Liz Hay-Chmielewski, Todd Grischke, Christian LeSage, Dr. James Breck, Tina Tincher, Barbara Dilts, Cecilia Gilson, James Harding, and Dr. Ned Fogle.

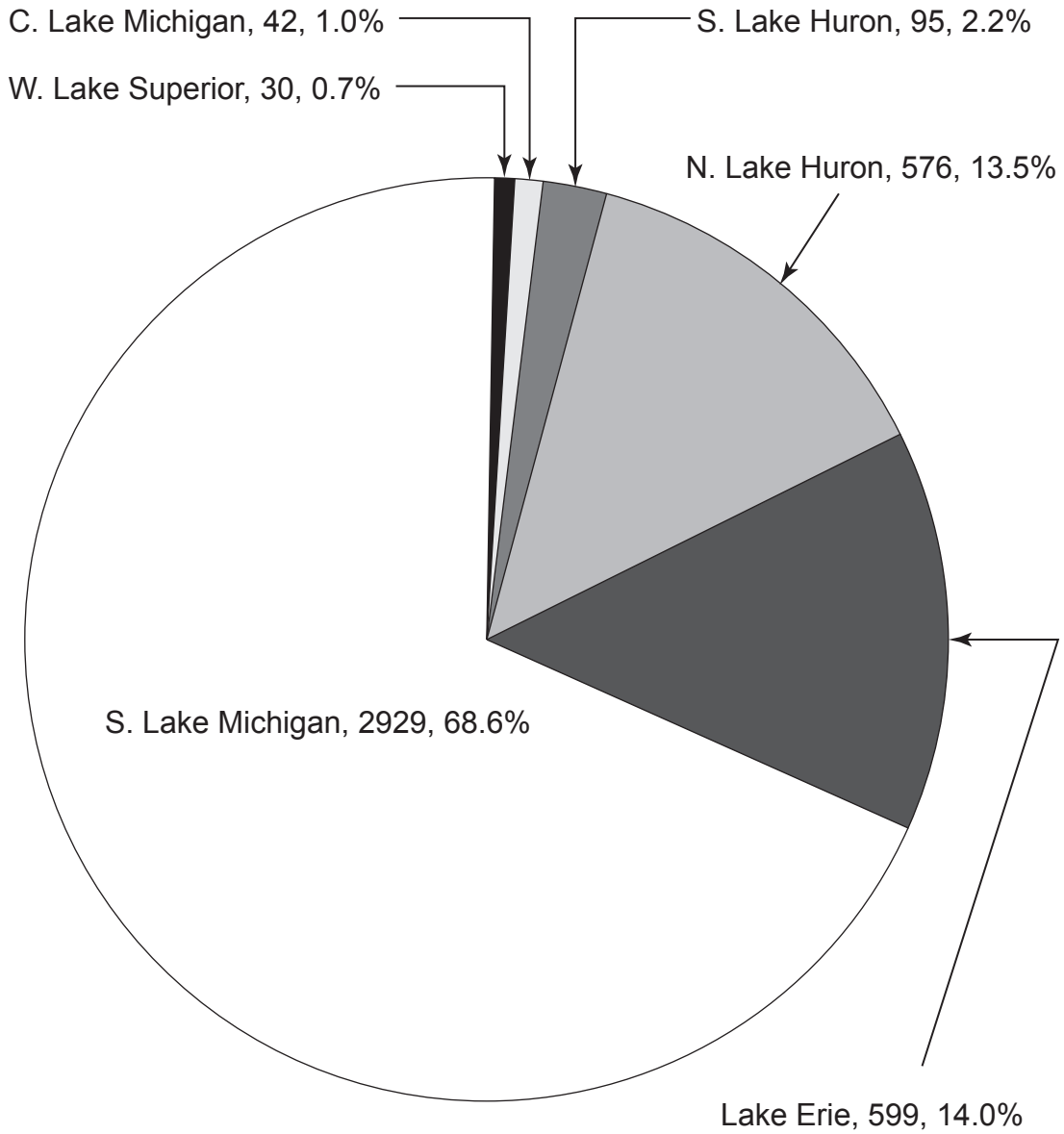


Figure 1.—Commercial snapping turtle harvest by management unit, 1998–2006. Numbers following management unit names are total harvest and percent harvest.

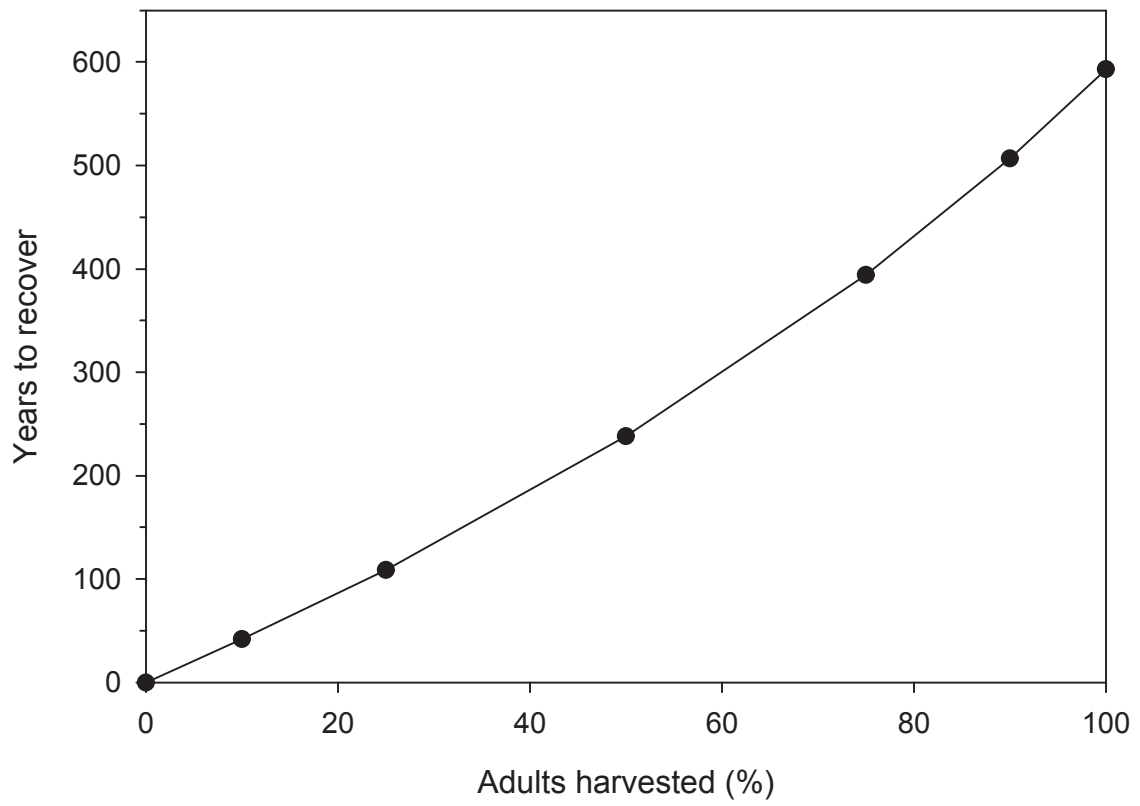


Figure 2.—Recovery time (years to reach pre-harvest adult population abundance) for a snapping turtle population after a one time harvest event on adult females 12 years of age and older.

Table 1.—Commercial reptile and amphibian licenses issued and reporting compliance (%), 1998–2006.

Year	Licenses issued	Reports received	Compliance (%)
1998	6	2	33.0
1999	6	2	33.0
2000	12	5	42.0
2001	12	6	50.0
2002	9	4	44.0
2003	11	5	45.0
2004	12	3	25.0
2005	16	16	100.0
2006	16	16	100.0
Total	100	59	59.0

Table 2.—Commercial snapping turtle harvest by county, 1998–2006.

Year	County																										Total				
	Alcona	Allegan	Alpena	Barry	Baraga	Berrien	Branch	Cass	Eaton	Hillsdale	Ionia	Iosco	Jackson	Kalamazoo	Kent	Lake	Lapeer	Livingston	Lenawee	Monroe	Montcalm	Montmorency	Muskegon	Ogemaw	Oscoda	Ottawa		St. Joseph	VanBuren	Washenaw	Wayne
1998	0	20	0	40	0	47	0	35	0	0	20	0	0	0	39	0	0	0	0	0	30	0	0	0	0	0	57	19	0	0	307
1999	0	40	0	60	30	40	0	20	0	0	20	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	260
2000	33	0	0	68	0	85	0	93	0	16	0	0	6	0	26	0	0	0	0	58 ^a	0	0	0	0	0	0	84	0	0	0	469
2001	40	27	0	29	0	197	0	0	0	7	7	0	25	10	36	0	0	0	0	34 ^a	0	0	0	0	0	0	0	0	0	0	412
2002	43	27	0	15	0	221	0	0	0	0	16	0	0	0	7	0	0	0	0	0	0	17	0	0	0	0	44	0	0	0	390
2003	0	0	0	0	0	188	50	0	0	0	0	0	25	0	0	0	0	0	0	25	0	0	0	0	42	0	30	0	0	0	360
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0	13	0	0	0	23	38	0	0	0	0	95	
2005	105	0	25	0	0	64	120	83	0	0	0	0	113	0	0	25	0	15	0	110	0	22	0	17	47	123	50	0	96	69	1,084
2006	70	0	111	57	0	130	45	0	35	0	0	15	78	9	26	0	0	25	22	96	0	0	0	0	0	100	30	0	0	45	894
Total	291	114	136	269	30	972	215	231	35	23	63	15	247	19	154	25	21	40	22	336	30	22	17	40	127	223	325	19	96	114	4,271

^a In 2000 and 2001, 8 and 9 turtles were reported harvested in "Erie County," respectively. It was assumed Erie County referred to Erie Township in Monroe County.

Table 3.—Snapping turtle life history traits (Congdon et al. 1994) and implications for theoretical populations.

Life stage	Probability	Adult population examples		
		Population = 50 total (25 females)	Populations = 30 total (15 females)	Populations = 16 total (8 females)
Frequency of laying eggs/year	0.85	.85 · 25 = 21 will lay eggs	.85 · 15 = 13 will lay eggs	.85 · 8 = 7 will lay eggs
Mean clutch size (# eggs)	28.0	21 · 28 = 588 eggs are laid	13 · 28 = 364 eggs are laid	7 · 28 = 196 eggs are laid
Nest survival	0.23	588 · .23 = 135.2 eggs hatch	364 · .23 = 83.7 eggs hatch	196 · .23 = 45.1 eggs hatch
Age 1 survival	0.47	135.2 · .47 = 63.6 survive to age 1	83.7 · .47 = 39.3 survive to age 1	45.1 · .47 = 21.2 survive to age 1
Age 2 survival	0.77	63.6 · .77 = 48.9 survive to age 2	39.3 · .77 = 30.3 survive to age 2	21.2 · .77 = 16.3 survive to age 2
Age 3 survival	0.77	48.9 · .77 = 37.7 survive to age 3	30.3 · .77 = 23.3 survive to age 3	16.3 · .77 = 12.6 survive to age 3
Age 4 survival	0.77	37.7 · .77 = 29 survive to age 4	23.3 · .77 = 18 survive to age 4	12.6 · .77 = 9.7 survive to age 4
Age 5 survival	0.77	29 · .77 = 22.3 survive to age 5	18 · .77 = 13.8 survive to age 5	9.7 · .77 = 7.4 survive to age 5
Age 6 survival	0.77	22.3 · .77 = 17.2 survive to age 6	13.8 · .77 = 10.7 survive to age 6	7.4 · .77 = 5.7 survive to age 6
Age 7 survival	0.77	17.2 · .77 = 13.2 survive to age 7	10.7 · .77 = 8.2 survive to age 7	5.7 · .77 = 4.4 survive to age 7
Age 8 survival	0.77	13.2 · .77 = 10.2 survive to age 8	8.2 · .77 = 6.3 survive to age 8	4.4 · .77 = 3.4 survive to age 8
Age 9 survival	0.77	10.2 · .77 = 7.9 survive to age 9	6.3 · .77 = 4.9 survive to age 9	3.4 · .77 = 2.6 survive to age 9
Age 10 survival	0.77	7.9 · .77 = 6 survive to age 10	4.9 · .77 = 3.7 survive to age 10	2.6 · .77 = 2 survive to age 10
Age 11 survival	0.77	6 · .77 = 4.7 survive to age 11	3.7 · .77 = 2.9 survive to age 11	2 · .77 = 1.6 survive to age 11
Age 12 survival	0.77	4.7 · .77 = 3.6 survive to age 12	2.9 · .77 = 2.2 survive to age 12	1.6 · .77 = 1.2 survive to age 12
Number of new adults/year		3.6 new adult turtles/year	2.2 new adult turtles/year	1.2 new adult turtles/year
Low adult survival	0.88	50 · .88 = 44 adults survive/year	30 · .88 = 26.4 adults survive/year	16 · .88 = 14.1 adults survive/year
Mean adult survival	0.93	50 · .93 = 46.5 adults survive/year	30 · .93 = 27.9 adults survive/year	16 · .93 = 14.9 adults survive/year
High adult survival	0.97	50 · .97 = 48.5 adults survive/year	30 · .97 = 29.1 adults survive/year	16 · .97 = 15.5 adults survive/year

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Approved by Gary E. Whelan

Appendices

Appendix A.—Memorandum to the Director and Director’s Order No. DFI-166.89.

Appendix B.—Director’s Order No. DFI-166.90.

Appendix C.—Director’s Order No. DFI-166.91.

Appendix D.—Amphibian and Reptile Technical Advisory Committee Letter.

Appendix E.—Memorandum to the Director and Director’s Order No. DFI-166.93.

Appendix F.—Memorandum to the Director and Director’s Order No. DFI-166.98.

Appendix G.—Memorandum to the Director and Fisheries Order No. FO-224.02.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

June 7, 1989

Memorandum to the Director:

SUBJECT: Reptile and Amphibian Regulations

Authority:

Under the authority of chapter II of the Michigan Sportsmen Fishing Law, 1929 PA 165, as amended, the Director may regulate the manner of taking, open seasons and possession limits for reptiles and amphibians.

Discussion:

Act 373 of the Public Acts of 1988 amended Act 165 to give the Director the authority to regulate and protect the reptilian and amphibian resources of Michigan. Protection in the past has been limited to those species protected under state and federal endangered species' legislation.

Several species of reptiles and amphibians, including snapping, wood, spotted and box turtles, black rat snake, spotted salamander, and bull and cricket frogs, have undergone population declines in the recent years. These declines are believed to be caused by to habitat destruction and exploitation by commercial and private (hobbyist) collectors.

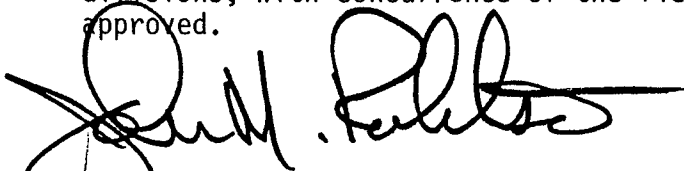
Many states already protect reptiles and amphibians from exploitation. Michigan's lack of protection has been an open invitation for collectors to harvest all they wanted and to export them out-of-state. These proposed regulations will not only protect Michigan's resources, they will aid enforcement in neighboring states by the fact that poachers of reptiles and amphibians will no longer be able to "launder" these species by claiming that they came from Michigan.

These regulations have been developed with the help of many people; including herpetologists, persons with turtle trapping expertise, herpetological hobbyist groups, commercial collectors and the Michigan United Conservation Clubs, as well as DNR Fisheries, Law and Wildlife division personnel.


These proposed regulations will extend needed protection to an important segment of Michigan's wildlife heritage. More and more scientists now believe these animal groups are important indicators of environmental well-being. These regulations will establish the necessary protection to both reptiles and amphibians, but also will allow for their reasonable use.

Recommendations:


It is, therefore, recommended by Fisheries and Law Enforcement divisions, with concurrence of the field, that the attached order be approved.



John M. Robertson, Chief
Fisheries Division



Herbert B. Burns, Chief
Law Enforcement Division



Jack D. Baits
Deputy Director

DIRECTOR'S ORDER NO. DFI-166.89

Regulations on the Take of Reptiles and Amphibians

In accordance with sections 1c and 2, chapter II, Act 165 of the Public Acts of 1929, as amended, being sections 302.1c(1) and 302.1c(2) of the Michigan Compiled Laws, I HEREBY ORDER:

That it shall be unlawful to kill, take, trap, possess, buy, sell, offer to buy or sell, barter, or attempt to take, trap, possess or barter any reptile or amphibian from the wild, or the eggs of any reptile or amphibian from the wild, except as provided within this order:

1. The following species of reptiles and amphibians shall not be taken from the wild or possessed except as authorized under a permit from the director:
Wood turtle Clemmys insculpta
Spotted turtle Clemmys guttata
Eastern box turtle Terrapene carolina carolina
Black rat snake Elaphe obsoleta obsoleta
Cricket frog Acris crepitans blanchardi
and those reptiles and amphibians protected under the Endangered Species Act, Act 203 of the Public Acts of 1974.
2. A person may collect reptiles and amphibians or their eggs for research studies or other special use under a permit issued by the director's designated fisheries representative. The permit shall be valid only for the species, number, manner and time specified on the permit.
3. Reptiles may be taken only by hand, trap, seines up to 12 x 4 feet overall dimension, hand net, or hook and line as defined in chapter II, section 1(1) of Act No. 165 of the Public Acts of 1929, being section 302.1(1) of the Michigan Compiled Laws.
4. Amphibians may be taken by hand, hook and line, hand net or trap where not otherwise prohibited by law. In addition, frogs may be speared. As provided by Act No. 156 of the Public Acts of 1933, as amended, frogs shall not be speared with the aid of an artificial light.
5. Traps used for the taking of turtles shall be limited to no more than 10 traps and shall be constructed and set in a manner to allow turtles to surface and breathe, and shall be constructed of mesh at least 1 inch wide at the narrowest measurement.
6. Traps used or possessed in areas frequented by reptiles must have a plate or tag attached bearing the name and address of user in legible English.
7. Reptiles and amphibians shall be possessed and transported in the field in a manner that allows clear identification of size and species.

8. A person shall immediately release to the wild any reptile or amphibian that is taken during a closed season, is under the legal size, or is otherwise protected.
9. Snapping turtles and softshell turtles may only be taken from July 1 to September 30 of each year in the Lower Peninsula, and from July 15 to September 30 in the Upper Peninsula.
10. Reptiles other than snapping turtles, softshell turtles and those species listed under #1 of this order may be taken at any time.
11. A person may only take and possess snapping turtles and softshell turtles with a carapace length of 12 inches or more.
12. Amphibians may be taken from the last Saturday in May to November 15 of each year, except that salamanders may be taken from March 15 through November 15 of each year.
13. Reptile eggs may not be disturbed or removed from the wild.
14. The daily limit for reptiles other than snapping turtles shall be 2 of each species. The daily limit for snapping turtles shall be 10.
15. The possession limit for reptiles other than snapping turtles shall be 6. The possession limit for snapping turtles shall be 10.
16. The following provisions apply to turtles and frogs taken under the authority of a sports fishing license.
 - A. Turtles and frogs taken under a sports fishing license shall not be bought, sold or offered for sale.
 - B. The daily and possession limit for amphibians shall be 12 of each species.
17. A commercial reptile and amphibian license is required of a person to take, trap, catch or fish for reptiles and amphibians for commercial purposes. Reptiles and amphibians lawfully taken from the wild prior to the date of this order, and those reptiles and amphibians taken under the authority of a commercial reptile and amphibian license in accordance with this order, may be bought and sold as specified in the following regulations.
 - A. The commercial take and sale of reptiles is permitted as defined in items 1-16 of this order. In addition, reptiles may be taken as specified as follows:
 - (1) Traps used or possessed in areas frequented by reptiles must, in addition to the name and address of users, bear the commercial license number of the licensee.

- (2) The daily limit of Eastern garter snakes shall be 10. The possession limit of Eastern garter snakes shall be 25.
 - (3) The possession limit for snapping turtles shall be 30.
 - (4) Holders of a Michigan reptile and amphibian commercial license shall submit an annual catch report on forms provided by the Director to: Fisheries Division, MDNR, P.O. Box 30028, Lansing, Michigan 48910, by November 1 of the license year. The report shall contain an accurate record of all reptiles and amphibians taken during the year for commercial purposes. Failure to submit a report by the due date will be considered delinquent and notice to that effect may be mailed to such delinquent persons by the Director. Failure to submit a report within ten days of the notice shall be considered as intent to violate the provisions of this order. The license of any person who fails to submit an annual report, and who has been duly notified by the Director as provided herein, may be suspended by the Director until such time as the delinquent reports are submitted to the Director. Any person failing to make the report or reports as above described shall be denied a new license for the person's place of business until in compliance with the provisions of this section of this order.
- B. The following species of amphibians may be taken for commercial purposes:
- Leopard frog Rana pipiens
 - Pickereel frog Rana palustris
 - Green frog Rana clamitans
 - Bull frog Rana castesbeiana
 - Tiger salamander Ambystoma tigrinum
 - Blue-spotted salamander Ambystoma laterale
 - Mudpuppy Necturus maculosus
 - Spotted salamander Ambystoma maculatum
 - Newts Notophthalmus sp.
- C. The daily limit for frogs shall be 200 with a possession limit of 200. The daily limit for salamanders shall be 500 with a possession limit of 1,000.
18. As provided by PA 394 of the Public Acts of 1988, any person that sells or distributes any viable turtle eggs or live turtles with a carapace length of less than 4 inches shall also provide the purchaser with a health advisory sheet prepared by the Michigan Department of Agriculture. A violation of this act is punishable by a fine of \$1000.00 or 90 days in jail, or both.

This order shall take immediate effect and shall remain effective until revised or rescinded.

Issued at Lansing, Michigan, this 14th day of June, 1989.


David F. Hales
Director

DIRECTOR'S ORDER NO. DFI-166.90

REGULATIONS ON THE TAKE OF REPTILES AND AMPHIBIANS

In accordance with sections 1c(1) and (2), chapter II, Act 165 of the Public Acts of 1929, as amended, being sections 302.1c(1) and 302.1c(2) of the Michigan Compiled Laws, I HEREBY ORDER:

That it shall be unlawful to kill, take, trap, possess, buy, sell, offer to buy or sell, barter, or attempt to take, trap, possess or barter any reptile or amphibian from the wild, or the eggs of any reptile or amphibian from the wild, except as provided within this order.

1. The following species of reptiles and amphibians shall not be taken from the wild or possessed except as authorized under a permit from the director:

Wood turtle Clemmys insculpta
Spotted turtle Clemmys guttata
Eastern box turtle Terrapene caroline carolina
Black rat snake Elaphe obsoleta obsoleta
Cricket frog Acris crepitans blanchardi.

Those reptiles and amphibians protected under the Endangered Species Act, Act 203 of the Public Acts of 1974.

2. A person may collect reptiles and amphibians or their eggs for research studies or other special use under a permit issued by the director's designated fisheries representative. The permit shall be valid only for the species, number, manner and time specified on the permit.
3. Reptiles may be taken only by hand, trap, seines up to 12 x 4 feet overall dimension, hand net, or hook and line as defined in chapter II, section 1(1) of Act No. 165 of the Public Acts of 1929, being section 302.1(1) of the Michigan Compiled Laws.
4. Amphibians may be taken by hand, hook and line, hand net or trap where not otherwise prohibited by law. In addition, frogs may be speared. As provided by Act No. 156 of the Public Acts of 1933, as amended, frogs shall not be speared with the aid of an artificial light.
5. Traps used for the taking of turtles shall be limited to no more than 10 traps and shall be constructed and set in a manner to allow turtles to surface and breathe, and shall be constructed of mesh at least 1 inch wide at the narrowest measurement.

6. Traps used or possessed in areas frequented by reptiles must have a plate or tag attached bearing the name and address of user in legible English.
7. ~~Reptiles and amphibians possessed and transported in the field must be clearly identifiable as to size and species.~~ IT IS ILLEGAL TO POSSESS OR TRANSPORT IN THE FIELD, DRESSED OR PROCESSED REPTILES OR AMPHIBIANS THAT CANNOT BE MEASURED OR IDENTIFIED.
8. A person shall immediately release to the wild any reptile or amphibian that is taken during a closed season, is under the legal size, or is otherwise protected.
9. Snapping turtles and softshell turtles may only be taken from July 1 to September 30 of each year in the Lower Peninsula, and from July 15 to September 30 in the Upper Peninsula.
10. Reptiles other than snapping turtles, softshell turtles and those species listed under #1 of this order may be taken at any time.
11. A person may only take and possess snapping turtles and softshell turtles with a carapace length of 12 inches or more.
12. Amphibians may be taken from the last Saturday in May to November 15 of each year, except that salamanders may be taken from March 15 through November 15 of each year.
13. Reptile eggs may not be disturbed or removed from the wild.
14. The daily limit for reptiles other than snapping turtles shall be 2 of each species. The daily limit for snapping turtles shall be 10.
15. The possession limit for reptiles other than snapping turtles shall be 6. The possession limit for snapping turtles shall be 10.
16. The following provisions apply to turtles and frogs taken under the authority of a sports fishing license.
 - A. Turtles and frogs taken under a sports fishing license shall not be bought, sold or offered for sale.
 - B. The daily and possession limit for amphibians shall be 12 of each species.

17. A commercial reptile and amphibian license is required of a person to take, trap, catch or fish for reptiles and amphibians for commercial purposes. Reptiles and amphibians lawfully taken from the wild prior to the date of this order, and those reptiles and amphibians taken under the authority of a commercial reptile and amphibian license in accordance with this order, may be bought and sold as specified in the following regulations.

A. The commercial take and sale of reptiles is permitted as defined in items 1-16 of this order. In addition, reptiles may be taken as specified as follows:

- (1) Traps used or possessed in areas frequented by reptiles must, in addition to the name and address of users, bear the commercial license number of the licensee.
- (2) The daily limit of Eastern garter snakes shall be 10. The possession limit of Eastern garter snakes shall be 25.
- (3) The possession limit for snapping turtles shall be 30.
- (4) Holders of a Michigan reptile and amphibian commercial license shall submit an annual catch report on forms provided by the Director to: Fisheries Division, MDNR, P.O. Box 30028, Lansing, Michigan 48910, by November 1 of the license year. The report shall contain an accurate record of all reptiles and amphibians taken during the year for commercial purposes. Failure to submit a report by the due date will be considered delinquent and notice to that effect may be mailed to such delinquent persons by the Director. Failure to submit a report within ten days of the notice shall be considered as intent to violate the provisions of this order. The license of any person who fails to submit an annual report, and who has been duly notified by the Director as provided herein, may be suspended by the Director until such time as the delinquent reports are submitted to the Director. Any person failing to make the report or reports as above described shall be denied a new license for the person's place of business until in compliance with the provisions of this section of this order.

B. The following species of amphibians maybe taken for commercial purposes:
Leopard frog Rana pipiens

Pickerel frog Rana palustris
Green Frog Rana clamitans
~~Bull-frog~~ Rana castesbeiana
Tiger salamander Ambystoma tigrinum
Blue-spotted salamander Ambystoma laterale
Mudpuppy Necturus maculosus
Spotted salamander Ambystoma maculatum
Newts Notophthalmus sp.

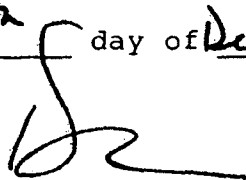
C. The daily limit for frogs shall be 200 with a possession limit of 200. The daily limit for salamanders shall be 500 with a possession limit of 1,000.

18. As provided by PA 424 of the Public Acts of 1988, being MCL 287.311 through 287.314, any person that sells or distributes any viable turtle eggs or live turtles with a carapace length of less than 4 inches shall also provide the purchaser with a health advisory sheet prepared by the Michigan Department of Agriculture. A violation of this act is punishable by a fine of \$1000.00 or 90 days in jail, or both.

This order supersedes the Director's Order entitled "Regulation on the Take of Reptiles and Amphibians," effective June 14, 1989, and assigned the number DFI-166.89.

This order shall take immediate effect and shall remain effective until revised or rescinded.

Issued at Lansing, Michigan, this 8th day of December, 1990.


David F. Hales
Director

DIRECTOR'S ORDER NO. DFI-166.91

REGULATIONS ON THE TAKE OF REPTILES AND AMPHIBIANS

In accordance with sections 1c(1) and (2), chapter II, Act 165 of the Public Acts of 1929, as amended, being sections 302.1c(1) and 302.1c(2) of the Michigan Compiled Laws, I HEREBY ORDER:

That it shall be unlawful to kill, take, trap, possess, buy, sell, offer to buy or sell, barter, or attempt to take, trap, possess or barter any reptile or amphibian from the wild, or the eggs of any reptile or amphibian from the wild, except as provided within this order.

1. The following species of reptiles and amphibians shall not be taken from the wild or possessed except as authorized under a permit from the director:

Wood turtle Clemmys insculpta
Spotted turtle Clemmys guttata
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Those reptiles and amphibians protected under the
Endangered Species Act, Act 203 of the Public
Acts of 1974.

2. A person may collect reptiles and amphibians or their eggs for research studies or other special use under a permit issued by the director's designated fisheries representative. The permit shall be valid only for the species, number, manner and time specified on the permit.
3. Reptiles may be taken only by hand, trap, seines up to 12 x 4 feet overall dimension, hand net, or hook and line as defined in chapter II, section 1(1) of Act No. 165 of the Public Acts of 1929, being section 302.1(1) of the Michigan Compiled Laws.
4. Amphibians may be taken by hand, hook and line, hand net or trap where not otherwise prohibited by law. In addition, frogs may be speared. As provided by Act No. 156 of the Public Acts of 1933, as amended, frogs shall not be speared with the aid of an artificial light.
5. Traps used for the taking of turtles shall be limited to no more than 10 traps and shall be constructed and set in a manner to allow turtles to surface and breathe, and shall be constructed of mesh at least 1 inch wide at the narrowest measurement.

6. Traps used or possessed in areas frequented by reptiles must have a plate or tag attached bearing the name and address of user in legible English.
7. It is illegal to possess or transport in the field, dressed or processed reptiles or amphibians that cannot be measured or identified.
8. A person shall immediately release to the wild any reptile or amphibian that is taken during a closed season, is under the legal size, or is otherwise protected.
9. Snapping turtles and softshell turtles may only be taken each year from June 23 to September 30 in the Department's Lower Peninsula Region III, from July 1 to September 30 in the Department's Lower Peninsula Region II, and from July 15 to September 30 in the Department's Upper Peninsula Region I.
10. Reptiles other than snapping turtles, softshell turtles and those species listed under #1 of this order may be taken at any time.
11. A person may only take and possess snapping turtles and softshell turtles with a carapace length of 12 inches or more.
12. Amphibians may be taken from the last Saturday in May to November 15 of each year, except that salamanders may be taken from March 15 through November 15 of each year.
13. Reptile eggs may not be disturbed or removed from the wild.
14. The daily limit for reptiles other than snapping turtles shall be 2 of each species. The daily limit for snapping turtles shall be 10.
15. The possession limit for reptiles other than snapping turtles shall be 6. The possession limit for snapping turtles shall be 10.
16. The following provisions apply to turtles and frogs taken under the authority of a sports fishing license.
 - A. Turtles and frogs taken under a sports fishing license shall not be bought, sold or offered for sale.
 - B. The daily and possession limit for amphibians shall be 12 of each species.

17. A commercial reptile and amphibian license is required of a person to take, trap, catch or fish for reptiles and amphibians for commercial purposes. Reptiles and amphibians lawfully taken from the wild prior to the date of this order, and those reptiles and amphibians taken under the authority of a commercial reptile and amphibian license in accordance with this order, may be bought and sold as specified in the following regulations.

A. The commercial take and sale of reptiles is permitted as defined in items 1-16 of this order. In addition, reptiles may be taken as specified as follows:

- (1) Traps used or possessed in areas frequented by reptiles must, in addition to the name and address of users, bear the commercial license number of the licensee.
- (2) The daily limit of Eastern garter snakes shall be 10. The possession limit of Eastern garter snakes shall be 25.
- (3) The possession limit for snapping turtles shall be 50.
- (4) Holders of a Michigan reptile and amphibian commercial license shall submit an annual catch report on forms provided by the Director to: Fisheries Division, MDNR, P.O. Box 30028, Lansing, Michigan 48910, by November 1 of the license year. The report shall contain an accurate record of all reptiles and amphibians taken during the year for commercial purposes. Failure to submit a report by the due date will be considered delinquent and notice to that effect may be mailed to such delinquent persons by the Director. Failure to submit a report within ten days of the notice shall be considered as intent to violate the provisions of this order. The license of any person who fails to submit an annual report, and who has been duly notified by the Director as provided herein, may be suspended by the Director until such time as the delinquent reports are submitted to the Director. Any person failing to make the report or reports as above described shall be denied a new license for the person's place of business until in compliance with the provisions of this section of this order.

B. The following species of amphibians maybe taken for commercial purposes:
Leopard frog Rana pipiens

Pickereel frog Rana palustris
Green Frog Rana clamitans
Tiger salamander Ambystoma tigrinum
Blue-spotted salamander Ambystoma laterale
Mudpuppy Necturus maculosus
Spotted salamander Ambystoma maculatum
Newts Notophthalmus sp.


C. The daily limit for frogs shall be 100 with a possession limit of 100. The daily limit for salamanders shall be 500 with a possession limit of 1,000.

18. As provided by PA 424 of the Public Acts of 1988, being MCL 287.311 through 287.314, any person that sells or distributes any viable turtle eggs or live turtles with a carapace length of less than 4 inches shall also provide the purchaser with a health advisory sheet prepared by the Michigan Department of Agriculture. A violation of this act is punishable by a fine of \$1000.00 or 90 days in jail, or both.

This order supersedes the Director's Order entitled "Regulation on the Take of Reptiles and Amphibians," effective December 8, 1990, and assigned the number DFI-166.90.

This order shall take immediate effect and shall remain effective until revised or rescinded.

Issued at Lansing, Michigan, this 26th day of June, 1991.


Delbert Rector
Director



April 9, 1993

Ned E. Fogle, Ph.D.
Recreational Fisheries Program Manager
Fisheries Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Dear Dr. Fogle:

Several members of the Technical Advisory Committee on Amphibians and Reptiles met on March 6 to discuss various aspects of "herptile" conservation in Michigan. We are generally very pleased with the way the State of Michigan and the Department of Natural Resources has implemented the "new" regulations pertaining to amphibians and reptiles. A special note of appreciation should be made in recognition of the interest and enthusiasm of our state's Conservation Officers in enforcing these regulations.

In light of on-going research and new information on amphibian and reptile populations, we have some concerns and would like to propose changes to the present regulations as specified in Director's Order No. DFI-166.91. Our specific recommendations, along with rationale for them, are outlined below. (All members of the committee have reviewed, and concur with, these recommendations).

1) Add the Blanding's Turtle (*Emydoidea blandingii*) to the list of fully protected species (Section 1. of Director's Order).

Rationale: Although this species remains locally common in parts of the L.P., it has experienced recent local declines and is very rare in the U.P. Populations in many areas are under stress from habitat fragmentation and heavy road mortality. There are reliable reports that Blanding's Turtles are being collected in increasing numbers for the pet trade. Especially pertinent is information provided by Dr. Justin Congdon, based on long-term research at the University of Michigan E.S. George Reserve. He and his colleagues, working with Blanding's Turtle, have shown that such long-lived species with slow maturation and high nest mortality are extremely vulnerable to any factor that decreases adult survivorship; thus the loss of any adult or older juvenile turtle is significant, and there is literally no harvestable surplus in their populations. It is quite likely that most or all Michigan *Emydoidea* populations are in, at best, a slow decline. The present regulations on take and possession are incompatible with this knowledge. Protected status would also boost opportunities for public education.

2) Decrease the daily limit of Snapping Turtles (*Chelydra serpentina*) taken for personal use with a sport-fishing license to two, and the possession limit to six, as for other reptile species (Section 14. and 15. of Director's Order).

Rationale: Snapping Turtles are subject to the same population constraints as other long-lived, slow-maturing species (see above). While the species has wide habitat tolerances and is locally common, it has proven vulnerable to overharvest. They should be managed as a valuable game species, with an eye towards population stability. Recent studies in Ontario indicate that northern snapper populations may be particularly sensitive to the loss of mature animals, due to exceptionally low recruitment. In addition, it would seem that a daily and possession limit of ten is more than anyone needs for their personal use, and may make it difficult for Conservation Officers to detect possible illegal (unlicensed) commercial harvest.

3) Drop the first sentence under part 17. A. (page 3 of Director's Order). Begin part 17.A. with "Reptiles and amphibians may be taken for commercial purposes only as specified below:"

Rationale included under recommendation (6).

4) Change daily and possession limits for Eastern Garter Snakes (*Thamnophis sirtalis*) to two and six respectively, as for other species. (If recommendation (6) is accepted, this can be disregarded).

Rationale: Even though this is a generally abundant species, there are numerous anecdotal reports that garter snakes have experienced local declines in numbers. There is also a "similarity of appearance" problem, since many people fail to discriminate between Eastern Garter Snakes, and the rarer and/or less widely distributed Ribbon Snakes (*T. sauritus*) and Butler's Garter Snakes (*T. butleri*).

5) Decrease the possession limit for Snapping Turtles to 10 (part 17.A (3)). Perhaps under special permit, a wholesaler or retailer could be allowed to hold larger numbers of these animals, if they were accumulating stock from widely dispersed sources.

Rational: See recommendation (1) above. A limit of 50 is excessive, particularly if the turtles were taken from a single locality. This species is (according to many trappers) often harvested by "cleaning out" a locality (lake, section of a river, etc.) and then moving on to another locality. This is contrary to any definition of "sustained yield."

6) Replace part 17. B. with the following: The following reptile may be taken for commercial purposes:

Snapping Turtle *Chelydra serpentina*

No amphibians may be taken for commercial purposes.

Rationale: The Committee feels the State of Michigan should join the many other states (at least 20 at present) that prohibit the commercial taking and sale of native amphibians and reptiles. There is no ecological or economic justification for exploiting reptile or amphibian populations for profit; these animals play a critical role in the State's environment, and are not in any way expendable. *It is both reasonable and logical to manage this resource in the same way that the State manages wild birds and inland game fish.* The State does not allow game birds or inland fish to be harvested commercially, and the public appears to accept and support this management philosophy.

There are presently only a small number of people involved with commercial harvest of native amphibians and reptiles, and for nearly all of these it is only a sideline activity for supplemental income. A ban on commercial take would have no significant economic impact. While it might be argued that these few people do not threaten the resource, it is apparent that even one collector can have a local impact on populations of target animals. We feel that it is in the best interest of wildlife conservation to eliminate commercial exploitation, assuring that such trade does not increase. Additionally, we feel that commercialization promotes a false sense among the state's citizens that these animals are abundant and exploitable. Education of the public regarding the ecological values of amphibians and reptiles will be facilitated by granting these animals the same standing as most other vertebrate resources.

Because of the more widespread traditional harvest of snapping turtles, we are recommending that the commercial taking of this species be phased out over (perhaps) a three year period, subject to the take and possession limits specified above. This should give market trappers and wholesalers ample opportunity to find alternate income sources. We realize that there will be some opposition to ending the commercial take of these animals, as there was undoubtedly opposition to ending the trade in songbirds and wading birds many decades ago. But ending commercial exploitation of amphibians and reptiles is scientifically and philosophically supportable, and is "the right thing to do."

We should emphasize that our recommendations would not restrict the taking or use of non-protected amphibians and reptiles for personal use, whether for food, scientific or educational use, or as pets. Regulations already in place, along with the above recommendations, would appear at the present time to be sufficient to protect the resource.

Thank you for giving serious consideration to these recommendations. All members of this advisory committee will be happy to provide information and assistance to DNR staff persons and citizen groups regarding this proposal or any issues related to conservation of herpetological resources in Michigan,

Sincerely,



James H. Harding

Chairman, Technical Advisory Committee
On Amphibians and Reptiles

All members concurring:

Dr. James Gillingham, Dept. of Biology, Central Michigan University
Dr. Craig Weatherby, Dept. of Biology, Adrian College
Dr. Ronald Gratz, Dept. Biological Sciences, Michigan Tech. University
Dr. J. Alan Holman, Dept. of Zoology, Michigan State University
Dr. Ronald Nussbaum, Museum of Zoology, University of Michigan
Dr. Richard Bowker, Dept. of Biology, Alma College
Dr. J. Kirwin Werner, Dept. of Biology, Northern Michigan University

cc: Mr. Tom Weise, Endangered Species Coordinator, MDNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Interoffice Communication

December 15, 1993

Memorandum to the Director:

SUBJECT: Regulation on the Take of Reptiles and Amphibians

Authority:

Under the authority of sections 1c and 2, chapter II, of the Michigan Sports Fishing Law, 1929 PA 165, as amended, the Director has the authority to prescribe the manner and time of take for reptiles and amphibians.

Discussion and Background:

Academia, numerous conservation groups and environmentalists are making a strong statement to curtail all commercial take of reptiles and amphibians on a nationwide basis. There is convincing evidence that many populations of these species are being decimated by the commercial pet trade.

In Michigan many reptile and amphibian populations appear to be in decline. Some losses are due to possible environmental contamination while others are the direct result of overharvest and habitat destruction. One long-running research study on turtles in the University of Michigan's E. George Preserve in Livingston County strongly suggests that populations of long-lived species may never recover from over-harvest.

Many species have been significantly reduced where habitats have been destroyed. As an example, small wetlands, not protected by wetland laws, but often critical to certain herps species, are being filled and lost at an alarming rate. Nesting and hibernation areas of many species are routinely eliminated through the cutting of woodlands and clearing of brushy habitat for residential developments. High numbers of snakes and turtles, and in certain cases, frogs and toads, are killed each year on roadways by automobiles. There is substantiating evidence that pet marketeers often take all the breeding stock from areas of collection.

Michigan lags behind many other states who totally protect their respective species from all commercial take. For the above reasons we are proposing that all commercial take of reptiles and amphibians in the state, except for snapping turtles and green frogs, be prohibited. In addition, we also propose to reduce the personal take of most reptiles and amphibians. This change would make the personal take more reasonable in light of the population problems with many of the species.

These proposed restrictions have the endorsement of the Michigan United Conservation Clubs (MUCC) Fish Committee. They are supported by the State's Herpetological Advisory Committee and most herps researchers.

Recommendation:

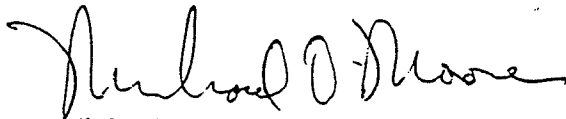
It is, therefore, recommended by Fisheries and Law Enforcement Divisions, with concurrence of the field that the attached order be approved.



John M. Robertson, Chief
Fisheries Division



Herbert B. Burns, Chief
Law Enforcement Division



Michael D. Moore
Deputy Director

DIRECTOR'S ORDER

NO. DFI-166.93

REGULATIONS ON THE TAKE OF REPTILES AND AMPHIBIANS

In accordance with sections 1c(1) and (2), chapter II, Act 165 of the Public Acts of 1929, as amended, being sections 302.1c(1) and 302.1c(2) of the Michigan Compiled Laws, I HEREBY ORDER:

That it shall be unlawful to kill, take, trap, possess, buy, sell, offer to buy or sell, barter, or attempt to take, trap, possess or barter any reptile or amphibian from the wild, or the eggs of any reptile or amphibian from the wild, except as provided within this order.

GENERAL

1. The following species of reptiles and amphibians shall not be taken from the wild or possessed except as authorized under a permit from the director:

Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*)

Blanding's Turtle (*Emydoidea blandingii*)

Wood turtle (*Clemmys insculpta*)

Spotted turtle (*Clemmys guttata*)

Eastern box turtle (*Terrapene carolina carolina*)

Black rat snake (*Elaphe obsoleta obsoleta*)

Cricket frog (*Acris crepitans blanchardi*)

Those reptiles and amphibians protected under the Endangered Species Act, Act 203 of the Public Acts of 1974.

2. A person may collect reptiles and amphibians or their eggs for research studies or other special use under a permit issued by the director's designated fisheries representative. The permit shall be valid only for the species, number, manner and time specified on the permit.
3. A person may take certain species of reptiles and amphibians for personal take. See items listed under personal take.
4. Commercial take of reptiles and amphibians is restricted to snapping turtles and green frogs. See items listed under commercial take.
5. Reptiles may be taken only by hand, trap, seines up to 12 x 4 feet overall dimension, hand net, or hook and line as defined in chapter II, section 1(1) of Act No. 165 of the Public Acts of 1929, being section 302.1(1) of the Michigan Compiled Laws.

6. Amphibians may be taken by hand, hook and line, hand net or trap where not otherwise prohibited by law. In addition, frogs may be speared. As provided by Act No. 156 of the Public Acts of 1933, as amended, frogs shall not be speared with the aid of an artificial light.
7. Traps used or possessed in areas frequented by reptiles must have a plate or tag attached bearing the name and address of user in legible English.
8. It is illegal to possess or transport in the field, dressed or processed reptiles or amphibians that cannot be measured or identified.
9. A person shall immediately release to the wild any reptile or amphibian that is taken during a closed season, is under the legal size, or is otherwise protected.
10. Snapping and softshell turtles may only be taken each year from June 23 to September 30 in the Department's Lower Peninsula Region III, from July 1 to September 30 in the Department's Lower Peninsula Region II, and from July 15 to September 30 in the Department's Upper Peninsula Region I.
11. A person may only take and possess snapping turtles with a carapace length of 12 inches or more.
12. Reptile eggs may not be disturbed or removed from the wild except as authorized under a permit by the Director.

PERSONAL TAKE

1. Traps used for the taking of turtles shall be limited to no more than 3 traps, shall be constructed and set in a manner to allow turtles to surface and breathe, and shall be constructed of mesh at least 1 inch wide at the narrowest measurement.
2. Reptiles other than snapping turtles, softshell turtles and those species listed under General Section #1 of this order may be taken at any time.
3. Amphibians other than those listed under General Section #1 may be taken from the last Saturday in May to November 15.
4. A fishing license is required to take turtles and frogs for personal take.
5. All reptiles and amphibians taken for personal take shall not be bought, sold or offered for sale.

6. The daily limit for reptiles other than snapping turtles shall be a combination of 3. The daily limit for snapping turtles shall be 3 for personal take under a sport fishing license. The possession limit for reptiles other than snapping turtles shall be a combination of 6. The possession limit for snapping turtles shall be 6.
7. The daily and possession limit for amphibians shall be a combination of 10.

COMMERCIAL TAKE

1. A commercial reptile and amphibian license is required of a person to take, trap, catch or fish for snapping turtles and green frogs for commercial purposes. Snapping turtles and green frogs taken under the authority of a commercial reptile and amphibian license in accordance with this order, may be bought and sold as specified in the following regulations.
2. The commercial take and sale of turtles and frogs is permitted as following:
 - A. Species permitted for commercial sale under a Michigan reptile and amphibian license:

Snapping turtles (*Chelydra serpentina*)
Green frog (*Rana clamitans*)
 - B. Traps used for the taking of turtles shall be limited to no more than 10 traps and shall be constructed and set in a manner to allow turtles to surface and breathe, and shall be constructed of mesh at least 1 inch wide at the narrowest measurement.
 - C. Traps used or possessed in areas frequented by reptiles must, in addition to the name and address of users, bear the commercial license number of the licensee.
 - D. The daily limit for snapping turtles is 10 and the possession limit 50. The daily limit for green frogs shall be 25 with a possession limit of 50.
3. Holders of a Michigan reptile and amphibian commercial license shall submit an annual catch report on forms provided by the Director to: Fisheries Division, MDNR, P.O. Box 30028, Lansing, Michigan 48910, by November 1 of the license year. The report shall contain an accurate record of all reptiles and amphibians taken during the year for commercial purposes. Failure to submit a report by the due date will be considered delinquent and notice to that effect may be mailed to such delinquent persons by the Director. Failure to submit a report within ten days of the notice shall be considered as intent to violate the provisions of this order. The license of any person who fails to submit an annual report, and

who has been duly notified by the Director as provided herein, may be suspended by the Director until such time as the delinquent reports are submitted to the Director. Any person failing to make the report or reports as above described shall be denied a new license for the person's place of business until in compliance with the provisions of this section of this order.

4. As provided by PA 424 of the Public Acts of 1988, being MCL 287.311 through 287.314, any person that sells or distributes any viable turtle eggs or live turtles with a carapace length of less than 4 inches shall also provide the purchaser with a health advisory sheet prepared by the Michigan Department of Agriculture. A violation of this act is punishable by a fine of \$1000.00 or 90 days in jail, or both.

This order supersedes the Director's Order entitled "Regulation on the Take of Reptiles and Amphibians," effective June 26, 1991, and assigned the number DFI-166.91.

This order shall take immediate effect and shall remain effective until revised or rescinded.

Issues at Lansing, Michigan, this 15th day of DECEMBER 1993.



Roland Harmes
Director


DNR
MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

November 12, 1998

Memorandum to the Director:

SUBJECT: Regulation on the Take of Reptiles and Amphibians

Authority:

Under the authority of sections 43509, 48702 and 48705 of PA 451, as amended, the Director has the authority to prescribe the manner and time of take for reptiles and amphibians.

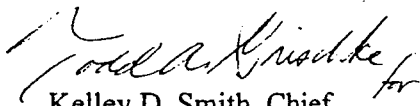
Discussion and Background:

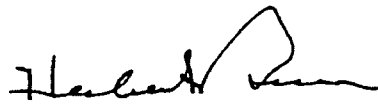
There are a number of antiquated references to departmental regions, statutes, etc. in this order. Such references will be updated upon passage.

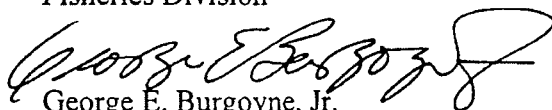
Also, the season for snapping and softshell turtles in Region III is being abolished by this order. There will be two separate seasons for the taking of these species, one for each of the peninsulas. This change is supported by the Michigan Herpetological Society and the Michigan Trappers Association.

Recommendation:

It is, therefore, recommended by Fisheries and Law Enforcement Divisions, with concurrence of the field that the attached order be approved. This item appeared on the September 28, 1998, Calendar and is eligible for approval on October 5, 1998.


Kelley D. Smith, Chief
Fisheries Division


Herbert B. Burns, Chief
Law Enforcement Division


George E. Burgoyne, Jr.
Resource Management Deputy

DIRECTOR'S ORDER

NO. DFI-166.98

REGULATIONS ON THE TAKE OF REPTILES AND AMPHIBIANS

In accordance with sections 43509, 48702 and 48705 of PA 451, being sections 324.43509, 324.48702, and 324.48705 of the Michigan Compiled Laws, I HEREBY ORDER:

That it shall be unlawful to kill, take, trap, possess, buy, sell, offer to buy or sell, barter, or attempt to take, trap, possess or barter any reptile or amphibian from the wild, or the eggs of any reptile or amphibian from the wild, except as provided within this order.

GENERAL

1. The following species of reptiles and amphibians shall not be taken from the wild and possessed except as authorized under a permit from the director:

Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*)
Blanding's Turtle (*Emydoidea blandingii*)
Wood turtle (*Clemmys insculpta*)
Spotted turtle (*Clemmys guttata*)
Eastern box turtle (*Terrapene carolina carolina*)
Black rat snake (*Elaphe obsoleta obsoleta*)
Cricket frog (*Acris crepitans blanchardi*)
Those reptiles and amphibians protected under the Endangered Species Act, Part 365 of Act 451 of the Public Acts of 1994.
2. A person may collect reptiles and amphibians or their eggs for research studies or other special use under a permit issued by the director's designated fisheries representative. The permit shall be valid only for the species, number, manner and time specified on the permit.
3. A person may take certain species of reptiles and amphibians for personal take. See items listed under personal take.
4. Commercial take of reptiles and amphibians is restricted to snapping turtles and green frogs. See items listed under commercial take.
5. Reptiles may be taken only by hand, trap, seines up to 12 x 4 feet overall dimension, hand net, or hook and line as defined in Section 48703 of Act 451 of 1994.
6. Amphibians may be taken by hand, hook and line, hand net or trap where not otherwise prohibited by law. In addition, frogs may be speared. As provided by Act No. 451 of the Public Acts of 1994, as amended, frogs shall not be speared with the aid of an artificial light.

DEPARTMENT OF NATURAL RESOURCES

Box 30028, LANSING, MICHIGAN 48909
K. L. Cool, Director

7. Traps used or possessed in areas frequented by reptiles must have a plate or tag attached bearing the name and address of the user in legible English.
8. It is illegal to possess or transport in the field, dressed or processed reptiles or amphibians that cannot be measured or identified.
9. A person shall immediately release to the wild any reptile or amphibian that is taken during a closed season, is under the legal size, or is otherwise protected.
10. Snapping and softshell turtles may only be taken each year from July 1 to September 30 in the Lower Peninsula, and from July 15 to September 30 in the Upper Peninsula.
11. A person may only take and possess snapping turtles with a carapace length of 12 inches or more.
12. Reptile eggs may not be disturbed or removed from the wild except as authorized under a permit by the Director.

PERSONAL TAKE

1. Traps used for the taking of turtles shall be limited to no more than 3 traps, shall be constructed and set in a manner to allow turtles to surface and breathe, and shall be constructed of mesh at least 1 inch wide at the narrowest measurement.
2. Reptiles other than snapping turtles, softshell turtles and those species listed under General Section #1 of this order may be taken at any time.
3. Amphibians other than those listed under General Section #1 may be taken from the last Saturday in May to November 15.
4. A fishing license is required for those 17 years and older to take reptiles and amphibians for personal use.
5. All reptiles and amphibians taken for personal take shall not be bought, sold or offered for sale.
6. The daily limit for reptiles other than snapping turtles shall be a combination of 3. The daily limit for snapping turtles shall be 3 for personal take under a sport fishing license. The possession limit for reptiles other than snapping turtles shall be a combination of 6. The possession limit for snapping turtles shall be 6.
7. The daily and possession limit for amphibians shall be 10 in combination.

COMMERCIAL TAKE

1. A commercial reptile and amphibian license is required of a person to take, trap, catch or fish for snapping turtles and green frogs for commercial purposes. Snapping turtles and green frogs taken under the authority of a commercial reptile and amphibian license in accordance with this order, may be bought and sold as specified in the following regulations.
2. The commercial take and sale of turtles and frogs is permitted as following:
 - A. Species permitted for commercial sale under a Michigan reptile and amphibian license:

Snapping turtles (*Chelydra serpentina*)
Green frog (*Rana clamitans*)
 - B. Traps used for the taking of turtles shall be limited to no more than 10 traps and shall be constructed and set in a manner to allow turtles to surface and breathe, and shall be constructed of mesh at least 1 inch wide at the narrowest measurement.
 - C. Traps used or possessed in areas frequented by reptiles must, in addition to the name and address of users, bear the commercial license number of the licensee.
 - D. The daily limit for snapping turtles is 10 and the possession limit 50. The daily limit for green frogs shall be 25 with a possession limit of 50.
3. Holders of a Michigan reptile and amphibian commercial license shall submit an annual catch report on forms provided by the Director to: Fisheries Division, MDNR, P.O. Box 30028, Lansing, Michigan 48910, by November 1 of the license year. The report shall contain an accurate record of all reptiles and amphibians taken during the year for commercial purposes. Failure to submit a report by the due date will be considered delinquent and notice to that effect may be mailed to such delinquent persons by the Director. Failure to submit a report within ten days of the notice shall be considered as intent to violate the provisions of this order. The license of any person who fails to submit an annual report, and who has been duly notified by the Director as provided herein, may be suspended by the Director until such time as the delinquent reports are submitted to the Director. Any person failing to make the report or reports as above described shall be denied a new license for the person's place of business until in compliance with the provisions of this section of this order.
4. As provided by PA 424 of the Public Acts of 1988, being MCL 287.311 through 287.314, any person that sells or distributes any viable turtle eggs or live turtles with a carapace length of less than 4 inches shall also provide the purchaser with a health advisory sheet prepared by the Michigan Department of Agriculture. A violation of this act is punishable by a fine of \$1000.00 or 90 days in jail, or both.

This order supersedes the Director's Order entitled "Regulation on the Take of Reptiles and Amphibians," effective December 15, 1993 and assigned the number DFI-166.93.

This order shall take immediate effect and shall remain effective until revised or rescinded.

Issues at Lansing, Michigan, this 18TH day of NOVEMBER 1998.


K. L. Cool
Director

**NATURAL RESOURCES
COMMISSION**

KEITH J. CHARTERS, Chair
JIM CAMPBELL
NANCY A. DOUGLAS
PAUL EISELE
BOB GARNER
WILLIAM U. PARFET
FRANK WHEATLAKE

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T MASON BUILDING, PO BOX 30028, LANSING MI 48909-7528

WEBSITE: www.michigandnr.com

K. L. COOL, Director

Resubmitted: August 20, 2001
September 17, 2001

TO: K. L. Cool, Director

INFORMATION: Natural Resources Commission

SUBJECT: Regulation on the Take of Reptiles and Amphibians (FO-224)

Authority:

Under the authority of sections 43509, 48702 and 48705 of PA 451, as amended, the Director has the authority to prescribe the manner and time of take for reptiles and amphibians.

Discussion and Background:

The following four changes to this order are recommended:

Spotted turtle (*Clemmys guttata*): On March 20, 1999 the status of spotted turtles changed from special concern to threatened. Due to its elevated status, this species will be removed from the list, and no harvest will be allowed.

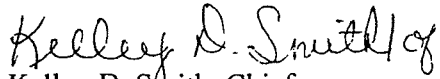
Six-lined racerunner (*Cnemidophorus sexlineatus*): This species is now considered one of special concern and we are recommending that it be added to the order. Harvest now will be regulated under special permit.


Boreal chorus frog (*Pseudacris triseriata maculata*): This species is now considered one of special concern and we are recommending that it be added to the order. Harvest now will be regulated under special permit.


Cricket Frog (*Acris crepitans blanchardi*): The correct common name for the cricket frog is Blanchard's Cricket Frog. The change will make this reference consistent with all other literature.

Recommendation:



This order was submitted for information only at the September Meeting of the Natural Resources Commission. This item appeared on the Department's September 3, 2001, and October 1, 2001, Calendars and is eligible for approval by the Director on October 12, 2001. We are now recommending that it be acted upon at this meeting.


Kelley D. Smith, Chief
Fisheries Division


Richard C. Asher, Chief
Law Enforcement Division


George E. Burgoyne, Jr.
Resource Management Deputy

I approve the staff recommendation.


 K. L. Cool
Director

12 OCTOBER 2001
Date Approved

ORDER

REGULATIONS ON THE TAKE OF REPTILES AND AMPHIBIANS

Under the authority of sections 43509, 48702 and 48705 of PA 451, being sections 324.43509, 324.48702, and 324.48705 of the Michigan Compiled Laws, The Director of the Department of Natural Resources on October 12, 2001, ordered that:

It shall be unlawful to kill, take, trap, possess, buy, sell, offer to buy or sell, barter, or attempt to take, trap, possess or barter any reptile or amphibian from the wild, or the eggs of any reptile or amphibian from the wild, except as provided within this order.

GENERAL

1. The following species of reptiles and amphibians shall not be taken from the wild and possessed except as authorized under a permit from the director:
 - Six Lines Racerunner (*Cnemidophorus sexlineatus*)
 - Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*)
 - Blanding's Turtle (*Emydoidea blandingii*)
 - Wood turtle (*Clemmys insculpta*)
 - Eastern box turtle (*Terrapene carolina carolina*)
 - Black rat snake (*Elaphe obsoleta obsoleta*)
 - Blanchard's Cricket frog (*Acris crepitans blanchardi*)
 - Boreal Chorus Frog (*Pseudacris triseriata maculata*)
 - Those reptiles and amphibians protected under the Endangered Species Act, Part 365 of Act 451 of the Public Acts of 1994.
2. A person may collect reptiles and amphibians or their eggs for research studies or other special use under a permit issued by the director's designated fisheries representative. The permit shall be valid only for the species, number, manner and time specified on the permit.
3. A person may take certain species of reptiles and amphibians for personal take. See items listed under personal take.
4. Commercial take of reptiles and amphibians is restricted to snapping turtles and green frogs. See items listed under commercial take.
5. Reptiles may be taken only by hand, trap, seines up to 12 x 4 feet overall dimension, hand net, or hook and line as defined in Section 48703 of Act 451 of 1994.

6. Amphibians may be taken by hand, hook and line, hand net or trap where not otherwise prohibited by law. In addition, frogs may be speared. As provided by Act No. 451 of the Public Acts of 1994, as amended, frogs shall not be speared with the aid of an artificial light.
7. Traps used or possessed in areas frequented by reptiles must have a plate or tag attached bearing the name and address of the user in legible English.
8. It is illegal to possess or transport in the field, dressed or processed reptiles or amphibians that cannot be measured or identified.
9. A person shall immediately release to the wild any reptile or amphibian that is taken during a closed season, is under the legal size, or is otherwise protected.
10. Snapping and softshell turtles may only be taken each year from July 1 to September 30 in the Lower Peninsula, and from July 15 to September 30 in the Upper Peninsula.
11. A person may only take and possess snapping turtles with a carapace length of 12 inches or more.
12. Reptile eggs may not be disturbed or removed from the wild except as authorized under a permit by the Director.

PERSONAL TAKE

1. Traps used for the taking of turtles shall be limited to no more than 3 traps, shall be constructed and set in a manner to allow turtles to surface and breathe, and shall be constructed of mesh at least 1 inch wide at the narrowest measurement.
2. Reptiles other than snapping turtles, softshell turtles and those species listed under General Section #1 of this order may be taken at any time.
3. Amphibians other than those listed under General Section #1 may be taken from the last Saturday in May to November 15.
4. A fishing license is required for those 17 years and older to take reptiles and amphibians for personal use.
5. All reptiles and amphibians taken for personal take shall not be bought, sold or offered for sale.
6. The daily limit for reptiles other than snapping turtles shall be a combination of 3. The daily limit for snapping turtles shall be 3 for personal take under a sport fishing license. The possession limit for reptiles other than snapping turtles shall be a combination of 6. The possession limit for snapping turtles shall be 6.

7. The daily and possession limit for amphibians shall be 10 in combination.

COMMERCIAL TAKE

1. A commercial reptile and amphibian license is required of a person to take, trap, catch or fish for snapping turtles and green frogs for commercial purposes. Snapping turtles and green frogs taken under the authority of a commercial reptile and amphibian license in accordance with this order, may be bought and sold as specified in the following regulations.
2. The commercial take and sale of turtles and frogs is permitted as following:
 - A. Species permitted for commercial sale under a Michigan reptile and amphibian license:

Snapping turtles (*Chelydra serpentina*)
Green frog (*Rana clamitans*)
 - B. Traps used for the taking of turtles shall be limited to no more than 10 traps and shall be constructed and set in a manner to allow turtles to surface and breathe, and shall be constructed of mesh at least 1 inch wide at the narrowest measurement.
 - C. Traps used or possessed in areas frequented by reptiles must, in addition to the name and address of users, bear the commercial license number of the licensee.
 - D. The daily limit for snapping turtles is 10 and the possession limit 50. The daily limit for green frogs shall be 25 with a possession limit of 50.
3. Holders of a Michigan reptile and amphibian commercial license shall submit an annual catch report on forms provided by the Director to: Fisheries Division, MDNR, P.O. Box 30028, Lansing, Michigan 48910, by November 1 of the license year. The report shall contain an accurate record of all reptiles and amphibians taken during the year for commercial purposes. Failure to submit a report by the due date will be considered delinquent and notice to that effect may be mailed to such delinquent persons by the Director. Failure to submit a report within ten days of the notice shall be considered as intent to violate the provisions of this order. The license of any person who fails to submit an annual report, and who has been duly notified by the Director as provided herein, may be suspended by the Director until such time as the delinquent reports are submitted to the Director. Any person failing to make the report or reports as above described shall be denied a new license for the person's place of business until in compliance with the provisions of this section of this order.
4. As provided by PA 424 of the Public Acts of 1988, being MCL 287.311 through 287.314, any person that sells or distributes any viable turtle eggs or live turtles with a

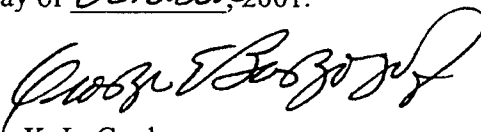
carapace length of less than 4 inches shall also provide the purchaser with a health advisory sheet prepared by the Michigan Department of Agriculture. A violation of this act is punishable by a fine of \$1000.00 or 90 days in jail, or both.

This order supersedes the Director's Order entitled "Regulation on the Take of Reptiles and Amphibians," effective November 18, 1998, and assigned the number DFI-166.98.

This order is assigned number FO-224.02 and is titled "Regulations on the Take of Reptiles and Amphibians".

This order shall take immediate effect and shall remain effective until revised or rescinded.

Issued at Lansing, Michigan, this 12TH day of OCTOBER, 2001.


FOR K. L. Cool
Director