

# Regulation Proposal Form

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<b>Proposal Title</b> Bass Slot Size Limit, Bass Lake , St Croix County	
<b>Author</b> Marty Engel	<b>Date</b> June 14, 2011
<b>Location Information:</b>	
<b>Affected water(s)</b> Bass Lake	
<b>County</b> St. Croix County	<b>WBIC(s)</b> 2450500
<b>Upstream/downstream boundaries, if applicable—Law Enforcement should be consulted</b> N/A	
<b>Will this regulation affect Ceded Territory water and are there any anticipated impacts to tribal fisheries?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

<b>Current Regulation</b> Standard statewide bass regulations - 14 inch size limit and bag limit of 5.
<b>Proposed Regulation</b> There is no minimum length limit on largemouth and smallmouth bass, but bass from 14” through 18” may not be kept, and only one fish over 18” is allowed with a daily bag limit of 3 in total.
<b>Management Goal</b> Summary statement that characterizes the desired fishery (e.g. provide a naturally reproducing harvest-oriented walleye fishery; provide a bass fishery dominated by large adults that maximizes predation on smaller fishes)  Restore pre 1990 (pre size limit) quality largemouth bass fishing opportunities to Bass Lake, St. Croix County.
<b>Description of the Water(s) and Fishery</b> Provide a brief description of the water(s), past regulations and other management actions. Summarize all applicable fisheries data, particularly from surveys meeting protocols (Table 1).  Bass Lake is a moderate sized, 416 acre, mesotrophic, hardwater (MPA, 129), seepage lake located in northwestern St. Croix County. The fish community is currently (2011) dominated by overly abundant, small slow growth (<14 inches) largemouth bass and a moderately abundant but high quality panfish population. Pre 1990 bass and panfish populations were considered highly desirable. The quality of the largemouth bass population has declined with substantial increases in largemouth density. A quality walleye fishery maintained through stocking existed for over 50 years but has recently declined to a point few can be found today. The shoreline on Bass Lake has heavy residential development and this lake is one of the most popular recreational lakes in the area. Bass Lake has a 19 car-trailer unit public access.
<b>Management Objective(s)</b> a) Goals are general, objectives are specific. Objectives are used to evaluate the effectiveness of your action and determine if you have achieved your goal. Provide a management objective that is specific, measurable, able to be achieved, related to the goal, and has a temporal component (e.g. increase walleye harvest rate to 0.1 fish/hour while maintaining recruitment at or above 10 YOY/mile within 5 years; increase largemouth bass RSD14 to 35 and bluegill RSD8 to 15 within 5 years  Within 12 years of implementation improve largemouth bass harvest, population size structure and angler satisfaction by implementing a 14 -18 inch protected slot size limit and bag limit of three of which only one can be over 18 inches.  1) The primary objective is to substantially increase harvest of overly abundant, small (<14 inch) largemouth bass thus reducing competition and improving growth of remaining fish. This can be measured by normal Tier 1 sampling with a goal of reducing the number of 8 to 13.9 inches bass to 30-70 per mile (electrofishing CPE).

2) The secondary objective is to improve the population and catch rate of quality size largemouth bass (>14 inches). The primary population objective is to improve size structure within the population by increasing the number of largemouth within and beyond the slot. This can be measured by normal Tier 1 sampling with a goal of increasing the number of bass > 14 inches to > 3 per mile and an RSD15 of 5 or better.

3) Improve bass growth rates from the current status of "slow growth" to match or exceed statewide averages as found during the pre 14 inch size limit era (1986).

4) Reduce over abundant small bass to aid in restoration of walleye through stocking. This can be measured by normal Tier 1 sampling with a goal of increasing the walleye population to historic levels of 1-3 adults per acre.

**b) Describe how the management objective and associated target levels for metrics were developed (e.g. lake management plan, stakeholder meeting, comparison to other water(s)).**

During 1986 Bass Lake contained a desirable largemouth bass length distribution and above average growth rates. Largemouth bass densities were moderate and walleye population exceeded one per acre. Lake District Management Plans and local DNR Fisheries goals were set using this pre 1990 14 inch bass size limit data as a benchmark for restoration efforts.

### **Current Problem**

**Use survey data or provide context for a similar water or group of waters (e.g. lake type, watershed) to demonstrate how the fishery is not meeting the desired management objective. Identify hypothesized problem(s) you hope to address.**

In general, largemouth bass populations in western Wisconsin measured by electrofishing Catch per Unit Effort, 8 inches and larger are considered overly abundant at >75 bass per mile. Such high densities often are accompanied by a decline of quality sized bass. Bass populations with moderate densities (25-75 bass per mile, > 8 inches) generally have adequate recruitment and often the best size distribution. Lakes with low bass densities (< 25 per mile, > 8 inches) may or may not have good size distribution but recruitment is limited or these fisheries are dominated by other species such as walleye. An inverse relationship between high densities of small bass and the number of legal bass may be partially responsible for size structure in area lakes (Table 1, Figures 1 & 2).

Bass Lake currently has very high bass densities (96 -115 per mile, > 8 inches) compared to other waters in this area (Table 1). This was not always the case as demonstrated by pre 14 inch size limit data from 1986 in which Bass Lake contained moderate densities (62 bass per mile > 8 inches).

Table 2 shows a shift in length distribution and density from a quality fishery in 1986 to a poor fishery in 2011. The trend shows small bass (8 -13.9 inches) increasing in abundance and quality bass (RSD15) declining substantially over the 25 year period. Electrofishing CPE catch rates of quality size bass in 1986 were 9.3 per mile over 14 inches with and RSD15 of 8. By 2011 quality bass populations declined to 1.3 per mile over 14 inches with and RSD15 of zero. Bass over 15 inches could not be found during 2011 spring sampling when 616 bass were collected by electrofishing in 4.5 miles of shoreline.

Growth rates are density dependant in Bass Lake. Growth rates in Bass Lake have declined from "slightly above average" in 1986 to "below average" during 2011 (Table 3). According to the Wisconsin's Black Bass Management Plan: 2010 Addendum "Slow Growth" is defined as 20 % below the statewide mean or it takes 5 to 6 years to reach 14 inches. At age 5 Bass Lake growth rates are 14% below the statewide average and it takes 7 years to reach 14 inches.

Condition factors of 8-12 inch bass are currently poor in Bass Lake. Condition factor measured as Relative Weight (Wr) of 8-12 inch bass range from 75 to 106 with a mean of 89.5 + 8.4 SD. According to the literature, abundant bass populations with relative weights of 8-12 inch individuals below 85 indicate a need for a PLR (Protected Length Regulation). Populations with low abundance of 8-12 inch bass plus abundant prey availability (indicated by relative weight above 90) suggest application of a minimum length limit. In the case

of Bass Lake, 8 to 12 inch bass are considered overly abundant with electrofishing catch rates currently at 82 per mile. This is the second highest of any water in the area. Thirty two percent of Relative Weights in Bass Lake are substandard and another 12 percent are borderline for Bass Lake indicating a need for a PLR.

Pre-bass size limit data from 1986 show Bass Lake to have moderate bass densities with excellent size distribution, average growth and exceptional quality. In addition, walleye stock survival historically was excellent and both fisheries coexisted. 1997 data show Bass Lake growth rates declined, however many older fast growth fish remained from the pre size limit era. By 2011 growth rates remained slow and few bass remained in the population >14 inches. We believe liberalization of the harvest of small bass and the protection of 14-17.9 bass through a PLR will aid in restoration of both quality bass and walleye fisheries.

Table 1. Spring Electrofishing Catch-per-Unit-Effort for Largemouth Bass in Western Wisconsin Lakes.

Lake/Res	Year	Total	8"+	12"+	8 to 13.9"	14"+	15"+	14 to 17.9"	18"+	PSD	RSD14	RSD15
Cedar** 2009	2009	8.1	8.1	7.3	3.6	4.5	2.1	4.5	0	90.1	55.6	25.9
Menomin* 1999	1999	12.3	10.2	6.9	6.8	3.4	2.3	3.2	0.2	67.6	33.3	22.5
Tainter** 1998	1998	12.9	12.1	6.5	9.9	2.3	1.3	2.2	0.1	53.7	19.0	10.7
N.R. Flowage 2010	2010	15.7	15.2	13.7	9.8	5.3	2.5	5	0.3	90.1	34.9	16.4
Pine (B) 2007	2007	22.8	21.8	6.5	16.8	5	3.5	4.8	0.3	29.8	22.9	16.1
Eau Galle 2002	2002	44	27.5	20.8	10	6.8	6.4	6.3	1.3	75.6	24.7	23.3
Pine (S) 2007	2007	51.7	44.5	32.4	21	23.4	14.4	21.7	1.7	72.8	52.6	32.4
Nugget 1995	1995	67.3	48.3	38.1	39.8	8.5	0.6	8	0.5	78.9	17.6	1.2
Mallalieu* 2001	2001	68	52.9	31.9	33.4	19.4	15.3	15.3	4.1	60.3	36.7	28.9
Little Falls* 2000	2000	57.7	55.2	30.8	39.2	15.9	11.7	12	4	55.8	28.8	21.2
Spr. Valley 2009	2009	60.9	57.3	20.3	38.2	19.1	15.2	17.6	1.5	35.4	33.3	26.5
Spr. Valley 2003	2003	72.2	58.2	29.9	37.3	20.9	14.9	17.3	3.6	51.4	35.9	25.6
Spr. Valley 1995	1995	64.3	58.6	25.7	52	6.6	3.8	4.9	1.7	43.9	11.3	6.5
Bass 1986	1986	65.6	62.2	26.1	52.9	9.3	5	7.8	1.5	42.0	15.0	8.0
Bass 1997	1997	86.1	72.9	19.7	69	3.9	2.8	2	2	27.0	5.3	3.8
Squaw 1996	1996	102	74.3	48.3	37.4	36.9	17.9	34.6	2.4	64.9	49.7	24.1
Nugget 2010	2010	84	79.5	34	60.3	19.3	5	19.3	0	42.8	24.3	6.3
Perch 1994	1994	143.1	89	12.3	87.2	1.8	2.3	0.3	1.5	13.8	2.0	2.6
Bass 2011	2011	136.7	96	14.2	94.7	1.3	0	1.3	0	14.8	1.4	0.1
Dry Dam 2010	2010	101.5	100	32.6	95.7	4.2	0.1	4.2	0	32.6	4.2	0.1
Squaw 2001	2001	165	101.3	57.75	64.5	36.8	26	34.5	2.3	57.0	36.3	25.7
Squaw 2008	2008	108	105.8	62.5	93.8	12	1.8	12	0	59.1	11.3	1.7
Bass 2000	2000	177.3	115.3	50.6	105.5	9.8	0.2	9.5	0.3	43.9	8.5	0.2
Glen 2003	2003	187	153	17	150.3	2.6	0.3	2.6	0.3	11.1	1.7	0.2
Glen 1997	1997	229.8	170.2	27.7	165.5	4.3	2.2	4.3	0.5	16.3	2.5	1.3
Glen 1995	1995	198.4	171	37	167.3	3.2	1.8	3.2	0.8	21.6	1.9	1.1
**Walleye Lakes												
*LMB/SMB Lakes												

**CPUE 8+      CONDITION**

75 +	Over-abundant, size structure often poor
25-75	Moderate abundance, good size structure
< 25	Low density, size structure varies - usually good, recruitment may be limited and/or other gamefish species dominate

**CPUE 8+      MANAGEMENT ACTION**

75 +	Slow Growth -No size limit, bag of 5 or Normal to Fast Growth -14-18 slot, bag 3
< 25	14 inch size limit, bag of 5 or 18 inch, bag of 1

Figure 1. The relationship of bass density (8 inches & greater) and bass quality (14 inches & greater) in St. Croix County Area Lakes (includes lakes dominated by walleye or northern pike).

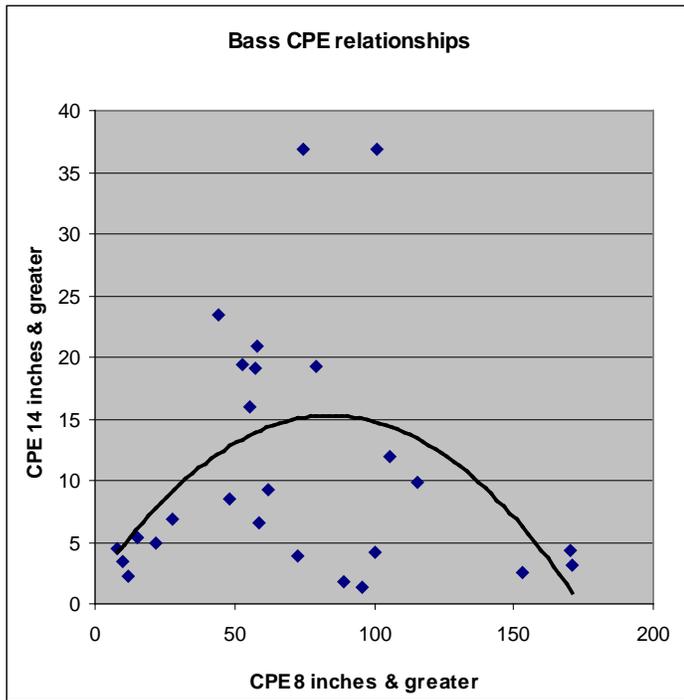


Figure 2 The relationship of bass density (8 inches & greater) and bass quality (14 inches & greater) in St. Croix County Area Lakes, (excluding lakes dominated by walleye or northern pike).

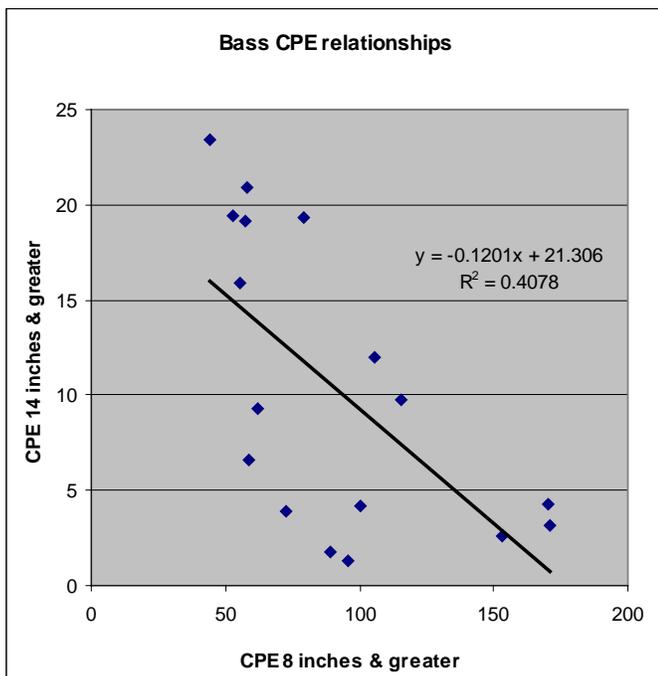


Table 2. Bass Lake, St. Croix County – Spring Largemouth Bass Electrofishing Catch-per-Unit-Effort.

Year	Total	8+	12+	8 to 13.9	14+	15+	14 to 17.9	18+	PSD	RSD14	RSD15
1986	65.6	62.2	26.1	52.9	9.3	5	7.8	1.5	42.0	15.0	8.0
1997	86.1	72.9	19.7	69	3.9	2.8	2	2	27.0	5.3	3.8
2000	177.3	115.3	50.6	105.5	9.8	0.2	9.5	0.3	43.9	8.5	0.2
2011	136.7	96	14.2	94.7	1.3	0	1.3	0	14.8	1.4	0.0

Table 3. Bass Lake, St Croix County, Largemouth Bass growth rates in comparison to Statewide Waters.

Statewide			Bass Lake						
Age	Mean		1986		1997		2011		
	Length	Std Dev.	Length	Std Dev.	Length	Std Dev.	Length	Std Dev.	
1	4.9	1.5			3.6	0.8	4.9	0.78	
2	7	1.8	7	1.34	5.9	1.1	6.8	0.6	
3	9.3	2	9.3	1.23	7.8	0.9	8.5	0.69	
4	11.2	2	10.8	0.95	10	0.8	10.1	0.62	
5	12.9	2.1	13.4	1.33	11.7	0.6	11.9	0.86	
6	14.7	2	14.4	1.35	13.2	0.9	13	0.68	
7	16.2	1.8	15.9	1.27	14.1	1	14.3	0.06	
8	17.5	2.2	17.9	0.55	15.2	0.9			
9	18.1	1.9	19	0.8	18.3	0.9			
10	18.8	1.5	19.9	1.07	19	1.3			
11	19.5	1.2			20.1	0.6			
12			20.8	0.46	20.9	0.6			
13			21.6		20.8	0.3			
14					21.4	0.3			

### **Proposed Regulation Justification**

**How is the regulation change expected to meet your objective(s)? Demonstrate expected results of the regulation using tools such as modeling, comparisons to other waters, peer-reviewed literature, etc...**

In a recent synopsis of 91 evaluations (42 slots) of largemouth bass fishery responses to length limits in Fisheries (Wilde, Vol. 22, No. 6), Wilde found minimum length limits increased largemouth bass population size and increased angler catch rates, however failed to increase the proportion of larger fish and the number and weight of fish harvested. Wilde's summary indicated slot length limits were successful in restructuring largemouth bass populations by increasing population size of quality and preferred size bass and the proportion of larger fish but did not increase angler catch rates or harvest.

Bass protected slot size limits or length ranges (PLR) are effective at improving size distributions where bass recruitment is high (Anderson 1976; Eder 1984). Bass populations with high recruitment and abundance of 8-12 inch individuals with relative weights below 85 indicate a need for a PLR. Populations with low abundance of 8-12 inch bass plus abundant prey availability (indicated by relative weight above 90) suggest application of a minimum length limit.

Several studies (e.g., Gablehouse 1984; Summers 1990; Martin 1995) reported slot length limits failed to restructure largemouth bass populations because anglers did not harvest sufficient numbers of fish smaller than the lower limit of the protected size range. In some of these cases the slot size limit many have been set too low (ex., 12-15 inch protected slot). The Wisconsin version with a 14-18 inch protected slot size limit, targets harvest under 14 inches. While catch and release for bass is popular, a portion of anglers will harvest over abundant bass in the 8–13.9 inch range. Further education may be needed to encourage harvest of small bass.

### **Evaluation Plan**

**Provide a suggested plan and timeline for evaluating whether the objectives are met in response to the regulation change. Indicate potential courses of action if objectives are not being met. If proposed regulation is not part of the "toolbox" (Table 2) the evaluation plan needs to be additionally detailed with an explanation of how the costs of evaluation will be covered.** If approved and implementation occurs during spring of 2013. Post evaluation should begin during normal Tier I sampling. Bass Lake is next scheduled for Tier I sampling during spring of 2019 (6 years from the projected implementation date). Further monitoring of the bass and walleye population maybe necessary every three years until one complete life cycle (12 years) of largemouth bass can be completed. The evaluation will be completed in 2025.

All sampling will follow normal Tier I sampling and will include a spring electrofishing run for largemouth bass and walleye population estimate. Scales and spines will be collected using standard sampling procedures to estimate growth rates. Results will be presented in a short summary report following each survey until the project is completed.

Electrofishing catch rates for largemouth bass will be summarized and evaluated for goal compliance. If spring electrofishing CPE for bass 8-13.9 inches can be reduced to a range of 30-70 per mile and quality bass (14 inches and greater) catch rates increased to a minimum 3 per mile and an RSD of 5 or better the regulation change will be considered successful.

Secondary objectives will also be evaluated. Stocked walleye populations will be monitored for survival and restoration will be determined to be successful if adult densities fall within 1-3 adults per acre. Such densities fall within the range of successful stocked walleye fisheries in northern Wisconsin.

If upon completion of the evaluation, the protected slot size limit fails to meet stated goals and objectives the alternative of no size limit should be pursued.

**Previous Action**

**Include details on previous regulation proposals that were intended to address the current problem, if applicable.**

During 2009 Baldwin DNR fisheries staff submitted a 14-18 inch bass protect slot size limit resolution for 4 lakes including Bass Lake. That proposal was supported by the Bass Statewide Team but tabled by the FH Board due to limited staff time, a limit on the number of questions proposed and special assignment to a walleye/bass team which focused on north west Wisconsin.

During 2010, the Baldwin staff submitted a new and improved bass slot size limit proposal for six lakes, including Bass Lake. That proposal was supported by the Bass Statewide Team and forwarded to the FH Board for approval. The FH Board continued its position of limiting regulations proposals. It approved Glen and Squaw Lake, declining Bass Lake based on the fact the data was somewhat old and the lake was up for evaluations during spring of 2011.

**Public Participation in Developing Proposed Regulation**

**Was input solicited from stakeholders when developing the proposed regulation change? Include documented comments from affected user groups (positive and negative), contacts made with local Conservation Congress Representatives, lake associations, angler groups, etc...**

During the 2009 Spring Conservation Hearing concerns were expressed about the over abundance of small bass and the decline in quality bass in a number of area lakes. A resolution for a 14-18 inch protected slot size limit, bag of three of which only one can be > 18 inches was submitted for Glen Lake. That resolution was passed in St. Croix County, vote was 57 to 10. In addition, The Bass Lake Management and Rehabilitation District just completed a comprehensive lake management plan with fisheries input. That plan recommended changing the standard statewide bass regulations on Bass Lake to a protected slot in an attempt to improve walleye survival and restore the quality of bass populations in Bass Lake.

During winter of 2010, the Squaw Lake Management and Rehabilitation District questioned what could be done to reverse the decline in bass quality and endorsed a 14-18 inch protected slot limit in their lake management plan.

On numerous occasions (2009-2011) this issue and the potential of slot size limits were discussed and supported by the St. Croix County Alliance of Sports Clubs which include all members of the Conservation Congress. They proposed DNR package the background information into one set with individual questions by lake.

During 2009 DNR staff submitted a package of 4 lakes for a protected slot size limit regulation. That proposal was expanded in 2010 to six lakes, of which two were approved for the Spring 2011 questionnaire. Squaw Lake passed 1,649 to 705 and Glen Lake passed 1,656 to 724.

The Conservation Congress and Bass Lake District continue to question why the FH board continues to table other lakes in the proposal when there is strong local and statewide support and a documented need to change.

**Small Business and Fiscal Effect**

**Explain who is likely to be economically impacted and in what way. If possible, provide estimates.**

No resorts or local retailers are found in the immediate area. If bass populations can be improved, angler activity may experience a modest increase in the area resulting in a minor increase in gasoline and bait shop sales.

Bass Lake is small when it comes to bass tournaments. Basically no organized bass tournaments take place on this lake. Therefore, I do not anticipate any objections to the bass slot limit proposal.

**Draft Question: for inclusion in Spring Hearing questionnaire**

**This proposal would (insert proposed regulation):** Small bass are over abundant in Bass Lake St. Croix County, but quality sized fish greater than the legal size limit of 14 inches are considered scarce. Growth rates have declined from average to slow growth during the past 25 years. Populations of small bass have been increasing since the implementation of a 14 inch size limit during 1989, however quality sized bass populations have declined. To increase harvest of small bass and improve population size structure and angler satisfaction, a 14 -18 inch protected slot size limit is proposed with a bag limit of three of which only one can be greater than 18 inches. The primary objective of this rule change is to substantially increase

harvest of abundant small (<14 inch) bass thus reducing competition and improving growth of remaining fish. The secondary objective is to improve or restore the number of quality size bass (>14 inches) found in Bass Lake. A similar rule change was proposed for Squaw and Glen Lakes at the 2010 Spring Conservation Hearing. Both passed locally and statewide by wide margins. The 2009 Bass Lake Rehabilitation and Management District Lake Management Plan recommends changing the standard statewide 14 inch bass size limit regulation on Bass Lake to a 14-18 inch protected slot size limit in an attempt to improve juvenile walleye stock survival and restore the quality of bass populations in Bass Lake. This regulation proposal is also supported by members of the St. Croix County Alliance of Sportsmen Clubs and the Conservation Congress.

**The Management Goal is:** to restore pre 1990 (pre size limit) quality largemouth bass fishing opportunities to Bass Lake, St. Croix County.

**This regulation proposal is one tool to help meet the management goal because:** It will allow harvest of overly abundant small bass resulting in less competition and improved growth rates. Improved growth rates and protection of bass in the slot will allow the quality of bass populations to improve. Such actions would restore quality bass fishing opportunities to desirable pre size limit conditions.

**Do you favor :** replacing the current 14 inch minimum bass length limit and daily bag limit of 5 in Bass Lake St. Croix County with a no minimum length limit and a 14-18 inch protected slot size limit, bag limit of 3, where only one bass harvested may be longer than 18 inches.

## Fish Team Supervisor Regulation Proposal Review Checklist

Instructions: Please use this checklist as a guide for your review of the regulation proposal. A completed checklist is only necessary after you have made your decision to reject or recommend. After completion, save a copy and use the email button at the top of the proposal form to send the proposal package to the Regional Fish Supervisor, Kate Strom Hiorns (automated), and CC the proposal's author.

<b>Proposal Title</b> Bass Slot Size Limit, Bass Lake , St Croix County		
<b>Author</b> Marty Engel	<b>Reviewer</b> Bob Hujik	<b>Date</b> 7-07-2011
<b>Fish Team Supervisor Reviewer Notes:</b> Author has current data that suggests over population of bass and a slow growing population. Would be nice to have a 5-bag when objectives are to decrease numbers.		

**Recommended Action by Fish Team Supervisor**

Approve  Reject

## Regional Fish Supervisor Regulation Proposal Review Checklist

<b>Proposal Title</b> Bass Slot Size Limit, Bass Lake , St Croix County		
<b>Author</b> Marty Engel	<b>Reviewer</b> Bob Hujik	<b>Date</b> 7-07-2011
<b>Regional Fish Supervisor Reviewer Notes:</b> Recommend approval		

**Recommended Action by Regional Fish Supervisor**

Approve  Reject

## Species Team Regulation Proposal Review Checklist

<b>Proposal Title</b> Bass Slot Size Limit, Bass Lake , St Croix County		
<b>Author</b> Marty Engel	<b>Reviewer</b> Bass Team	<b>Date</b> 12/14/2011
<b>Species Team Reviewer Notes:</b> The Bass Team supports this proposal. The author supplied a substantial amount of data from multiple surveys (ranging from 1986 to 2011) that indicate a change has occurred to the largemouth bass population that warrants a change to a protected slot limit.		

**Recommended Action by Species Team**

Approve  Reject