

Software Packages for Creel Survey Data Entry, Design and Estimation



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Topics

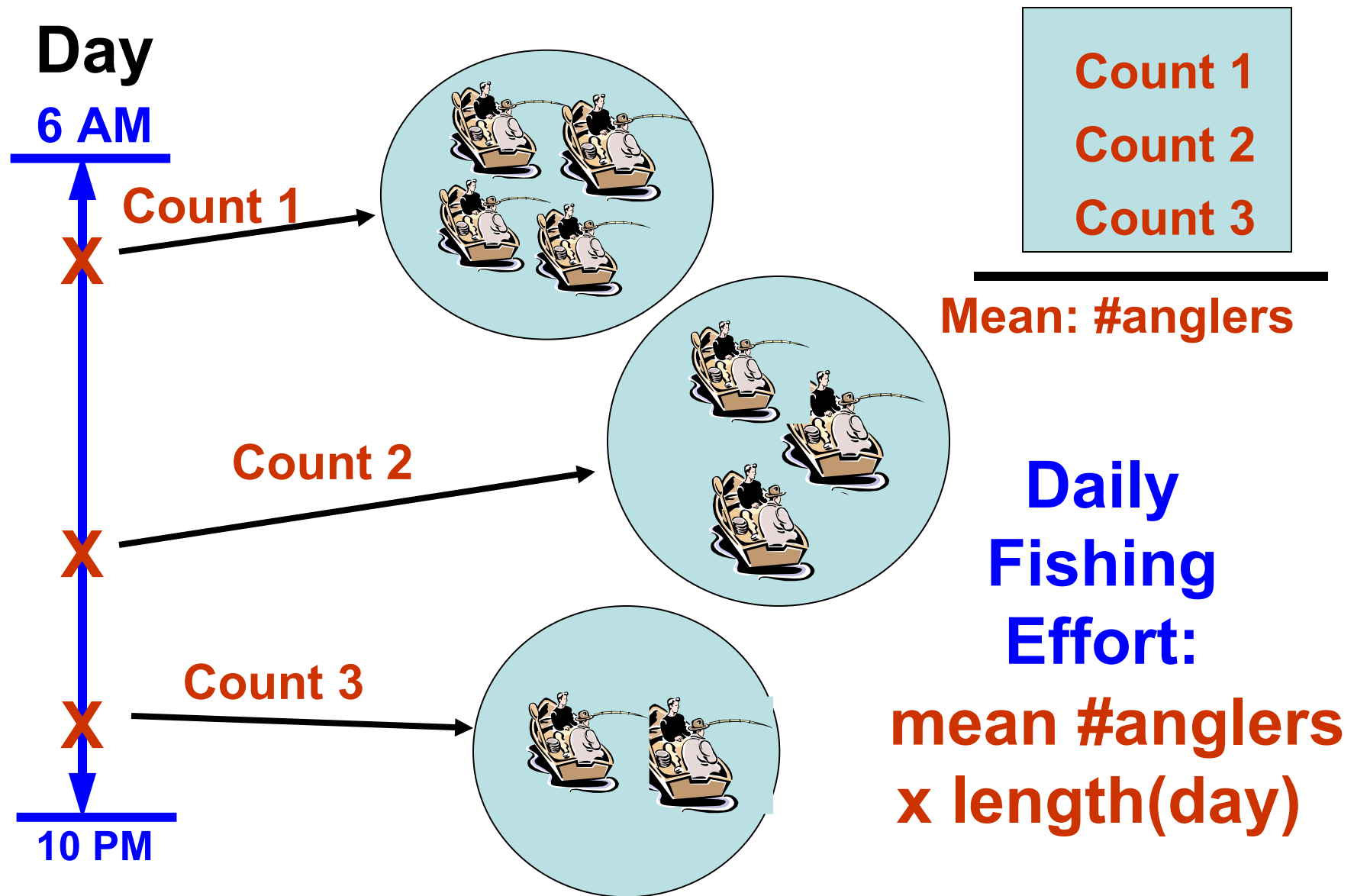
- What is creel survey?
- Components of a creel survey.
- Three software programs developed to aid in the creel survey design, data entry and estimation.

Creel Survey

A sampling technique to gather data on angling activities and harvest by interviewing anglers or angler parties and making counts of the number of them.

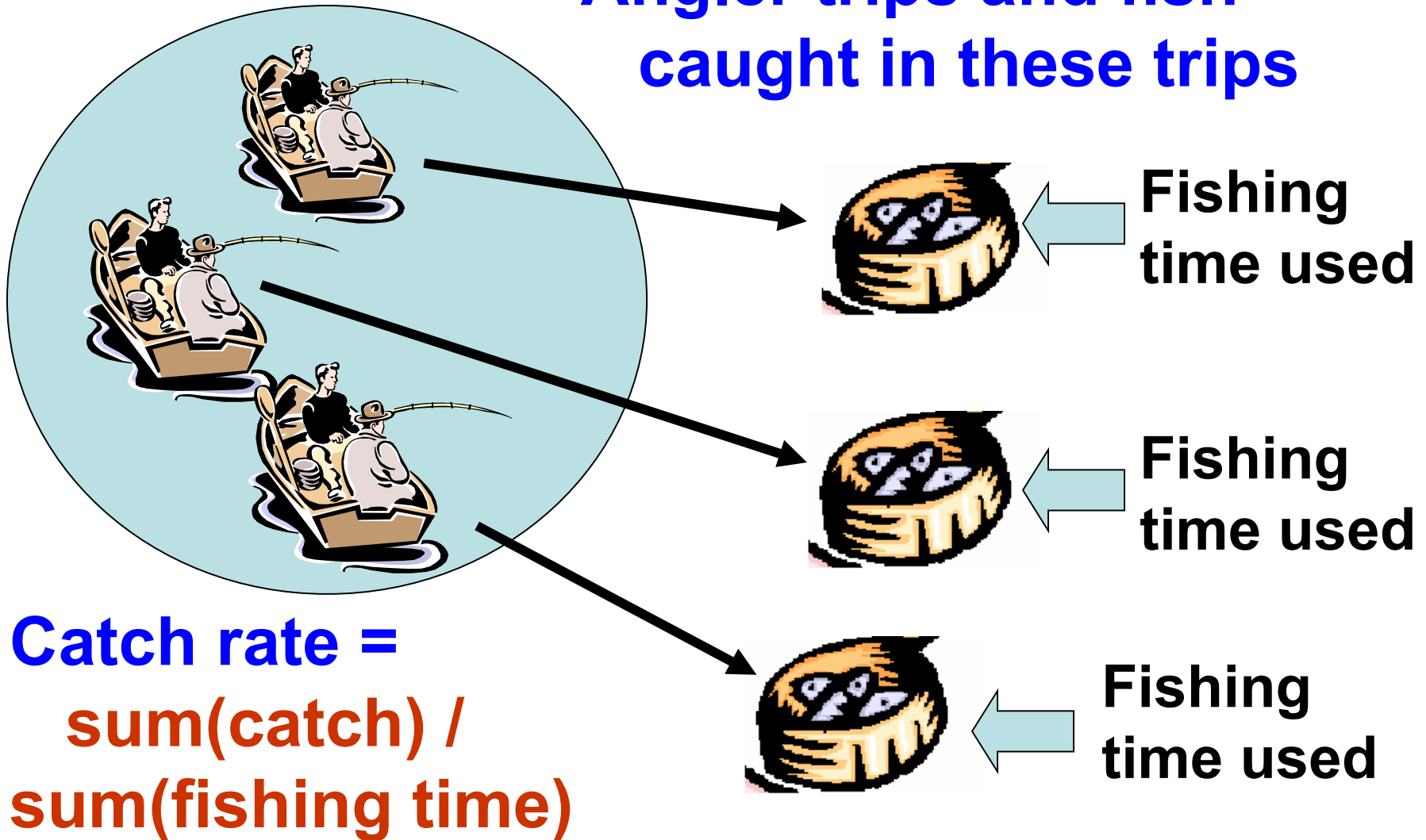


Data collected 1: counts of #anglers



Data collected 2: angling trips

Angler trips and fish caught in these trips



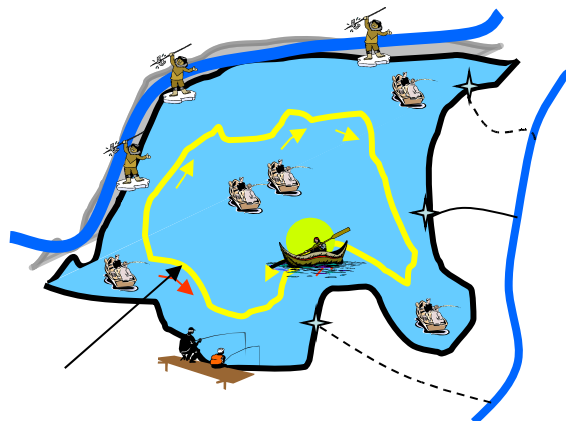
The need for sampling

- **Survey units: all the times available for fishing and all fishing trips in a survey period (such as a month) .**
- **Too expensive to make counts at all the times and to interview every angler on every day.**
- **Therefore, need to sampling aportion of the available fishing times and trips.**

Components of a creel survey

1. Planning and Design

SUNDAY	MONDAY	TUESDAY	WENESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2 Shift B {3CC} {2CW}{5:00 PM}	3 Shift A {1CC} {3CC}{8:00 AM}	4 Shift A {2CW} {1CC}{7:00 AM}	5	6 Shift A {2CW} {2C AM}
7 Shift B {3CW} {1CW}{7:00 PM}	8	9	10 Shift B {2CC} {1CC}{3:00 PM}	11 Shift A {3CW} {3CW}{10:00 AM}	12 Shift B {1CW} {2CC}{3:00 PM}	13 Shift B {1CW} {3C PM}
14 Shift A {3CC} {3CW}{11:00 AM}	15 Shift A {1CW} {1CC}{11:00 AM}	16 Shift B {2CC} {2CW}{7:00 PM}	17	18	19 Shift B {3CW}{7:00 PM}	20 Shift B {2CW} {2C PM}
21 Shift B {1CC} {1CW}{5:00 PM}	22 Shift A {3CW} {3CW}{12:00 PM}	23	24	25 Shift B {1CC} {2CC}{4:00 PM}	26 Shift A {2CC} {1CC}{10:00 AM}	27 Shift A {2CC} {2C AM}
28	29	30	31			



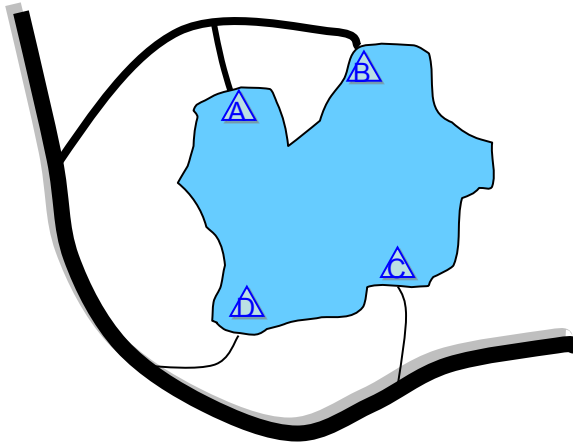
2. Implementation

Species	C/H	April-May	June	July	August	September
lmbr	0.0239 (0.0097)	1,316 (1,000)	401 (402)	848 (630)	935 (818)	619 (676)
waer	0.0036 (0.0022)	0 (0)	49 (71)	347 (328)	35 (71)	112 (145)
nopr	0.0280 (0.0098)	556 (553)	278 (293)	498 (408)	143 (175)	384 (329)
whbr	0.0008 (0.0010)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
cwsr	0.0003 (0.0007)	0 (0)	80 (121)	0 (0)	0 (0)	0 (0)
rkbr	0.0133 (0.0078)	219 (375)	194 (193)	153 (191)	897 (1,024)	153 (161)
bowr	0.0017 (0.0013)	16 (32)	134 (150)	41 (82)	35 (71)	71 (119)
blqr	0.2822 (0.0885)	4,740 (3,523)	8,435 (3,241)	4,359 (2,642)	1,863 (1,205)	3,946 (4,711)
psfr	0.0353 (0.0149)	1,506 (1,450)	1,462 (1,129)	2,059 (1,339)	0 (0)	58 (115)
yepr	0.2121 (0.0544)	2,122 (1,640)	6,733 (3,340)	3,346 (1,454)	1,971 (1,184)	3,234 (2,967)
TOTAL RELEASED	0.6171 (0.1273)	10,964 (4,341)	16,170 (4,835)	12,605 (3,465)	6,379 (2,170)	8,934 (5,632)
TOTAL CATCH	1.6398 (0.2855)	18,109 (5,285)	44,511 (10,349)	31,606 (8,046)	17,142 (4,926)	24,332 (11,002)
ANGLER HOURS	6,918 (2,713)	17,470 (5,543)	24,720 (5,737)	17,265 (4,120)	22,893 (15,978)	
ANGLER TRIPS	1,683 (671)	4,423 (1,439)	6,368 (1,506)	4,360 (1,078)	5,968 (4,402)	

3. Data Analysis

1. Plan and design a survey

1. Survey methods



Access Point Survey

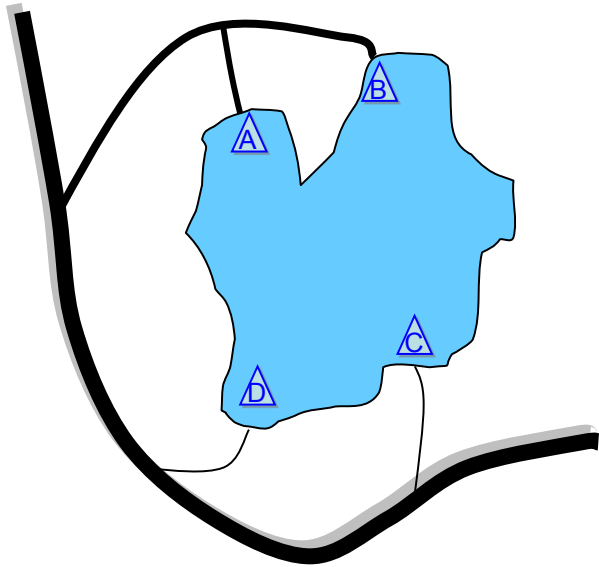


Roving Creel Survey

11. Survey Frame: all the fishing times and fishing trips.

13. Sample size: how many days should be sampled how many counts made per day in a survey period.

Sample selection: scheduling

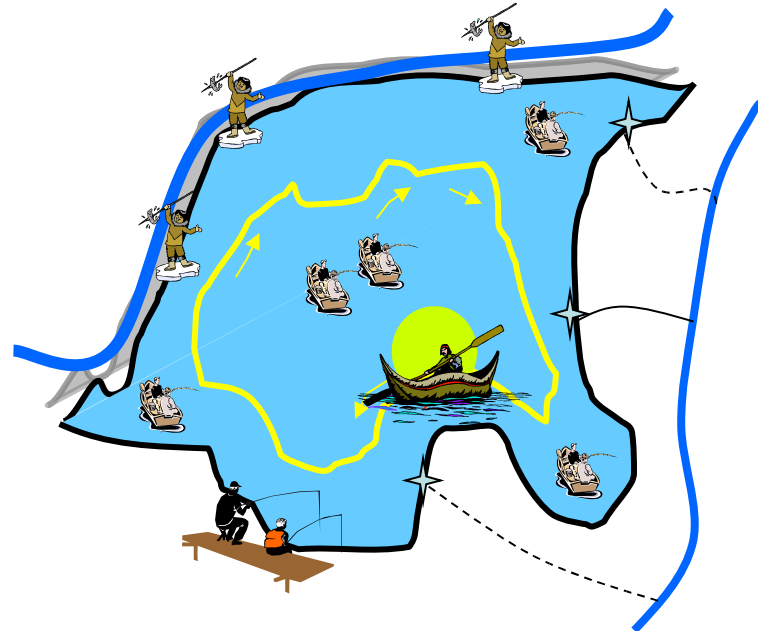


Roving Creel Surveys

2. Work days
3. Shifts
4. Interview start locations and directions
5. Count times
6. Count start locations and directions

Access Point Surveys

2. Work days
3. Site x Shift
4. Count times



MiCreel Designer

The screenshot shows the MiCreel Designer software interface. The title bar is 'Creel Design'. The menu bar includes 'File', 'Options', 'Make', and 'Help'. The toolbar contains icons for file operations and survey design. The main window has tabs for 'Design', 'Shifts', 'Sampling', and 'Options'. The 'Design' tab is active, showing various input fields and sections for survey design.

Water Body
InlandWater

Water Type
☒ Inland ☐ Great Lakes

Survey Period
Year: 2005
Start: January Day: 1
End: December Day: 31

Survey Method
☐ Traditional Access
☒ Roving-Roving
☐ Roving-Access
☐ Bus-Route Access

Sites
Number of Sites: 2
Sites per day: 1 ☒ Equal probability

Site	Site Name	Probability
1	s1	0.500
2	s2	0.500

Count method
Number of Counts: 1
Duration (min): 60

Roving Survey
Interview Start Locations: 3
☒ Choose a direction
Count Start Locations: 3
☒ Choose a direction

- Automate and standardize survey scheduling_
- Generate random schedules for several creel survey methods, multiple sites and varying number of shifts

MiCreel Designer generated schedule

August 2005						
SUNDAY	MONDAY	TUESDAY	WENESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2 Shift:B s2 {3 CC} { 2CW 5:00 PM}	3 Shift:A s1 {1 CC} { 3CC 6:00 AM}	4 Shift:A s2 {2 CW} { 1CC 7:00 AM}	5	6 Shift:A s2 {2 CW} { 2CW 7:00 AM}
7 Shift:B s2 {3 CW} { 1CW 7:00 PM}	8	9	10 Shift:B s1 {2 CC} { 1CC 3:00 PM}		12 Shift:B s1 {1 CW} { 2CC 3:00 PM}	13 Shift:B s2 {1 CW} { 3CW 5:00 PM}
14 Shift:A s2 {3 CC} { 3CW 11:00 AM}	15 Shift:A s1 {1 CW} { 1CC 11:00 AM}	16 Shift:B s2 {2 CC} { 2CW 7:00 PM}	17	18	19 Shift:B s1 {3 CW} { 3CW 7:00 PM}	20 Shift:B s1 {2 CW} { 2CC 4:00 PM}
21 Shift:B s1 {1 CC} { 1CW 5:00 PM}	22 Shift:A s2 {3 CW} { 3CW 12:00 PM}	23	24		26 Shift:A s1 {2 CC} { 1CC 10:00 AM}	27 Shift:A s1 {2 CC} { 2CC 7:00 AM}
28 Shift:A s2 {3 CC} { 1CC 1:00 PM}	29 Shift:A s1 {1 CC} { 2CC 6:00 AM}	30	31			

2. Implementation: conducted by creel clerks

Requirements

- Schedules are strictly followed.
- Fish species are correctly identified.
- Data are correctly entered.

Data entry and record

Scannable paper forms:.




- Easily make input errors.
- Hard to validate data entered.
- Need time to scan the forms.



PDA data entry:





- Less bubbles to fill.
- Data entered can be validated by several methods.
- Data can be used right away

MiCreel Data Assistant

 **MiCreel**   3:18

Work Directory

\Storage Card\Business\Creel ▼

  \\Storage Card\Business\Creel
 Int_chx_Mar_2006_1.txt
 Ont_chx_Mar_2006_1.txt


Select a file in the file view above and click a button to start




Interview

Count

Help

Exit

File About Options  ▲

 **MiCreel: Party**   2:11

Seq#
First in Party# 2

Notes
wind storm today ▲ ▼


Fishing Site
south arm ▼

Fishing Mode
boat ▼

No. of Anglers
0 ▲ ▼


No. of Trips
2 ▲ ▼

☐ Count

Number of Anglers 

Number of Anglers must be greater than 0

Cancel

 ▲

Features

- Check the integrity of an interview record: essential info must be entered.
- Check boxes, dropdown lists etc. are used to limit data entries.
- Range check, presence check, and length check are applied to data entry

The screenshot shows a data entry form with two validation pop-ups. The first pop-up, titled "Number of Anglers", appears because the "No. of Anglers" field contains the value 0. The second pop-up, titled "Harvest and Release", appears because the "Daily procession limit for walleye" field contains the value 5.



Form Fields:

- No. of Anglers:** A dropdown menu with the value 0 selected.
- No. of Trips:** A dropdown menu with the value 2 selected.
- Number of Anglers:** A text input field with the value 0.
- Number of Trips:** A text input field with the value 2.
- Number of Anglers:** A text input field with the value 0.
- Number of Trips:** A text input field with the value 2.
- Number of Anglers:** A text input field with the value 0.
- Number of Trips:** A text input field with the value 2.

Validation Messages:

- Number of Anglers:** Number of Anglers must be greater than 0
- Harvest and Release:** Daily procession limit for walleye is at most 5


Features

 MiCree! Time  2:12

Start Time Today

Date ☒ AM ☐ PM

Hour ☐ Half hour



1 2 3 4 5 6 7 8 9 10 11 12

**Fishing times are
double checked**

3. MiCreel Estimation Program

7 I:\InlandCreelSurvey\Creel_AI\2003\Tribal\Muskegon\winter\Muskegon sum_win2002-3 zs.mdb

File Edit Data Run Tools Report Window Help

site 310 md 1 mdc 1 vr 2 mon 4 spec

FishingHours

ID	WaterBody	Year
1	Muskegon Lake	
2	Muskegon Lake	
3	Muskegon Lake	
4	Muskegon Lake	

Interviews

ID	FishSite	mode	Year
284	310	6	
285	310	6	
319	310	6	

Counts

ID	Waterbody	FishSite
365	Muskegon Lake	
360	Muskegon Lake	
361	Muskegon Lake	

Output

angler hours/trip data summaries detailed estimates by mode and site by mode

Species	C/H	April-May	June	July	August	September	October
HARVEST							
coh	0.0005 (0.0007)	0 (0)	0 (0)	0 (0)	0 (0)	85 (121)	7
chs	0.0055 (0.0047)	81 (90)	0 (0)	0 (0)	0 (0)	871 (825)	0
rht	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	14 (27)	0
bnt	0.0015 (0.0027)	32 (47)	245 (491)	0 (0)	0 (0)	0 (0)	0
smb	0.0009 (0.0011)	0 (0)	0 (0)	161 (192)	0 (0)	0 (0)	7
wae	0.0116 (0.0048)	65 (83)	147 (254)	489 (377)	72 (102)	415 (498)	3
yep	0.4784	3,288	15,313	5,354	5,028	5,872	4

Tables Log Error log Field Names Options Sort Filter Locate

Table	Field(s)	Table summary
Muskegon_counts	ID	
Muskegon_counts_sum	WaterBody	
Muskegon_counts_win	Year	
Muskegon_interviews	Month	
Muskegon_interviews_sum	Start1stShift	
Muskegon_interviews_win	EndLastShift	
MuskegonFishingHours	Expansion	

:0 1 of 11 Unmodified

Start I:\V... Mic... W Mic... Cr... un... Mic...

- Estimate fishing effort, catch rate and catch by species for both access points and roving surveys.
- Generate reports for the survey.

Species	C/H	April-May	June	July	August	September	October	November	January	February	March	Season
Imbr	0.0239 (0.0097)	1,316 (1,000)	401 (402)	848 (630)	935 (818)	619 (676)	60 (94)	41 (82)	86 (127)	0 (0)	0 (0)	4,304 (1,648)
waer	0.0036 (0.0022)	0 (0)	49 (71)	347 (328)	35 (71)	112 (145)	38 (77)	72 (70)	0 (0)	0 (0)	0 (0)	654 (387)
nopr	0.0280 (0.0098)	556 (553)	278 (293)	498 (408)	143 (175)	384 (329)	263 (219)	381 (343)	479 (492)	955 (683)	1,109 (1,011)	5,046 (1,611)
whbr	0.0008 (0.0010)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	148 (171)	0 (0)	148 (171)
cwsr	0.0003 (0.0007)	0 (0)	60 (121)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	60 (121)
rkbr	0.0133 (0.0078)	219 (375)	194 (193)	153 (191)	897 (1,024)	153 (161)	507 (685)	20 (40)	208 (338)	44 (88)	0 (0)	2,396 (1,372)
bowr	0.0017 (0.0013)	16 (32)	134 (150)	41 (82)	35 (71)	71 (119)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	298 (222)
blgr	0.2822 (0.0885)	4,740 (3,523)	6,435 (3,241)	4,359 (2,642)	1,863 (1,205)	3,946 (4,711)	3,758 (3,063)	0 (0)	2,492 (1,711)	6,964 (6,676)	16,250 (9,667)	50,808 (14,278)
psfr	0.0353 (0.0149)	1,506 (1,450)	1,482 (1,129)	2,059 (1,339)	0 (0)	58 (115)	577 (775)	20 (40)	460 (707)	0 (0)	210 (422)	6,351 (2,542)
yepr	0.2121 (0.0544)	2,122 (1,640)	6,733 (3,340)	3,346 (1,454)	1,971 (1,184)	3,234 (2,967)	615 (746)	204 (252)	5,957 (4,055)	9,855 (4,072)	4,156 (2,786)	38,194 (8,220)
TOTAL RELEASED	0.6171 (0.1273)	10,964 (4,341)	16,170 (4,835)	12,605 (3,465)	6,379 (2,170)	8,934 (5,632)	5,848 (3,328)	770 (445)	9,703 (4,499)	18,010 (7,852)	21,726 (10,120)	111,110 (16,919)
TOTAL CATCH	1.6398 (0.2855)	18,109 (5,285)	44,511 (10,349)	31,606 (6,046)	17,142 (4,926)	24,332 (11,002)	11,676 (4,244)	2,879 (1,005)	27,039 (8,502)	56,023 (13,815)	61,953 (18,856)	295,270 (30,896)
ANGLER HOURS		6,918 (2,713)	17,470 (5,543)	24,720 (5,737)	17,265 (4,120)	22,893 (15,978)	3,706 (1,447)	4,198 (1,486)	22,940 (10,523)	38,993 (10,807)	20,960 (7,253)	180,064 (25,054)
ANGLER TRIPS		1,683 (671)	4,423 (1,439)	6,368 (1,506)	4,360 (1,078)	5,968 (4,402)	1,126 (493)	1,062 (387)	6,133 (2,748)	9,781 (2,835)	4,914 (1,749)	45,819 (6,661)

Summary

- To plan, schedule, and execute an creel survey, and to analyze the data is a demanding task.
- The scheduling and estimation programs greatly speed up the scheduling and estimation processes.
- The data entry program makes creel surveys a pleasure; it also ensures that data are correctly entered and validated.