

## Sea Urchin Zone Council Meeting Summary March 22, 2018 in Ellsworth, ME

**DMR staff:** Maggie Hunter, Robert Russell, Carl Wilson, Mike Kersula, Troy Dow (MP Sgt), Rustin Ames (MPO) and Melissa Smith.

**SUZC members present:** Brian Preney, Steve Eddy, Alan Knowlton, Larry Harris, Teresa Johnson, Joe Leask, Sinuon Chau, Tim Peterson, Mark Nickerson, Clint Richardson, and Chuon Muth.

**SUZC members absent:** John Dray, Chenda Doeur and Tracey Sawtelle.

**Public:** David Tarr, Rodney Dame, Sam Samoin, Atchan Tamaki, Schuyler Belle, Robert Hersey Jr, James McMillan, Brian Chadwick, James Campbell, Todd Gray, Shane Miller, Marcus Jones, Brian Chadwick, Tom Reno, Fred Gray, and Brian Swartz

### Sea Urchin Zone Council Research Subcommittee Meeting Summary

**Meeting commenced at 2:06pm.**

Update on general research programs (Larry G. Harris, Chair):

- No projects currently in development, nor any outstanding proposals seeking funding
- Offered to provide recruitment/collectors to any parties interested in setting plates out and, upon return of plates, complete analysis of specimens on the collectors
  - Collectors should be placed in locations by late May

With the impending sunset of the Cat Ledges Targeted closure (Chapter 26.20 (1) sunsets May 1, 2018), M. Smith asked for input or comment regarding the future status on Cat Ledges Area. L. Harris recommended a refocus of efforts to complement DMR's Blue Hill Bay Experimental Area. B. Preney also provided summary information pertaining to his last site visit during late summer 2017 to all three station locations. Very few urchins were observed and a new seaweed was present in the entire area that was unfamiliar (purple in color and string-like). B. Preney also considers the project complete and supported the recommendation to allow the area to reopen.

Update on Blue Hill Bay Experimental Area (M. Hunter):

See **Appendix A** for M. Hunter's slides. The summary of information from the first year of the Blue Hill Bay (BHB) tracking project indicated that 20 trackers were assigned to harvesters; 4 of which were never turned on. From the 16 active trackers, 4 were placed on drag vessels and 12 on dive vessels. At the end of the season, 4 druggers and 11 dive boats with 20 divers fished in BHB at least one day. A total of 12,759 pings representing fishing effort were recorded. The area of BHB that requires trackers for entry is approximately 271 km<sup>2</sup> of water. From tracking information, 11 km<sup>2</sup> of water area of the bay were utilized for urchin harvesting; this represents 4%.

Update on future projects from other research institutions (C. Wilson):

Bigelow is working on a study on algal communities and re-assessing how the communities have evolved over the last ten years. Urchins have not come back and the algal communities have changed dramatically and so what is the link within those algal/urchin ecosystems. Doug Rasher with Bigelow will be working on this topic.

Update on urchin aquaculture (S. Eddy):

Steve Eddy at Center for Cooperative Aquaculture Research is focused on increasing sea urchin production for 2018. Product is intended to be placed in waters managed by Dave Quimby. S. Eddy notes that sea urchin aquaculture efforts have increased in Canada and will be something to keep an eye on. Also noted was the fact that Nova Scotia also has experienced die offs and researchers local to Nova Scotia suggest it's related to hurricane activity.

#### Updates/observations from harvesters:

Marcus Jones inquired about previous graduate research (Jonathan Onufryk) that focused on coelomic fluid extractions from urchins to determine auto immune response to elevated temperature. It was on 2015 that Robert Russell assisted with urchin collections for this research project through a special license to harvest. No update has been received. M. Smith has contacted the graduate student for follow-up information.

M. Jones also reported several repeated observations of surf clams lying on top of mud bottom and a "red fuzz" alga covering the clams, inside and out. M. Jones would be able to harvest a sample and send a frozen specimen to L. Harris for analysis. Observations include seeing wilted spines and urchins covered in red algae; seemed most prevalent around Blue Hill Bay. Also, noticed a white film (bacteria?) on a variety of seaweeds this season.

Mark Nickerson reported no red fuzz in his area (Zone 1).

Joe Leask has chosen several locations to drop collector plates and will work with L. Harris to assess whether year-round settlement may occur in these areas and to further determine recruitment potential in urchin barrens.

## **Sea Urchin Zone Council Meeting**

**Meeting commenced at 3:15pm**

### **Welcome & Introductions**

Vice Chair B. Preney welcomed the group and asked everyone to introduce themselves around the room, both council members and audience.

### **March 23, 2017 Meeting Summary**

L. Harris moved to accept; C. Richardson seconded the motion.

***VOTE: UNANIMOUS. Approval of minutes passed.***

### **Council Update:**

M. Smith provided a summary of council status. Election of officers (chair, vice chair) occur annually and require a renewal. By general consent, the SUZC tabled the discussion until the next meeting. The current balance of the Sea Urchin Research Fund (SURF) is \$136,614. Anticipated upcoming expenditures include council travel vouchers and the sea urchin survey. 2018 is the second year of the 2-year term elections and the elections process will commence in Fall 2018. Information surrounding the election process will be released in late summer. Future discussions on changes to limited access within the sea urchin fishery to develop measures for administering new licenses will be set for a later date in the summer.

### **DMR Updates:**

#### Landings

M. Hunter presented information from the current season's landings [**Appendix B**]. Total landings were 2,131,921 pounds with an estimated value of \$6.4 million. Average price for this season was \$2.99. There were 187 active harvesters, approximately 2/3 of available urchin licenses (302 total).

Row content was lower in Zone 1 than Zone 2, with an average of 9.5% and 12.9%, respectively. These averages were slightly higher than the previous season.

#### Picking Days Analysis

Regarding potential changes in effort due to picking of days to harvest, Zone 1 observed no changes in the average number of days fished per harvester. However, the average number of days fished per harvester in Zone 2 was higher (21 days) than the previous 3 seasons (18 days).

#### Urchin Survey Results

R. Russell reported the results of the last year's dive survey. Survey Region 3 (eastern Fishing Zone 1) had a dramatic decline. Most regions in Zone 2 were similar to or slightly better than the previous year. Two exceptions to this were Region 6

(Frenchmans Bay to Steuben) and Region 9 (Cobscook Bay). These two regions were near their lowest levels since the survey began in 2001. Regions 1 and 2 (west of Muscongus Bay) were not evaluated in 2017 to reduce survey costs.

### DMR Recommendations

- Repeat another year of data collection for Blue Hill Bay to collect additional tracking data, without closures
- Maintain pick your days style calendar
  - 15/20 for Zone 1; 38/45 for Zone 2

### Comments from 2017-18 Season

- Reduce overlap between Zone 1 and Zone 2 diving calendars
- No split calendar years for Zone 1 late dive calendar
- Dragging prohibited during September

C. Muth: there are overlap days of calendars (i.e. having later days on Zone 2 early drag calendar overlapping with Zone 2 late drag calendar) resulted in too much product being available and no market for the product.

### General discussion

Other topics to discuss at a later date:

- Zone separation (remove zones)
- Quota and days
  - Using swipe cards to re-evaluate the execution of the fishery
- Conservation measures for Zone 1
- Proposal to modify Zone 1 dive fishing to a lower daily tote limit over a longer number of harvest days

### **Discussion: Developing Calendar Recommendations for 2017-2018 Season**

M. Smith summarized the comments that were received during the season in relation to the calendar days: (1) reduce the overlap of dive days between zone 1 and zone 2; and, (2) avoid splitting zone 1 dive calendar over two calendar years. Regulations also stipulate that the harvesting of sea urchins is prohibited May 1<sup>st</sup> to August 31<sup>st</sup> with dragging for urchins also prohibited during the month of September.

M. Smith then instructed the audience and council members to split into 4 groups: zone 1 dive, zone 1 drag, zone 2 dive and zone 2 drag. Each table had copies of the previous 2 season calendars and a draft of a 2017/18 calendar based on dealer input as a starting point.

Once completed, 8 calendars were drafted for review, along with 2 calendars for limited access days in Whiting & Denny's Bays [**Appendix C**].

- Zone 1 Early Dive – 20 days: 17 days September, 3 days October
  - C. Richardson moved to accept; J. Leask seconded the motion. **VOTE: UNANIMOUS. Motion passed**
- Zone 1 Late Dive – 20 days: 11 days December, 3 days January, 6 days February
  - J. Leask moved to accept; C. Richardson seconded the motion. **VOTE: UNANIMOUS. Motion passed**
- Zone 1 Early Drag – 20 days: 20 days September
  - C. Richardson moved to accept; M. Nickerson seconded the motion. **VOTE: UNANIMOUS. Motion passed**
- Zone 1 Late Drag – 20 days: 12 days February, 8 days March
  - M. Nickerson moved to accept; C. Richardson seconded the motion. **VOTE: UNANIMOUS. Motion passed**
- Zone 2 Early Dive – 45 days: 6 days September, 14 days October, 13 days November, 12 days December
  - J. Leask moved to accept; T. Peterson seconded the motion. **VOTE: UNANIMOUS. Motion passed**
- Zone 2 Late Dive – 45 days: 11 days December, 14 days January, 12 days February, 8 days March
  - T. Peterson moved to accept; J. Leask seconded the motion. **VOTE: UNANIMOUS. Motion passed**
- Zone 2 Early Drag – 45 days: 14 days October, 12 days November, 13 days December, 6 January
  - J. Leask moved to accept; C. Richardson seconded the motion. **VOTE: UNANIMOUS. Motion passed**
- Zone 2 Late Drag – 45 days: 11 days December, 14 days January, 12 days February, 8 days March
  - T. Peterson moved to accept; M. Nickerson seconded the motion. **VOTE: UNANIMOUS. Motion passed**
- WDB Dive Calendar – 14 days: harvest on Thursdays
  - Discussion to amend harvest day from Tuesday to Thursday

- C. Richardson moved to accept; T. Peterson seconded the motion. **VOTE: UNANIMOUS. Motion passed**
- WDB Drag Calendar – 14 days: harvest on Wednesdays
  - C. Richardson moved to accept; M. Nickerson seconded the motion. **VOTE: UNANIMOUS. Motion passed**

**VOTE: UNANIMOUS. Motion passed.**

**Motion to propose an alternate calendar for Zone 1 early/late dive**

Propose 9 totes daily limit, with 20 harvest days in a 30 day calendar **[Appendix D]**.

C. Richardson moved to accept; J. Leask seconded the motion.

**VOTE: UNANIMOUS. Motion passed.**

**Other Business**

C. Muth described an interest by harvesters in Downeast Zone 2 to discuss closures or transplanting in and around Goose Island. This process would involve harvesting urchins from deeper waters and re-locating in/around Goose Island to determine feasibility and encourage better quality product for grow-out. M. Smith was contacted by Sgt Russell Wright on behalf of a group of harvesters interested in closing areas west of Cutler. M. Smith will reach out to industry to determine their objectives and goals for conservation management.

Tim Peterson brought forward a motion to recommend to the Commissioner an update to the language regarding totes: fill a standard size tote to the top and be level to allow a straight edge to swipe clear and use a standard cover. The rational is to minimize crushing of urchins, reduce exposure time to avoid freezing of product and ensure standardization among totes. M. Nickerson seconded the motion.

**VOTE: UNANIMOUS. Motion passed.**

**Next Meeting**

Next meeting has been set for April 30, 2018 in Augusta to discuss several of the topics mentioned during general discussion.

**Motion to adjourn**

J. Leask motioned to adjourn meeting; M. Nickerson seconded the motion.

**VOTE: UNANIMOUS. Meeting adjourned.**

Appendix A

M. Hunter's update on Blue Hill Bay Experimental Area.

### Blue Hill Bay Sea Urchin Project



### The DMR believes

- The resource and the fishery have a future
  - We are in it for the long haul
  - A viable fishery is important for the State of Maine
- The long-term goal is to rebuild the resource to 2001 levels and match a 2015 fishing rate to it
  - 4 to 5 million pound fishery
- Short-term experiments can inform goal
  - Develop a common language to proceed

### What defines the area

#### Why Blue Hill Bay

- Desire to work in a productive area
  - Approximately 5% of landings
- Mix of sizes from DMR survey
- Ability to access and monitor
- Scallop rotation
- Minimize impact to industry



### Experimental Area – Blue Hill Bay

- Year 1 – open
  - Evaluate fishing patterns
  - Develop survey methods
  - Work with industry to identify closures
- Year 2 – 50% closure
- Year 3 – 25% closure
- Year 4 – 12% closure
- Year 5 - open

### Experimental Area – Blue Hill Bay

- Year 1 – open
  - Evaluate fishing patterns
  - Develop survey methods
  - Work with industry to identify closures
- Year ~~2~~ – 50% closure
- Year 3 – 25% closure
- Year 4 – 12% closure
- Year 5 - open

### Trackers from Faria Beede

- Required to fish in area
- DMR will supply first 30 units + data
  - \$250 + \$20/mo
- Confidential data
- Harvesters will have access to their own data
- Trackers will continue to ping regardless of location
- Ping rate 1/min (1/hr if stationary)





## Summary - Preliminary

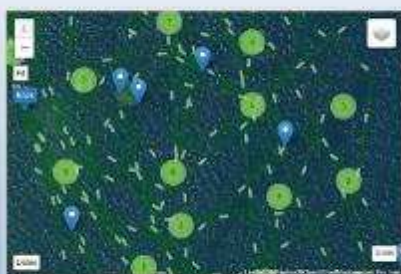
- 20 Trackers were given out
- 4 were never turned on
- 16 transmitted data, from
- 4 Draggers, 12 Dive boats
- The 12 dive boats carried 23 divers
- 1 of the dive boats never fished in BHB, so
- 4 draggers and 11 dive boats with 20 divers fished in BHB at least one day

## What do the Data Look Like? Using the Faria Beede website....



Removing all points on land left us with about 80,000 data points.

## What do the Data Look Like?



## What do the Data Look Like?



About 4.5 hours urchin dragging, about 1/4 square mi

## What do the Data Look Like?



About 56 minutes of diving

## What do the Data Look Like?



Different boat, about 1 hr 15 mins of diving

## What do the Data Look Like?



Transiting was excluded by removing points with speeds greater than about 5 kt.

## Some Basic Statistics



- The area in Blue Hill Bay where trackers are required represents 271 km<sup>2</sup> (~104 mi<sup>2</sup>) of water.
- After removing pings from land, from transiting, and from a mooring area in Bartlett Narrows, there were 12,759 pings representing fishing effort within Blue Hill Bay.
- Buffering these filtered pings by 50m to create polygons of areas fished revealed that approximately 11 km<sup>2</sup> (~4 mi<sup>2</sup>) of the water area of the bay were utilized for urchin harvesting (4%)

## Some Basic Statistics

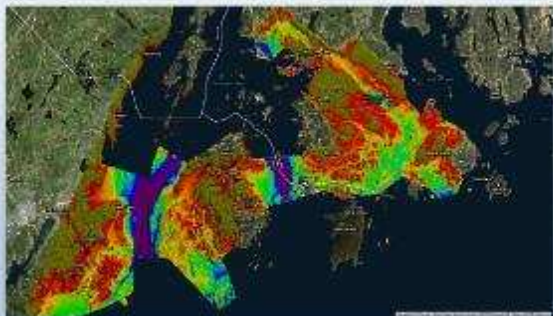


- We noted that one small region in the bay accounted for about half the fishing effort, in a harvest area of about 4.6 km<sup>2</sup> (< 2 mi<sup>2</sup>).
- The total effort expended at filtered pings for Blue Hill Bay was 744 fishing hours, with 350 hours of this effort being spent within this small region.

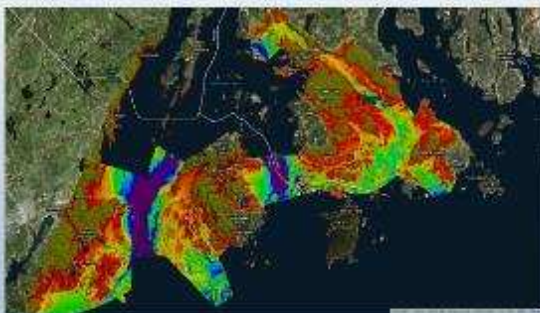
## Further Analyses

- Remove movements (pings) from non-urchin fishing days
- Using swipe card data, associate urchin landings (urchin removals) with fishing areas
- Continue surveying areas to evaluate stock abundance and impacts of fishing and recovery
- ....

### Other Research Efforts



### Other Research Efforts





**Appendix B**

M. Hunter's slides on preliminary landings data for 2017-18 and assessment of picking days.

**Maine Sea Urchin Landings In Pounds**

2017-2018 Maine Sea Urchin Landings (lbs) by Zone, Gear, and Month

	Zone 1		Zone 2		State Total
	Dive & Drag Total	Dive	Drag	Total	
Sep	109,936	76,731	0	76,731	186,667
Oct	13,751	132,675	148,022	280,697	294,448
Nov	0	145,288	181,504	326,792	326,792
Dec*	81,709	200,314	141,537	341,851	423,560
Jan	0	184,282	105,450	289,732	289,732
Feb*	66,890	229,895	164,546	394,241	461,131
Mar*	-	72,753	76,838	149,591	149,591
<b>Total</b>	<b>272,286</b>	<b>1,041,738</b>	<b>817,897</b>	<b>1,859,635</b>	<b>2,131,921</b>

\* December Zone 1 dragger data were combined with December Zone 1 divers, and February-March Zone 1 dragger data were combined with February Zone 1 divers, to preserve confidentiality.

All data are preliminary.

**Maine Sea Urchin Landings In Pounds**

2017-2018 2016-2017

	Zone 1		Zone 2		State Total		Zone 1		Zone 2		State Total
	Dive & Drag	Dive	Drag	Total			Dive & Drag	Dive	Drag	Total	
Sep	109,936	76,731	0	76,731	186,667	Sep	136,313	94,523	0	230,836	
Oct	13,751	132,675	148,022	280,697	294,448	Oct	0	310,200	310,200	310,200	
Nov	0	145,288	181,504	326,792	326,792	Nov	0	255,756	285,756	285,756	
Dec**	81,709	200,314	141,537	341,851	423,560	Dec	160,117	488,147	588,264	588,264	
Jan	0	184,282	105,450	289,732	289,732	Jan	0	277,210	277,210	277,210	
Feb*	66,890	229,895	164,546	394,241	461,131	Feb	0	258,132	258,132	258,132	
Mar*	-	72,753	76,838	149,591	149,591	Mar	0	323,029	323,029	323,029	
<b>Total</b>	<b>272,286</b>	<b>1,041,738</b>	<b>817,897</b>	<b>1,859,635</b>	<b>2,131,921</b>	<b>Total</b>	<b>296,430</b>	<b>1,735,103</b>	<b>2,031,535</b>	<b>2,031,535</b>	

About 40,000 more lbs caught in 2017-18 than 2016-17.

Red indicates months when values were lower than last season's, and blue indicates months that were higher.

All data are preliminary.

**Maine Sea Urchin Price per Pound in Dollars**

2017-2018 2016-2017

	Zone 1			Zone 2			Both			Zone 1	Zone 2	Both	
	Dive & Drag Total	Dive	Drag	Total	Dive	Drag	Total	Dive	Drag				Total
Sep	\$1.98	\$2.67	\$2.67	\$2.26	Sep	\$2.13	\$3.12	\$2.45	Sep	\$2.13	\$3.12	\$2.45	
Oct	\$1.89	\$2.90	\$2.74	\$2.84	\$2.77	Oct	\$2.97	\$2.59	\$2.78	Oct	\$2.97	\$2.59	\$2.78
Nov		\$3.45	\$3.09	\$3.25	\$3.25	Nov	\$3.67	\$3.67	\$3.67	Nov	\$3.67	\$3.67	\$3.67
Dec*	\$2.59	\$3.96	\$3.03	\$3.56	\$3.49	Dec	\$2.24	\$3.92	\$3.54	Dec	\$2.24	\$3.92	\$3.54
Jan		\$3.80	\$2.70	\$3.39	\$3.39	Jan	\$3.88	\$3.88	\$3.88	Jan	\$3.88	\$3.88	\$3.88
Feb*	\$2.62	\$3.24	\$2.39	\$2.87	\$2.85	Feb	\$3.07	\$2.99	\$3.03	Feb	\$3.07	\$2.99	\$3.03
Mar*		\$2.99	\$2.13	\$2.36	\$2.36	Mar	\$2.82	\$2.82	\$2.82	Mar	\$2.82	\$2.82	\$2.82
<b>Total</b>	<b>\$2.20</b>	<b>\$3.39</b>	<b>\$2.74</b>	<b>\$3.10</b>	<b>\$3.09</b>	<b>Total</b>	<b>\$2.19</b>	<b>\$3.46</b>	<b>\$3.28</b>	<b>Total</b>	<b>\$2.19</b>	<b>\$3.46</b>	<b>\$3.28</b>

- 2017-2018 prices were lower than 2016-2017, but higher than all other seasons except 2012-2013 (\$3.11).
- Overall landed value was \$6.4 million vs \$6.8 million in 2016-2017, higher than all other seasons since 2003-04.

Red indicates months when values were lower than last season's.

All data are preliminary.

**Maine Sea Urchin Roe Index (%)**

2017-2018 2016-2017

	Zone 1			Zone 2			Both			Zone 1	Zone 2	Both	
	Dive & Drag Total	Dive	Drag	Total	Dive	Drag	Total	Dive	Drag				Total
Sep	8.4	12.3	17.3	17.3	10.0	Sep	7.9	11.5	8.9	Sep	7.9	11.5	8.9
Oct	8.2	12.1	11.6	12.3	12.1	Oct	11.4	11.4	11.4	Oct	11.4	11.4	11.4
Nov		13.5	11.6	12.4	12.4	Nov	11.7	11.7	11.7	Nov	11.7	11.7	11.7
Dec*	10.3	14.8	11.3	12.8	12.3	Dec	9.5	11.0	11.5	Dec	9.5	11.0	11.5
Jan		14.8	11.8	13.7	13.7	Jan	12.4	12.4	12.4	Jan	12.4	12.4	12.4
Feb*	10.5	14.7	11.5	13.3	13.3	Feb	12.8	12.6	12.7	Feb	12.8	12.6	12.7
Mar*		17.3	11.2	13.2	13.2	Mar	15.2	15.1	15.1	Mar	15.2	15.1	15.1
<b>Total</b>	<b>9.5</b>	<b>14.0</b>	<b>11.6</b>	<b>12.9</b>	<b>12.5</b>	<b>Total</b>	<b>8.8</b>	<b>12.1</b>	<b>11.6</b>	<b>Total</b>	<b>8.8</b>	<b>12.1</b>	<b>11.6</b>

Roe indices were higher in 2017-2018 than 2016-2017.

Red indicates months when values were less than last year's total.

All data are preliminary.

**Number of Active Urchin Harvesters (fished at least twice)**

	2017-2018			2016-2017		
	Divers	Dragers	Total	Divers	Dragers	Total
Zone 1	28	5	33	34	8	42
Zone 2	78	76	154	75	81	156
<b>Total</b>	<b>106</b>	<b>81</b>	<b>187</b>	<b>109</b>	<b>89</b>	<b>198</b>

Preliminary data as of 3/15/18. Preliminary data as of 9/11/17.

	2017 Sea Urchin Licenses				
	Divers	Dragers	Rake	Link	Total
Zone 1	41	33	1	1	55
Zone 2	105	133	1	8	247
<b>Total</b>	<b>146</b>	<b>146</b>	<b>1</b>	<b>9</b>	<b>302</b>

**Results of "Pick Your Days" (15 of 20 for Zone 1, 38 of 45 for Zone 2)**

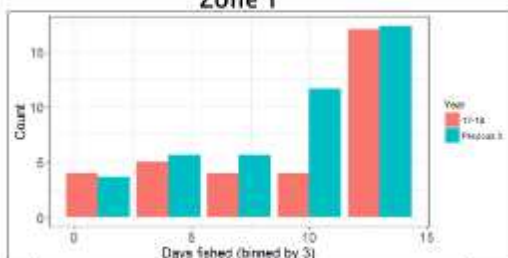
**2017-2018 Number of Harvesters and How Many Days they Fished**

	Zone 1 Days					Total
	1	2-9	10-14	15	20	
Early Dive	0	3	7	5		15
Late Dive	1	5	6	2		14
Dragers	0	4	1	0		5
<b>Total</b>	<b>1</b>	<b>12</b>	<b>14</b>	<b>7</b>	<b>15</b>	<b>47</b>

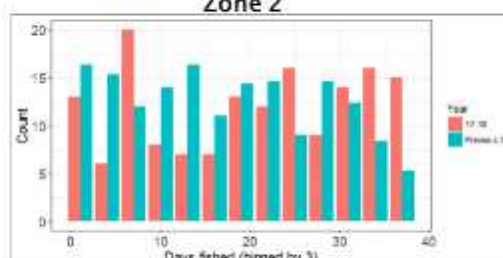
	Zone 2 Days					Total
	1	2-9	10-24	25-37	38	
Early Dive	0	4	6	16	3	29
Late Dive	1	11	16	18	4	50
Early Drag	1	3	10	19	0	33
Late Drag	4	17	18	8	1	48
<b>Total</b>	<b>6</b>	<b>35</b>	<b>50</b>	<b>51</b>	<b>8</b>	<b>150</b>

**"Pick Your Days" - How does 2017-18 compare with past seasons? Zone 1**



Average number of days fished per harvester was not different from previous 3 seasons (10 days).

**"Pick Your Days" - How does 2017-18 compare with past seasons? Zone 2**



Average number of days fished per harvester was higher (21) than previous 3 seasons (18 days).



**Appendix C**

Calendars approved by the Sea Urchin Zone Council for consideration by the DMR for proposed rulemaking at the March 22 meeting in Brewer, ME.

**ZONE 1 EARLY DIVE**

September 2018						
S	M	Tu	W	Th	F	S
						1 o
2	3 o	4 o	5 o	6 o	7 o	8
9	10 o	11 o	12	13 o	14 o	15
16	17 o	18 o	19	20 o	21 o	22
23	24 o	25 o	26	27 o	28 o	29
30						

17

October 2018						
S	M	Tu	W	Th	F	S
	1 o	2 o	3 o	4	5	6
7	8 o	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

3

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22 o	23	24
25	26	27	28	29	30	

0

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25 o	26	27	28	29
30	31					

0

 Holiday

Total Days

20

**ZONE 1 LATE DIVE**

September 2018						
S	M	Tu	W	Th	F	S
						1
2	3 o	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

0

October 2018						
S	M	Tu	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

0

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22 o	23	24
25	26	27	28	29	30	

0

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3 o	4 o	5 o	6	7	8
9	10 o	11 o	12 o	13	14	15
16	17 o	18 o	19 o	20	21	22
23	24	25 o	26	27 o	28 o	29
30	31					

11

January 2019						
S	M	Tu	W	Th	F	S
		1 o	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28 o	29 o	30 o	31		

3

February 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4 o	5 o	6	7	8	9
10	11 o	12 o	13	14	15	16
17	18 o	19 o	20	21	22	23
24	25	26	27	28		

6

March 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

0

Total Days

20

### ZONE 1 EARLY DRAG

September 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

0

October 2018						
S	M	Tu	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

0

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

0

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

20

Total Days

20

### ZONE 1 LATE DRAG

September 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

0

October 2018						
S	M	Tu	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

0

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

0

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

0

January 2019						
S	M	Tu	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

0

February 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

12

March 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

8

Total Days

20

### ZONE 2 EARLY DIVE

September 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

6

October 2018						
S	M	Tu	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

14

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

13

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

12

Total Days

45

### ZONE 2 LATE DIVE

September 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

0

October 2018						
S	M	Tu	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

0

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

0

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

11

January 2019						
S	M	Tu	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

14

February 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

12

March 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

8

Total Days

45

### ZONE 2 EARLY DRAG

September 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

0

October 2018						
S	M	Tu	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

14

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

12

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

13

January 2019						
S	M	Tu	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

6

February 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

0

March 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

0

Total Days  
45

### ZONE 2 LATE DRAG

September 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

0

October 2018						
S	M	Tu	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

0

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

0

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

11

January 2019						
S	M	Tu	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

14

February 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

12

March 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

8

Total Days  
45



# Whiting/Dennys Bays - Dive

**Proposed**

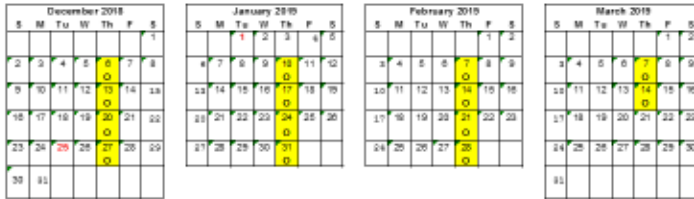
**2018-2019 Sea Urchin Season 14 Day Season for Whiting & Dennys Bays  
Limited Access Area (WDB LAA)**

☐ = Open      ☐ = Closed

Early Season for Divers, Rakers and Trappers



Late Season for Divers, Rakers and Trappers



# Whiting/Dennys Bays - Drag

**Proposed**

**2018-2019 Sea Urchin Season 14 Day Season for Whiting & Dennys Bays  
Limited Access Area (WDB LAA)**

☐ = Open      ☐ = Closed

Early Season for Draggers



Late Season for Draggers



**Appendix D**

Council recommendation of an alternate Zone 1 Early/Late Dive calendar under a 9 tote daily limit, 20 harvest days of a 30 day calendar.

**ZONE 1 EARLY DIVE NEW MOTION PROPOSAL**

September 2018						
S	M	Tu	W	Th	F	S
						1 o
2 o	3 o	4 o	5 o	6 o	7 o	8 o
9 o	10 o	11 o	12 o	13 o	14 o	15 o
16 o	17 o	18 o	19 o	20 o	21 o	22 o
23 o	24 o	25 o	26 o	27 o	28 o	29 o
30 o						
30						

October 2018						
S	M	Tu	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			
0						

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	
0						

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					
0						

PROPOSAL: HARVEST DAILY 9 TOTES, USING 20 HARVEST DATES ON A 30 DAY CALENDAR

Total Days  
**30**

**ZONE 1 LATE DIVE NEW MOTION PROPOSAL**

September 2018						
S	M	Tu	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						
0						

October 2018						
S	M	Tu	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			
0						

November 2018						
S	M	Tu	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	
0						

December 2018						
S	M	Tu	W	Th	F	S
						1
2	3 o	4 o	5 o	6 o	7 o	8
9	10 o	11 o	12 o	13 o	14 o	15
16	17 o	18 o	19 o	20 o	21 o	22
23	24	25	26	27 o	28 o	29
30	31					
17						

Total Days  
**30**

January 2019						
S	M	Tu	W	Th	F	S
		1	2	3	4	5
6	7 o	8 o	9 o	10	11	12
13	14 o	15 o	16 o	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		
6						

February 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5 o	6 o	7 o	8	9
10	11 o	12 o	13 o	14	15	16
17	18 o	19	20	21	22	23
24	25	26	27	28		
7						

March 2019						
S	M	Tu	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						
0						

PROPOSAL: HARVEST DAILY 9 TOTES, USING 20 HARVEST DATES ON A 30 DAY CALENDAR