

# Cost Analysis: BSAI Crab eLogbooks

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## 1 Introduction

NMFS requires daily fishing logbooks (DFLs) for catcher vessels and daily cumulative production logbooks (DCPLs) for catcher processors for vessels 60 feet length overall (LOA) or greater that participate in the Crab Rationalization (CR) Program fisheries in the Bering Sea and Aleutian Islands (BSAI).<sup>2</sup> The DFL/DCPL (hereafter, “logbooks”) is meant to account for each day of the fishing year (January 1 through December 31), indicating whether the vessel was active or inactive. In addition to vessel information, the DFL/DCPL includes a set-by-set breakdown of effort and catch. The vessel operator records the starting and ending latitude and longitude for each set, which is later translated into ADF&G statistical area. Additionally, each set includes soak time, pots depth, number of lost pots, and an estimate of the number of crab and their total estimated weight.

Although there is one crab catcher processor (CP) that voluntarily uses the NOAA electronic logbook, the rest of the crab vessel operators fill out paper logbooks. Some groundfish fleets have an electronic logbook (eLogbook) requirement or option. For instance, eLogbooks are required to be filled out by CPs using hook-and-line gear in the Pacific cod fishery, American Fisheries Act (AFA) pollock CPs, and Amendment 80 participants. The eLogbook requirement in these fisheries resulted from Amendment 91 to the Fishery Management Plan for Groundfish of the BSAI (75 FR 14015, March 23, 2010). Some catcher vessels (CV) using trawl gear have also used eLogbooks. It is not a requirement for the CV pollock vessels but many voluntarily use an eLogbook.

In April 2018, the Council received a proposal from the Pacific Northwest Crab Industry Advisory Committee (PNCIAC),<sup>3</sup> requesting the Council and NMFS develop and authorize eLogbooks for the BSAI king, Tanner and snow crab fisheries. In response, the Council initiated a discussion paper.

The discussion paper, presented in February 2019, included a description of the potential benefits of eLogbooks (see Section 2), the regulatory authority relating to logbooks, the use of the paper logbook in the BSAI crab fisheries, and a preliminary discussion of the costs and benefits of developing and implementing an eLogbook system. The Council’s February 2019 motion directed staff to conduct this cost analysis examining the costs for the Pacific States Marine Fisheries Commission (PSMFC) to develop and implement BSAI crab eLogbooks to replace the paper logbooks currently used in the CR Program. The Council did not specify whether an eLogbook program would be voluntary for the Crab

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<sup>2</sup> 50 CFR 679.5(c)(3)(i)(C)

<sup>3</sup> PNCIAC proposal: <http://npfmc.legistar.com/gateway.aspx?M=F&ID=dca44ed3-5b69-491f-821e-6d0d51b7d539.pdf>

Rationalization Program but PNCIAC has requested that, if it were made available, they would prefer it to be voluntary.

## **2 Background and Description of the Problem**

PNCIAC originally cited two reasons for their request to develop and allow crab eLogbooks. The first reason is to create a more efficient and timely reporting system. PNCIAC's problem statement says:

“... It is widely recognized that the paper program is cumbersome---it is labor intensive, costly and lacks timeliness, as reports have to be hand delivered in port. Once submitted, recording the data requires hand entries, whereas with an electronic program reports can be electronically generated by crab boat captains from the fishing grounds. It eliminates the need for hand entries. Electronic catch reporting will greatly improve timeliness, accuracy, and efficiency and it will be cost-effective.”

The second reason that PNCIAC asks for an eLogbook system to replace paper logbooks is in hopes that it will improve catch accounting and reduce management concerns associated with removing the prohibition on partial offloads of crab before returning to fish.<sup>4</sup> The prohibition against continuing to fish for CR crab after an offload has begun and until the offload is complete simplified port sampling and catch accounting, but the Council moved in December 2019 to remove the prohibition to allow the CR fisheries more flexibility.

However, in light of testimony received under the partial offloads agenda item in December 2019, it is unlikely that eLogbooks would solve the primary data quality concern associated with partial offloads. The concern was that crab from a first “round” of fishing (pre-partial offload) would be comingled with crab from a second “round” of fishing at the time of offload and thus catch could not be linked to a statistical area. ADF&G would have details of the statistical areas that were fished, but managers would not be able to link the retained crab to a statistical area unless crab from a first and second round of fishing were always kept in separate tanks. It was determined that eLogbooks would not enhance ADF&G's ability to edit the fish ticket to reflect catch by statistical area.

Understanding that the implementation of eLogbooks is not linked to the partial offloads issue, the reasons for considering eLogbooks are the timeliness and efficiency of catch accounting and cost minimization for ADF&G managers.

## **3 Use of DFL in the CR Program Fisheries**

In the CR Program fisheries, DFLs are primarily used by NOAA Office of Law Enforcement (OLE) for enforcement purposes and by ADF&G to collect catch and effort information by statistical area. The observer or dockside sampler collects one of the carbon copy pages from the DFL/DCPL for ADF&G. Often the DFL/DCPL provides the most detailed information on catch by statistical area. The DFL/DCPL is used to augment the State's confidential interview form (CIF) and expedite the interview process. After ADF&G staff manually enters this information into their system, the DFL/DCPL is used to edit fish tickets with updated data on catch and effort by statistical area. Fishermen are required to mail in a carbon copy of logbooks to OLE for all fishing.

## **4 Estimated Costs of Current Paper Logbooks**

Estimated Costs for ADF&G (personal communication, M. Westphal, E. Nichols, M. Stichert, 12/31/19)

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<sup>4</sup> <https://meetings.npfmc.org/CommentReview/DownloadFile?p=1e6200de-ab0b-49c6-97f2-fee5de9dfff0.pdf&fileName=MOTION%20C5%20.pdf>

ADF&G staff looked at two years that are likely to be representative of fisheries in the near future. 2015/16 was the last year that all of the main BSAI fisheries were open (Western Aleutian Islands golden king crab (WAG), Eastern Aleutian Islands golden king crab (EAG), Bristol Bay red king crab (BBR), Eastern Bering Sea Tanner crab (EBT), Western Bering Sea Tanner crab (WBT), and Bering Sea snow crab (BSS)). The total allowable catches (TACs) were comparatively lower for all fisheries except Tanner, which had high TACs that year. Staff also looked at 2018/19 when EBT was closed and the TACs were low for all open fisheries.

State samplers spend between 30 to 90 minutes on DFLs per delivery, with the specific time being fishery and trip dependent. Longer trips with more statistical areas tend to occur in the Aleutian Islands golden king crab fisheries (WAG and EAG) and also in snow crab. Red king crab and Tanner crab tend to have shorter trips. The number of trips and, thus, logbooks required is strongly correlated to TAC levels. ADF&G staff used the average DFL time of 1 hour across all fisheries in their calculations, with the minimum time being 30 minutes and the maximum being 90 minutes. Salary base for State samplers, including benefits but not overtime, is \$69.42 per hour. Between the two years, that provides a range of \$41,000 - \$71,000 spent annually on DFLs from the State's dockside sampling program (see Table 4-1).

**Table 4-1 Estimated Costs for ADF&G**

Fishery (2015/16)	BBR	WBT	EBT	BSS	EAG	WAG	TOTALS
TAC	9,974,000	8,396,000	11,272,000	40,611,000	3,310,000	2,980,000	
#Landings	152	240	202	390	34	50	1,068
#Vessels	64	62	49	74	3	2	254
#Logbooks	146	228	195	369	34	45	1,016
Time (MIN)	4,380	6,840	5,850	11,040	1,020	1,350	30,480
Cost (MIN)	\$5,067.70	\$7,913.95	\$6,7768.51	\$12,773.39	\$1,180.15	\$1,561.96	\$35,265.67
Time (MAX)	13,140	20,520	17,550	33,120	3,060	4,050	91,440
Cost (MAX)	\$15,203.11	\$23,741.85	\$20,305.53	\$38,320.17	\$3,540.45	\$4,685.89	\$105,797.00
Time (AVE)	8,760	13,680	11,700	22,080	2,040	2,700	60,960
Cost (AVE)	\$10,135.41	\$15,827.90	\$13,537.02	\$25,546.78	\$2,360.30	\$3,123.93	\$70,531.34

Fishery (2018/19)	BBR	WBT	EBT	BSS	EAG	WAG	TOTALS
TAC	4,308,000	2,439,000	-	27,581,000	3,856,000	2,500,000	
#Landings	121	101	-	313	47	36	618
#Vessels	55	101	-	61	3	3	158
#Logbooks	117	95	-	300	47	33	592
Time (MIN)	3,510	2,850	-	9,000	1,410	990	17,760
Cost (MIN)	\$4,061.11	\$3,297.48	\$0.00	\$10,413.09	\$1,631.38	\$1,145.44	\$20,548.50
Time (MAX)	10,530	8,550	-	27,000	4,230	2,970	53,280
Cost (MAX)	\$12,183.32	\$9,892.44	\$0.00	\$31,239.27	\$4,894.15	\$3,436.32	\$61,645.50
Time (AVE)	7,020	5,700	-	18,000	2,820	1,980	35,520
Cost (AVE)	\$8,122.21	\$6,594.96	\$0.00	\$20,826.18	\$3,262.77	\$2,290.88	\$41,097.00

Estimated Costs for NMFS

OLE uses DFLs/DCPLs for enforcement purposes. Once OLE receives DFLs/DCPLs from fishermen, OLE staff file them in their system. The storage is several filing cabinets per year, and after 2-3 years the pages are archived. Most of the DFLs/DCPLs logged by OLE are for groundfish. The cost to OLE for filing crab DFLs/DCPLs is estimated to be close to zero (personal communication, B. Pristas, 12/17/19).

NMFS staff also print and mail DFLs/DCPLs for CR fisheries each year in addition to annual updates associated with regulations. Estimated costs for printing, shipping, and Paperwork Reduction Act costs are as follows:

Date Printed	Type of Logbook	Number ordered	Total cost	Individual cost
12/22/16	Catcher Vessel Longline and Pot Gear	400	\$5245.50	\$13.11 each
12/22/16	Catcher/Processor Longline and Pot Gear	50	\$1049.70	\$20.99

Collection Title	Form	Description	Misc Costs
Paper Logbooks	Catcher vessel Longline/Pot gear DFL	Mail logsheets \$5 x 4 qtr x 118	\$2,360
	Catcher/Processor Longline/Pot gear DCPL	Mail logsheets \$5 x 4 qtr x 5	\$100

#### Estimated Costs to Industry

CR Program vessel operators must complete paper logbook entries as they fish. Depending on the interface, an eLogbook system could reduce the amount of time required to make entries and increase their accuracy.

### **5 Other Potential Benefits**

Electronic logbooks might provide additional functionality by integrating GPS information, which could help facilitate the development of spatial stock assessments. Additionally, eLogbooks could allow NMFS and ADF&G to receive logbook data more quickly, increasing efficiency for managers and stock assessment scientists who use the data.

### **6 Preliminary Estimate of Costs of eLogbooks**

PSMFC was asked to provide an estimate of costs associated with developing and implementing an eLogbook system for CR Program fisheries. After consulting with their software development staff, PSMFC estimated a range of \$200,000 - \$300,000 based on experience with eLogbooks (personal communication, D. Colpo, 12/13/19). This estimate is for labor development only and represents a one-time, upfront cost. \$50,000 of that total is estimated for the developers to do the research to determine what would need to be developed and the remainder is to build the eLogbook system. This estimate does not include servers, data entry staff, maintenance, troubleshooting software glitches, etc. PSMFC estimated ongoing annual costs of \$10,000 - \$20,000. These are considered soft estimates at this time. More accurate estimates would require more detailed information from industry on what functions they desire in an eLogbook interface.

In addition to the resources necessary to set up a quality eLogbook system, funds would need to be appropriated for hiring full-time technical support for the users that would operate the system. Based on the support required for the current eLogbooks programs, it is expected a CR program could require hiring three to four support staff at PSMFC. Crab vessels would need to have computers onboard that are compatible with an eLogbook system. Furthermore, the existing paper logbook system and associated infrastructure may need to be maintained if some operators continue to use paper logbooks during a transition phase, or if eLogbooks are not mandated in regulation and some vessel operators choose not to adopt them.

## **7 Next Steps**

Public input may inform the Council process on whether there is a continued interest in pursuing the development of an eLogbook for the BSAI crab fleet. If the Council feels it is able to identify a purpose and need statement and set of alternatives then it may also choose to initiate an initial review draft analysis that would consider federal regulatory changes to allow eLogbooks for CR Program fisheries.