

The Economics of Baitfish Transport
Between California and Hawaii Using Tanker-Trailer
Aboard Roll-On/Roll-Off Freighter

By

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The following series of tables were prepared in haste and with the benefit of a scant 2 months' experience in the business of the subject. They are intended, not as "The Word," but as a basis for discussion at the Baitfish Workshop. Roger Green supplied the basic information and guesses concerning costs, labor, mortality percentages, etc. Paul Callaghan did the work.

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This is a draft report distributed for information only in connection with the Tuna Baitfish Workshop. It will not be published in the present form and should not be cited in the literature.

Table 1. Fixed Costs Per Shipment^a for Three Alternative Methods of Shipping Live Bait

	Floating Receiver	Fixed Dockside Receiver	Direct Shipment ^f
<u>Cost Per Shipment:</u>			
<u>Labor:</u> ^b			
Boat to Receiver	24	24	
Receiver to Transport	24	24	24
Transport to Holding	12	12	12
	60	60	36
<u>Truck Tractor Rental:</u> ^c			
California	50	50	50
Hawaii	50	50	50
	100	100	100
<u>Shipping Charges</u>	1245	1245	1245
<u>Fuel:</u> ^d			
Tow Vessel	6	-	-
Transport	3	3	3
	9	3	3
<u>Oxygen</u>	3	3	3
<u>Applied Overhead</u> ^e	431	407	354
<u>Total Cost Per Shipment</u> ^a	<u>1848</u>	<u>1818</u>	<u>1741</u>

Notes:

- These are costs per shipment excluding the costs of purchase and feeding an inventory of bait in California
- Three men at four hours each for the loading process and two hours each for the unloading process.
- Estimated at \$25 per hour
- Estimated at \$.60 per gal.
- An application of the fixed overhead cost on the basis of an assumed 72 shipments per year (6 per mo.)
- Without "ageing" the bait as in either of the other two alternatives. Results in higher fish mortality.

Table 2 Annual Fixed Overhead^a for Three Alternative Methods of Shipping Live Bait

	Floating Receiver	Fixed Dockside Receiver	Direct Shipment
Fixed Overhead:			
Labor:			
Full Time ^b	15000	15000	15000
Dock Rental ^c	600	1320	600
Maintenance ^d	2662	1908	1725
Power, Water, Telephone	600	2400	300
Depreciation ^e	5325	3815	3450
Insurance + License ^f	426	305	276
Debt Service ^g	6390	4578	4140
Total Annual Overhead	<u>31003</u>	<u>29326</u>	<u>25491</u>

Notes:

- a) The yearly costs which will continue even if no bait is shipped during the year
- b) One full time person who will work out of his residence
- c) At \$.0275 per sq. ft.; 1500 sq. ft. for the floating receiver and direct shipment alternatives; 4000 sq. ft. for the fixed dockside receiver
- d) At 5 percent of total capital investment
- e) Over 10 yrs. using st line method
- f) Estimated at \$.80 per \$100 capital value
- g) Interest and debt amortization estimated at 12 percent of capital investment

Table 3

Capital Investment Necessary for Three Alternative Methods of Shipping Live Bait

	1	2	3	4	5	6
		Floating Receiver	Fixed Dockside Receiver		Direct Shipment	
1 Capital Investment:						
2 Floating Bait Receiver (1)		15000				
3 Bait Transporter (2 surplus)	5000		5000		5000	
4 Modifications (for two)	26000		26000		26000	
5		31000		31000		31000
6 Outboard Tow Vessel		3500				
7 Dockside Submersible Pump		3000		3000		3000
8 Maintenance Equipment		750		750		500
9 Dockside Holding Tanks (2)			1800			
10 Hoses			200			
11 Fittings			200			
12 Covers (2)			1200			
13				3400		
14 Total Capital Investment		53250		38150		34500
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17 Depreciation (10yr st. line)		5325		3815		3450
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Table 4 West Coast Inventory Size^a
(buckets)

Shipment Size	Mortality During Ageing ^b		Notes: a) Inventory necessary to maintain a rate of six shipments per month b) Assume a 10 day ageing period c) Dependent on size of shipment at the time of loading in Calif.
	33%	45%	
100 BU.	298	364	1
125 BU.	373	454	2
150 BU.	448	545	3
175 BU.	522	636	4
200 BU.	596	727	5

Table 5 Bait Purchase^a and Feeding Cost^b
Per Shipment
(dollars)

Shipment Size ^c	Mortality During Ageing		Notes: a) Price of bait in California is \$2.00 per bucket b) Feed consumption at \$20.00 per 1000 lbs of bait inventory Assume 7 lbs of bait per bucket c) At time of loading in California
	33%	45%	
100 BU.	319	390	11
125 BU.	399	486	12
150 BU.	480	582	13
175 BU.	558	680	14
200 BU.	632	778	15

Table 6 Bait Arrival in Honolulu (after ageing)
(buckets)

Shipment Size	Transit Mortality Rates				Note: Assuming 6 shipments per mo. a max. of 1080 BU. and a min. of 450 BU. will be available in Honolulu each month
	10%	15%	20%	25%	
100 BU.	90	85	80	75	22
125 BU.	112	106	100	94	23
150 BU.	135	128	120	113	24
175 BU.	158	149	140	131	25
200 BU.	180	170	160	150	26

Table 7 Bait Arrival in Honolulu (no ageing)
(buckets)

Shipment Size	Transit Mortality Rates			Note: Assuming 6 shipments per mo. a max. of 840 BU. and a min. of 240 BU. will be available in Honolulu each month
	30%	45%	60%	
100 BU.	70	55	40	33
125 BU.	88	68	50	34
150 BU.	105	82	60	35
175 BU.	122	96	70	36
200 BU.	140	110	80	37

Table 8 Cost of Bait Per Bucket in Honolulu^a
 Using a Fixed Dockside Receiver To Age Bait
 (dollars)

	1		2		3		4		5		6		7		8	
	Shipment Size		33% Mortality During Ageing		33% Mortality During Ageing		45% Mortality During Ageing		45% Mortality During Ageing		45% Mortality During Ageing		45% Mortality During Ageing		45% Mortality During Ageing	
	10%	15%	10%	15%	10%	15%	10%	15%	10%	15%	10%	15%	10%	15%	10%	15%
1	2374	2514	2671	2849	2453	2597	2760	2944	2453	2597	2760	2944	2453	2597	2760	2944
2	1979	2092	2217	2358	2057	2174	2304	2451	2057	2174	2304	2451	2057	2174	2304	2451
3	1702	1795	1915	2034	1778	1875	2000	2124	1778	1875	2000	2124	1778	1875	2000	2124
4	1504	1595	1697	1813	1581	1676	1784	1906	1581	1676	1784	1906	1581	1676	1784	1906
5	1364	1445	1535	1637	1442	1527	1622	1731	1442	1527	1622	1731	1442	1527	1622	1731
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Notes: a) Does not include distribution costs in Honolulu, but data include all acquisition, ageing, and transport costs.

Table 9 Cost of Bait Per Bucket in Honolulu^a
Using a Floating Receiver To Age Bait
(dollars)

Shipment Size	33% Mortality		During Aging		45% Mortality		During Aging	
	Transit Mortality		Mortality		Transit Mortality		Mortality	
	10%	15%	20%	25%	10%	15%	20%	25%
100 BU.	2408	2549	2709	2889	2487	2633	2798	2984
125 BU.	2006	2120	2247	2390	2084	2202	2334	2483
150 BU.	1724	1819	1940	2060	1800	1899	2025	2150
175 BU.	1523	1615	1718	1837	1600	1697	1806	1930
200 BU.	1381	1462	1554	1657	1459	1545	1641	1751

Notes: a) Does not include distribution costs in Honolulu, but does include all acquisition, aging, and transport costs

Table 10
 Cost of Bait Per Bucket in Honolulu^a
 Using Direct Shipment With No Ageing
 (dollars)

	Shipment Size	Transit Mortality		3	4	5	6	7	8	9
		30%	45%							
1	100 BU	2772	3529	4852						
2	125 BU	2262	2928	3982						
3	150 BU	1944	2489	3402						
4	175 BU	1714	2178	2987						
5	200 BU	1529	1946	2676						
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Notes: a) Does not include distribution cost in Honolulu, but does include all acquisition and transport costs.