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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 It will not be published in the present form and should not be cited in the literature.

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

	1	2	3	4	5	6
	Floating Receiver		Fixed Dockside Receiver		Direct Shipment[f]	
Cost Per Shipment:						
Labor[b]						
Boatboat to Receiver	24		24			
Receiver to Transport	24		24		24	
Transport to Holding	12		12		12	
		60		60		36
Truck Tractor Rental[c]						
California	50		50		50	
Honolulu	50		50		50	
		100		100		100
Shipping Charges		1245		1245		1245
Fuel[d]						
Tow Vessel	6		-		-	
Transport	3		3		3	
		9		3		3
Oxygen		3		3		3
Applied Overhead[e]		431		407		354
Total Cost Per Shipment[a]		1848		1818		1741

Notes:

a) These are costs per shipment excluding the costs of purchase and feeding an inventory of bait in California.

b) Three men at four hours each for the loading process and two hours each for the unloading process.

c) Estimated at $25 per hour

d) Estimated at $.60 per gal.

e) On application of the fixed overhead cost on the basis of an assumed 72 shipments per year (6 per mo.)

f) Without "aging" the bait as in either of the other two alternatives. Results in higher fish mortality.

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

	1	2	3	4	5	6
	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 + Licence[f]		426		305		276
Debt Service[g]		6390		4578		4140
Total Annual Overhead		31003		29326		25491

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

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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	
Capital Investment:						
Floating Bait Receiver (1)		15000				
Bait Transporter (2 surplus)	5000		5000		5000	
Modifications (for two)	26000		26000		26000	
		31000		31000		31000
Outboard Tow Vessel		3500				
Dockside Submersible Pump		3000		3000		3000
Maintenance Equipment		750		750		500
Dockside Holding Tanks (1)			1800			
Hoses			200			
Fittings			200			
Covers (2)			1200			
				3400		
Total Capital Investment		53250		38150		34500
Depreciation (10 yr st. line)		5325		3815		3450

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Table 4 West Coast Inventory Size[a]
(buckets)

Shipment Size[c]	Mortality During Ageing[b] 33%	45%
100 Bu.	298	364
125 Bu.	373	454
150 Bu.	448	545
175 Bu.	522	636
200 Bu.	596	727

Notes: a) Inventory necessary to maintain a rate of six shipments per month.
b) Assumes a 10 day ageing period.
c) Refers to the size of shipment at the time of loading in Calif.

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

Shipment Size[c]	Mortality During Ageing 33%	45%
100 Bu.	319	390
125 Bu.	399	486
150 Bu.	480	582
175 Bu.	558	680
200 Bu.	638	778

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

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

Shipment Size	Transit Mortality Rates 10%	15%	20%	25%
100 Bu.	90	85	80	75
125 Bu.	112	106	100	94
150 Bu.	135	128	120	113
175 Bu.	158	149	140	131
200 Bu.	180	170	160	150

Note: Assuming 6 shipments per mo. a max. of 1080 Bu. and a min. of 450 Bu. will be available in Honolulu each month.

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

Shipment Size	Transit Mortality Rates 30%	45%	60%
100 Bu.	70	55	40
125 Bu.	88	68	50
150 Bu.	105	82	60
175 Bu.	122	96	70
200 Bu.	140	110	80

Note: Assuming 6 shipments per mo. a max. of 840 Bu. and a min. of 240 Bu. will be available in Honolulu each month.

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

Shipment Size	33% Mortality During Ageing, Transit Mortality 10%	15%	20%	25%	45% Mortality During Ageing, Transit Mortality 10%	15%	20%	25%
100 BU.	2374	2514	2671	2849	2453	2597	2760	2944
125 BU.	1979	2092	2217	2358	2057	2174	2304	2451
150 BU.	1702	1795	1915	2034	1778	1875	2000	2124
175 BU.	1504	1595	1697	1813	1581	1676	1784	1906
200 BU.	1364	1445	1535	1637	1442	1527	1622	1731

Notes: a) Does not include distribution costs in Honolulu, but does 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 Ageing				45% Mortality During Ageing			
	Transit Mortality				Transit 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, ageing, and transport costs.

Table 10

Cost of Bait Per Bucket in Honolulu[a]
Using Direct Shipment With No Ageing
(dollars)

Shipment Size	Transit Mortality 30%	45%	60%
100 Bu	27.72	35.29	48.52
125 Bu	22.62	29.28	39.82
150 Bu	19.44	24.89	34.02
175 Bu	17.14	21.78	29.87
200 Bu	15.29	19.46	26.76

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