

Fishbanks

A Renewable Resource Management Simulation

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MIT Sloan

Fishbanks

- **You will play the role of a fishing company**
 - **Competing against other companies**
 - **Dealing with variations in fish populations and catch**

Market Goal

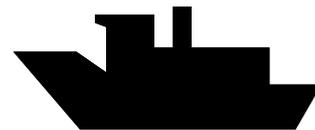
**Maximize your Net Worth
at the end of the game.**

Net Worth =

Bank Balance



+ Value of Fleet



**The winner is the team with the
highest Net Worth at game end**

Annual Profit

Profit = Income – Expenses

(\$/year)

- **Fish Sales**
- **Ship Sales**
- **Interest Earnings**

- **Operating Costs**
- **Ship Purchases**
- **New Ship Orders**
- **Interest Charges**

Income

- **Fish Sales** = **Catch** * **Fish Price**
(\$/Year) (Fish/Year) * (\$/Fish)

Fish Price = \$20/fish

- **Ship Sales** = **Ships Sold** * **Ship Price**
(\$/Year) (Ships/Year) * (\$/Ship)

Ship Price set by auction

- **Interest Earnings** = **Minimum Bank Balance** * **Interest Rate**
(\$/Year) (\$) * (%/Year)

*Interest earned only if Minimum Balance is positive.
Interest Rate = 2%/year*

Expenses

- **Operating Costs** = **Annual cost for ships deployed to:**
(\$/Year) **Harbor, Coast, and Deep Sea**

*Harbor: \$50, Coast: \$150, Deep: \$250
per ship per year*

- **Ship Purchases** = **Ships Bought** * **Ship Price**
(\$/Year) **(Ships/Year)** * **(\$/Ship)**

Ship Price set by auction

- **Interest Charges** = **Minimum** * **Interest**
(\$/Year) **Bank Balance** * **Rate**
(\$) * **(%/Year)**

*Interest charged whenever Minimum Balance is negative.
Interest Rate 5%/year.*

Expenses (continued)

- Each year you may order the construction of new ships.
- You pay for these ships this year and take delivery at the start of next year.
- **New Ship Purchases** = **Ships Ordered** * **New Ship Price**
(\$/Year) (Ships/Year) * (\$/Ship)

New Ship Price = \$300/Ship

Maximum New Ship Order is **half** of your current fleet (initial fleet + auction purchases), rounded up to the nearest whole number.

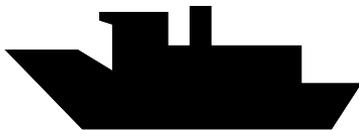
Fishing Fleet



- **Initial Fleet =**
3 Ships/team

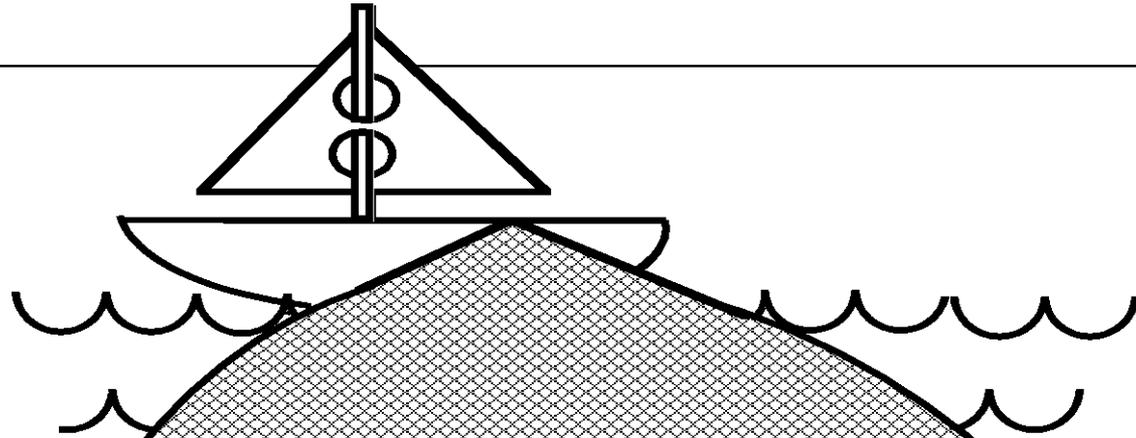


- **Fleet Growth**
 - Purchase from other teams via auctions
 - Order new ships



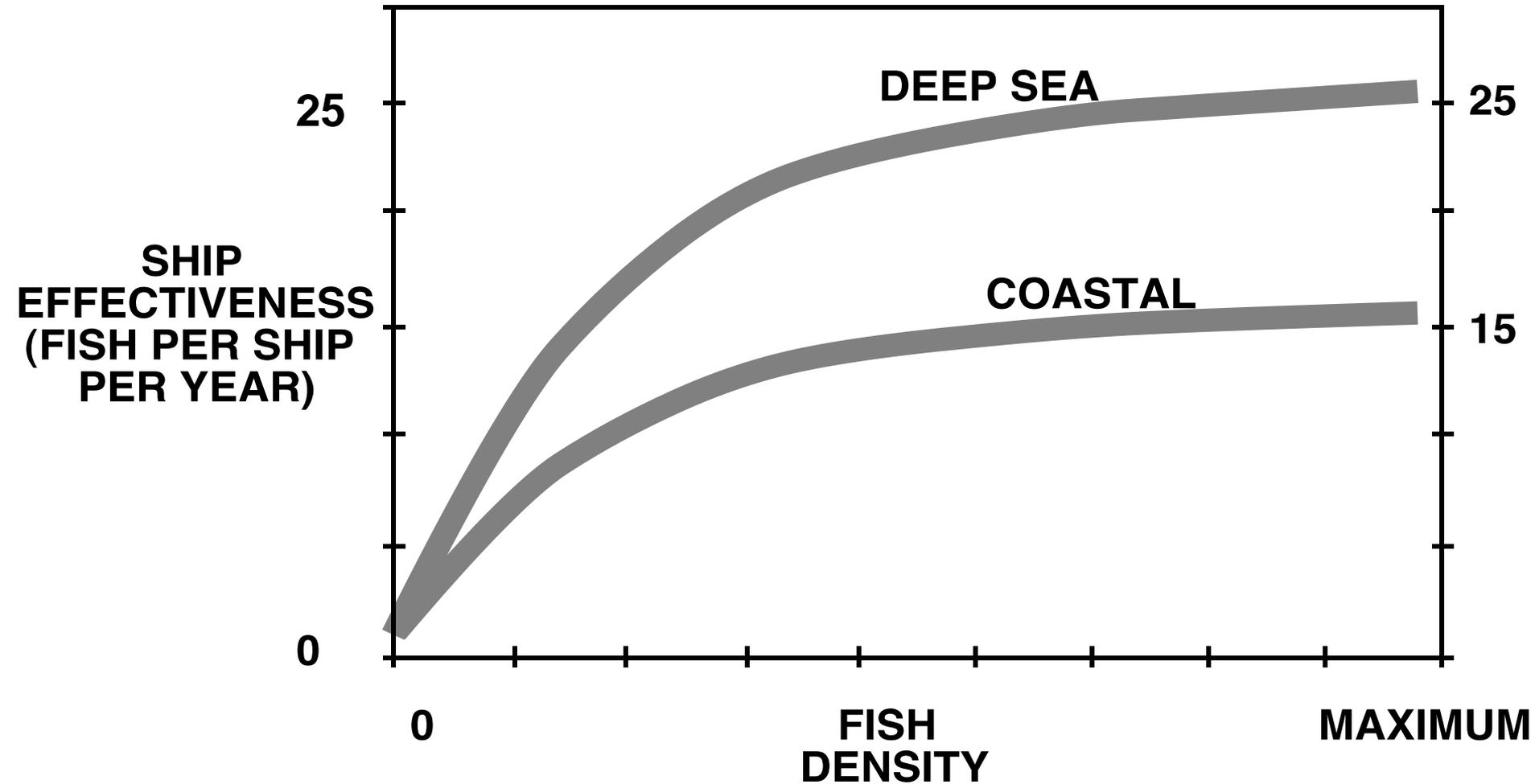
- **Fleet Reduction**
 - Sales to other teams via auctions

Catch

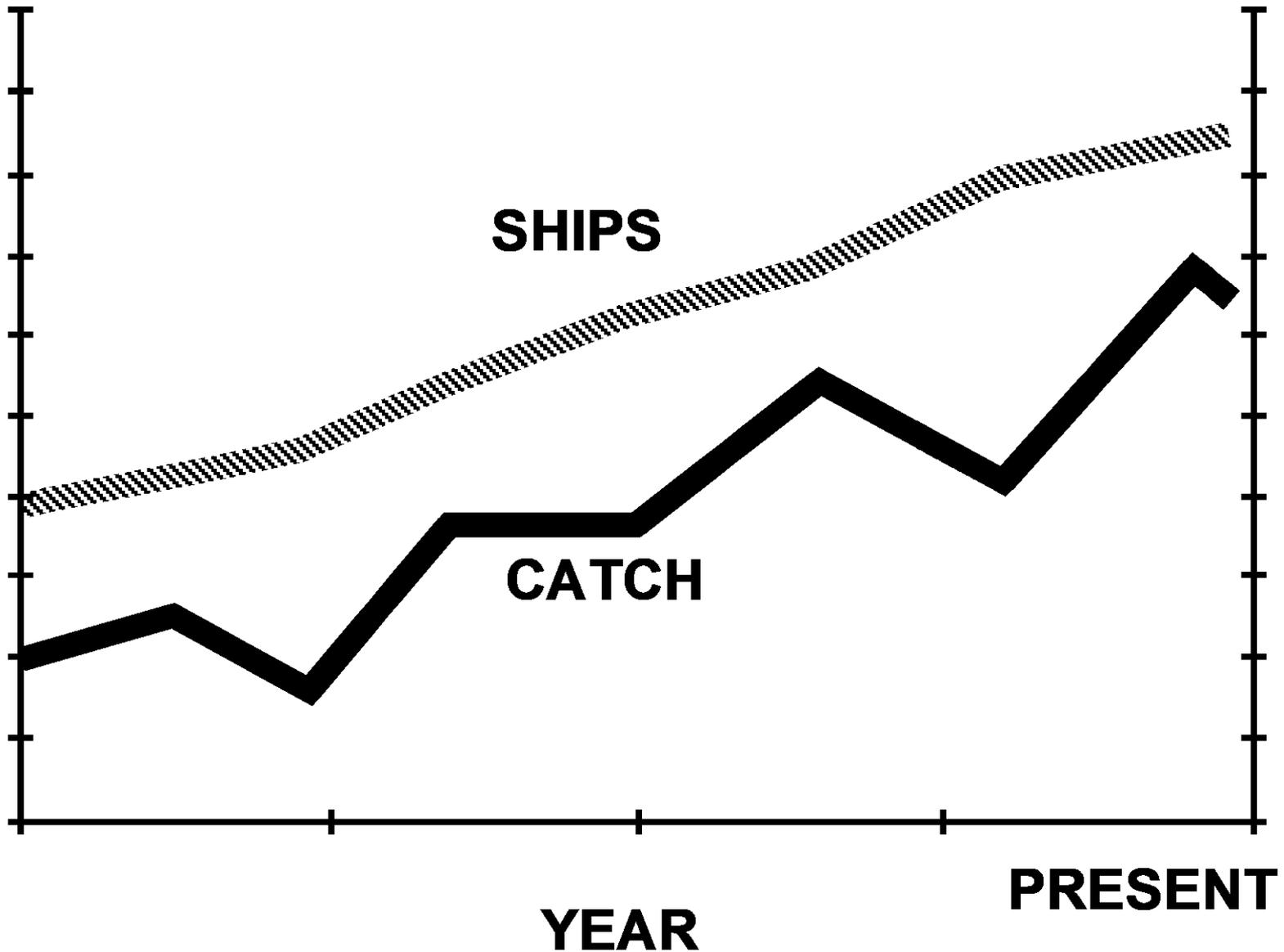


Catch influenced by:
Number of Ships,
Ship Effectiveness,
Weather

Ship Effectiveness



Recent History of the Fisheries



Fishing Areas

Deep Sea

**Maximum Population
2000 - 4000 Fish**

**Annual Operating Cost
\$250 per Ship-Year**

**Productivity
(Max Ship Effectiveness)
25 (Fish/year)/ship**

Coast

**Maximum Population
1000 - 2000 Fish**

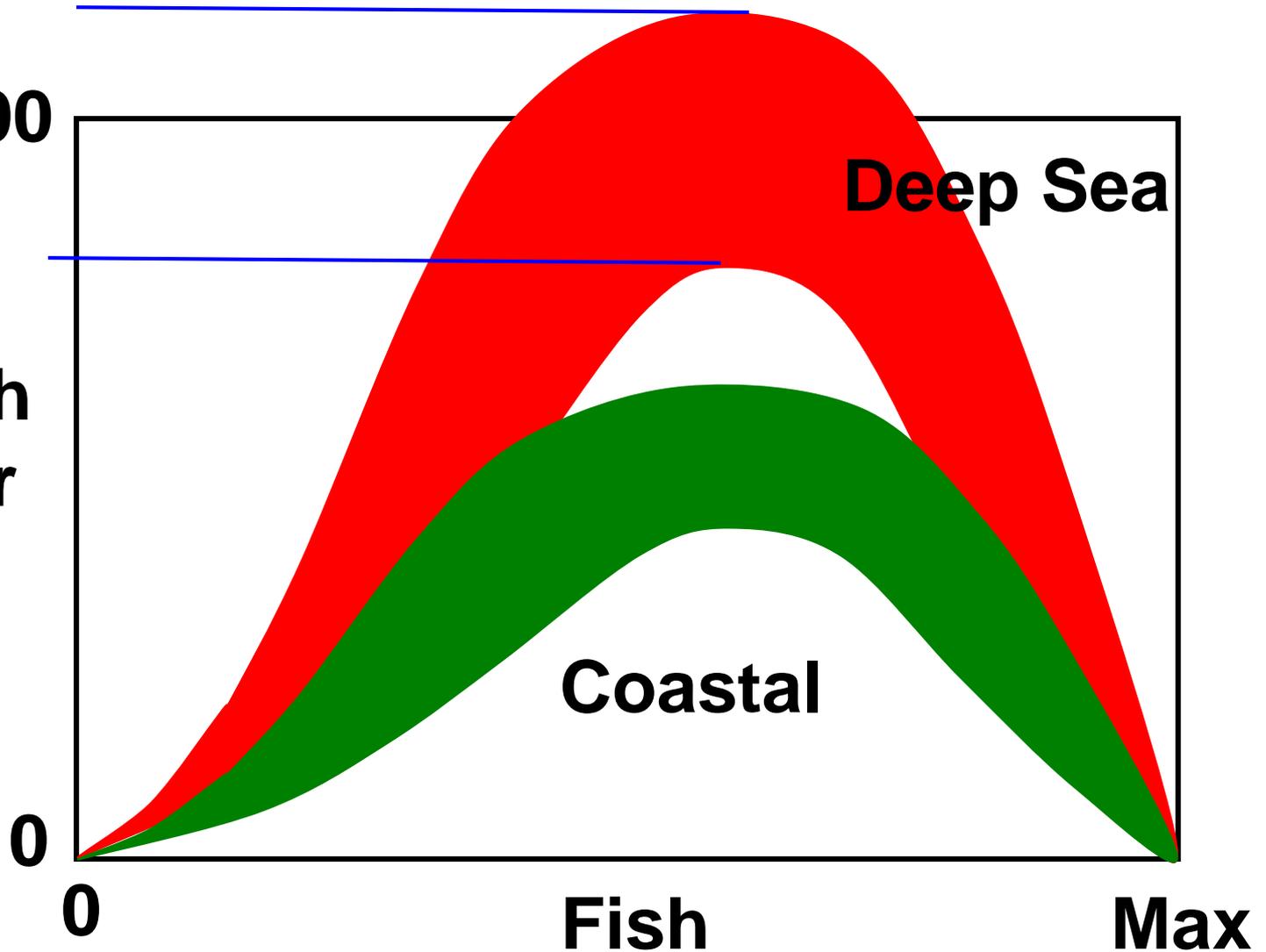
**Annual Operating Cost
\$150 per Ship-Year**

**Productivity
(Max Ship Effectiveness)
15 (Fish/year)/Ship**

Net Recruitment

≈ 500-800

New Fish
Per Year



Profit Example

1 SHIP TO DEEP SEA

FISH SALES = 25 X \$20	\$500
OPERATING COST	- \$250

DEEP SEA SUBTOTAL	\$250
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1 SHIP TO COASTAL

FISH SALES = 15 X \$20	\$300
OPERATING COST	- \$150

COASTAL SUBTOTAL	\$150
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1 SHIP TO HARBOR

HARBOR COST	- \$50
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PROFIT	\$350
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Develop your Strategy

- 1. Your goal is to end the game with the maximum possible assets.**
- 2. Discuss within your team what strategies for boat acquisition and allocation you will follow to attain this.**
- 3. Write your strategy down.**

Let's Go Fishing



Winslow Homer, Fishing Boats, Key West (1903)

Fishbanks MIT Sloan

<https://forio.com/simulate/mit/fishbanks/simulation/login.html>





Welcome to the Fishbanks Simulation

Student

Play as individual

Play as part of a class

Login ID:

Password :

Administrators

Set up a new class

Register as an administrator

Administer an existing class

Play as part of a Class

- **Login: agx@usp.br**
- **Password: pro3405**

Email	First Name	Last Name	Password
ag1@usp.br	Atlântico	At1	pro3405
ag2@usp.br	Atlântico	At2	pro3405
ag3@usp.br	Atlântico	At3	pro3405
ag4@usp.br	Atlântico	At4	pro3405
ag5@usp.br	Atlântico	At5	pro3405
ag6@usp.br	Pacífico	Pa1	pro3405
ag7@usp.br	Pacífico	Pa2	pro3405
ag8@usp.br	Pacífico	Pa3	pro3405
ag9@usp.br	Pacífico	Pa4	pro3405
ag10@usp.br	Pacífico	Pa5	pro3405

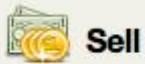
YEAR 1

Make decisions for current year



Buy

SELLER	NUMBER OF SHIPS	RESERVE PRICE (\$/SHIP)
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Sell

No. of Ships:

Reserve Price:

3

CURRENT TOTAL FLEET

HARBOR COAST DEEP

Ship Market Value (\$ / Ship)	300
Number of Ships (Ships)	3
Value of Ships (\$)	900
Bank Balance (\$)	600
Total Assets (\$)	1,500

	Harbor	Coast	Deep
Expected Catch per Ship (Fish / Year / Ship)	0	15	25
Price of Fish (\$ / Fish)	20	20	20
Expected Revenue per Ship (\$ / Year / Ship)	0	300	500
Operating Cost per Ship (\$ / Year / Ship)	50	150	250
Expected Profit per Ship (\$ / Year / Ship)	-50	150	250

SHIP ALLOCATION

SHIP ORDERS

Maximum Ship Orders:	2
No. of Ships:	x 350 each
Total:	50

YEAR 1

Make decisions for current year

Buy

SELLER	NUMBER OF SHIPS	RESERVE PRICE (\$/SHIP)

Sell

NO. OF SHIPS	MIN. BID (\$/SHIP)	MAX OFFER
1 ships	200 ea.	0 ea.

[remove](#)

3
CURRENT TOTAL FLEET

HARBOR COAST DEEP

Ship Market Value (\$ / Ship)	300
Number of Ships (Ships)	3
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Expected Revenue per Ship (\$ / Year / Ship)	0	300	500
Operating Cost per Ship (\$ / Year / Ship)	50	150	250
Expected Profit per Ship (\$ / Year / Ship)	-50	150	250

Maximum Ship Orders: 2

No. of ships:
Total:

Ready for next year?

Ship allocation

Ship Orders

YEAR 1 [Make decisions for current year](#)

Buy

SELLER	NUMBER OF SHIPS	RESERVE PRICE (\$/SHIP)
a a	1 ships	200 ea. bid

Sell

No. of Ships:

Reserve Price:

[Make Offer](#)

3
CURRENT
TOTAL FLEET

HARBOR COAST DEEP

Ship Market Value (\$ / Ship)	300
Number of Ships (Ships)	3
Value of Ships (\$)	900
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Expected Catch per Ship (Fish / Year / Ship)	0	15	25
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Operating Cost per Ship (\$ / Year / Ship)	50	150	250
Expected Profit per Ship (\$ / Year / Ship)	-50	150	250

Median Ship Orders: 2
 No. of ships: = 300 each
 Total: \$0

Ready for next year?

[Ship allocation](#)

[Ship Orders](#)

YEAR 1

Make decisions for current year

Buy

SELLER	NUMBER OF SHIPS	RESERVE PRICE (\$/SHIP)
a a	1 ships	200 ea. bid

Sell

No. of Ships:

Reserve Price:

Make Offer

3
CURRENT
TOTAL FLEET

All auctions available

SELLER	NO. OF SHIPS	RESERVE PRICE (\$ / SHIP)	HIGHEST BID (\$ / SHIP)	YOUR BID (\$ / SHIP)
a a	1	200	0 -	-

\$0 [Make bid](#)

Ship Market Value (\$ / Ship)	300
Number of Ships (Ships)	3
Value of Ships (\$)	900
Bank Balance (\$)	600
Total Assets (\$)	1,500

	Harbor	Coast	Deep
Expected Catch per Ship (Fish / Year / Ship)	0	15	25
Price of Fish (\$ / Fish)	20	20	20
Expected Revenue per Ship (\$ / Year / Ship)	0	300	500
Operating Cost per Ship (\$ / Year / Ship)	50	150	250
Expected Profit per Ship (\$ / Year / Ship)	-50	150	250

Maximum Ship Orders:	2
No. of ships:	= 300 each
Total:	\$0

Ready for next year?

Ship allocation

Ship Orders

YEAR 1

Make decisions for current year



Buy

SELLER	NUMBER OF SHIPS	RESERVE PRICE (\$/SHIP)
a a	1 ships	200 ea. bid



Sell

No. of Ships:
 Reserve Price:

Make Offer

3

CURRENT TOTAL FLEET

All auctions available

SELLER	NO. OF SHIPS	RESERVE PRICE (\$ / SHIP)	HIGHEST BID (\$ / SHIP)	YOUR BID (\$ / SHIP)	
a a	1	200	200 - a a	\$200	<input type="text" value="\$200"/> Make bid

Ship Market Value (\$ / Ship)	300
Number of Ships (Ships)	3
Value of Ships (\$)	900
Bank Balance (\$)	600
Total Assets (\$)	1,500

	Harbor	Coast	Deep
Expected Catch per Ship (Fish / Year / Ship)	0	15	25
Price of Fish (\$ / Fish)	20	20	20
Expected Revenue per Ship (\$ / Year / Ship)	0	300	500
Operating Cost per Ship (\$ / Year / Ship)	50	150	250
Expected Profit per Ship (\$ / Year / Ship)	-50	150	250

Maximum Ship Orders: 2
 No. of ships:
 Total:

Ready for next year?

Ship allocation

Ship Orders

YEAR 1

Make decisions for current year

Buy

SELLER NUMBER OF SHIPS RESERVE PRICE (\$/SHIP)

Sell

No. of Ships:
Reserve Price:

4
CURRENT
TOTAL FLEET

HARBOR

COAST

DEEP

Ship Market Value (\$ / Ship)	300
Number of Ships (Ships)	4
Value of Ships (\$)	1,200
Bank Balance (\$)	400
Total Assets (\$)	1,500

	Harbor	Coast	Deep
Expected Catch per Ship (Fish / Year / Ship)	0	15	25
Price of Fish (\$ / Fish)	20	20	20
Expected Revenue per Ship (\$ / Year / Ship)	0	300	500
Operating Cost per Ship (\$ / Year / Ship)	50	150	250
Expected Profit per Ship (\$ / Year / Ship)	-50	150	250



Harbor: Coast: Deep:

Ship allocation

Maximum Ship Orders: 2
No. of ships: x 300 each
Total: 0

Ship Orders

Ready for next year?

proceed

YEAR 2 Make decisions for current year

Buy

SELLER	NUMBER OF SHIPS	RESERVE PRICE (\$/SHIP)

Sell

No. of Ships:

Reserve Price:

5
CURRENT
TOTAL FLEET

HARBOR COAST DEEP

Ship Market Value (\$ / Ship)	195
Number of Ships (Ships)	5
Value of Ships (\$)	975
Bank Balance (\$)	-96
Total Assets (\$)	879

	Harbor	Coast	Deep
Expected Catch per Ship (Fish / Year / Ship)	0	15	25
Price of Fish (\$ / Fish)	20	20	20
Expected Revenue per Ship (\$ / Year / Ship)	0	300	500
Operating Cost per Ship (\$ / Year / Ship)	50	150	250
Expected Profit per Ship (\$ / Year / Ship)	-50	150	250

Maximum Ship Orders: 3
 No. of ships: x 300 each
 Total:

Ready for next year?

Ship allocation

Ship Orders