

Valuation of Consumer Choices on Spinner Dolphins Excursions in Hawaii



Katya Boehle*

Minling Pan**, Linda J. Cox*, and Wuyang Hu***

*University of Hawaii at Manoa

**NOAA, Pacific Islands Fisheries Science Center

***University of Kentucky



Presentation Outline

- Research problem and objective
- Research method
- Results and implications

Spinner Dolphins (*Stenella longirostris*)

- Found throughout the world in temperate and tropical waters
- A race of Pacific spinner dolphins in/around the Hawaiian Islands – Hawaiian spinner dolphins (nai`a)
- Protected under the U.S. Marine Mammal Protection Act
 - No take – “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any”
- PI Regional Guideline (<http://www.nmfs.noaa.gov/pr/education/protectdolphins.htm>)
 - It is against the law to feed or harass wild dolphins. For the dolphins' sake, and for your safety, please DON'T FEED, SWIM WITH, OR HARASS WILD DOLPHINS. We encourage you to observe them from a distance of at least 50 yards

Dolphin Excursions in Hawaii

- 16 operators (companies)
 - 4 on Oahu, 7 on Big Island, 5 on Kauai
- Tour price -- \$111 per trip
 - 5 operators offer “swim with”
 - 5 operators offer “Guarantee to see”
- Increasing popularity
 - Internet search for 'wild dolphin swim Hawaii'
 - **2,250** web hits in 2002 (Stanton 2005)
 - **17,500** in 2004 (Stanton 2005)
 - **31,400** in October 31, 2007 (Minling Pan)

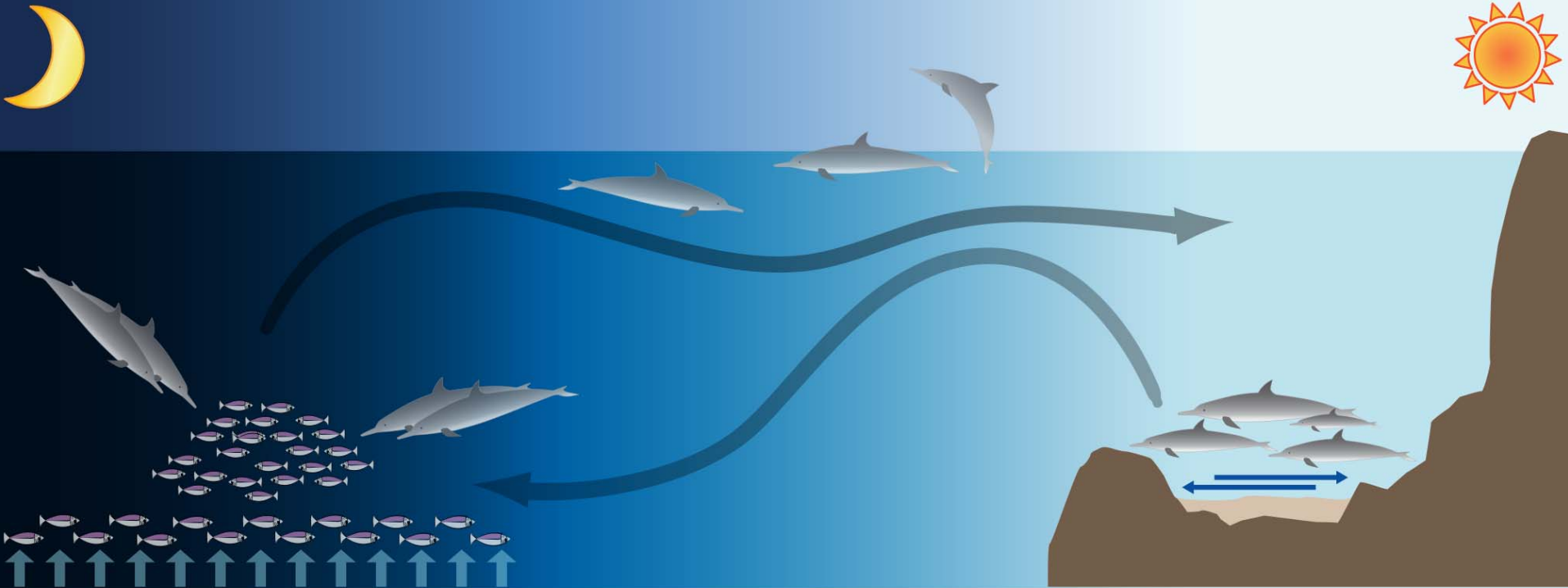


Wild Dolphin and Tours

A DAY IN THE LIFE OF A WILD HAWAIIAN SPINNER DOLPHIN



Pacific Islands Fisheries Science Center
www.pifsc.noaa.gov



FORAGING

Hawaiian spinner dolphins feed on fish, shrimp, and squid that, during the day, remain deep in the ocean but migrate to the surface (upper 200 m) at night. Spinner dolphins hunt cooperatively at night when their prey are closer to the surface.

SOCIAL TRANSITION

As spinner dolphins transition between rest and foraging, they typically display the leaps and spins for which their common name was given. They also socialize with each other during this transition.

RESTING

During the day, spinner dolphins move into shallow coastal waters to rest and socialize. Resting areas are usually wind protected, typically < 50 m in depth, and have sandy bottoms. Resting dolphins move slowly back and forth in tight groups, spending most of their time below the surface.

Concerns



- Human disturbance on dolphins
 - Highest in mid-morning when dolphins begin their rest period - stock
 - Displacement from primary resting areas





Research Question

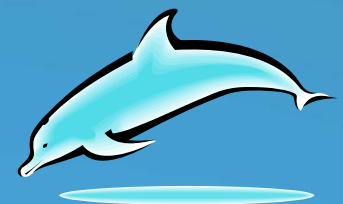
- Current viewing guideline (50 yards)
 - Not effective
 - Not enforceable
- Proposed rulemaking in December 2005
 - Encouraging viewing
 - Restricting activities
- To study consumer demand towards various activities
 - Effective regulations
 - Impacts of regulations

Research Method: Conjoint Analysis

- Random utility theory: individuals will choose the alternative within choice set t that generates the largest utility

$$U_{nit} = X_{nit} \beta + e_{nit}$$

- Types of boats (sail boat, motor, Zodiac)
 - Types of activities (viewing, snorkeling with, or swim with)
 - Guarantee to see
-
- Place value on resources/attributes that are not captured by the market system



Respondent Profile (N= 166, 2006)

| Variable | Categories | (%) |
|--------------------------|---|-----------|
| Hawaii Resident | Yes | 29 |
| | No | 71 |
| USA Resident | Yes | 63 |
| | No | 27 |
| Primary Reason for Visit | Relax in a tropical beach setting | 32 |
| | Swim and other water activities | 19 |
| | View wildlife | 12 |
| | Hike and outdoor land activities | 13 |
| | Learn more about Hawaiian culture | 6 |
| | Business | 7 |
| | Other | 8 |

Respondent Profile (N= 166, 2006)

| Factor | Variable | % of Respondents |
|---------------|-------------------|-------------------------|
| Gender | Female | 51 |
| | Male | 49 |
| Income | under \$15,000 | 7 |
| | \$15,000-\$24,999 | 6 |
| | \$25,000-\$34,999 | 10 |
| | \$35,000-\$49,999 | 19 |
| | \$50,000-\$74,000 | 25 |
| | \$75,000-\$99,999 | 16 |
| | above \$100,000 | 15 |
| Location | Big Island | 16 |
| | Oahu | 84 |

Knowledge about Dolphin Tours

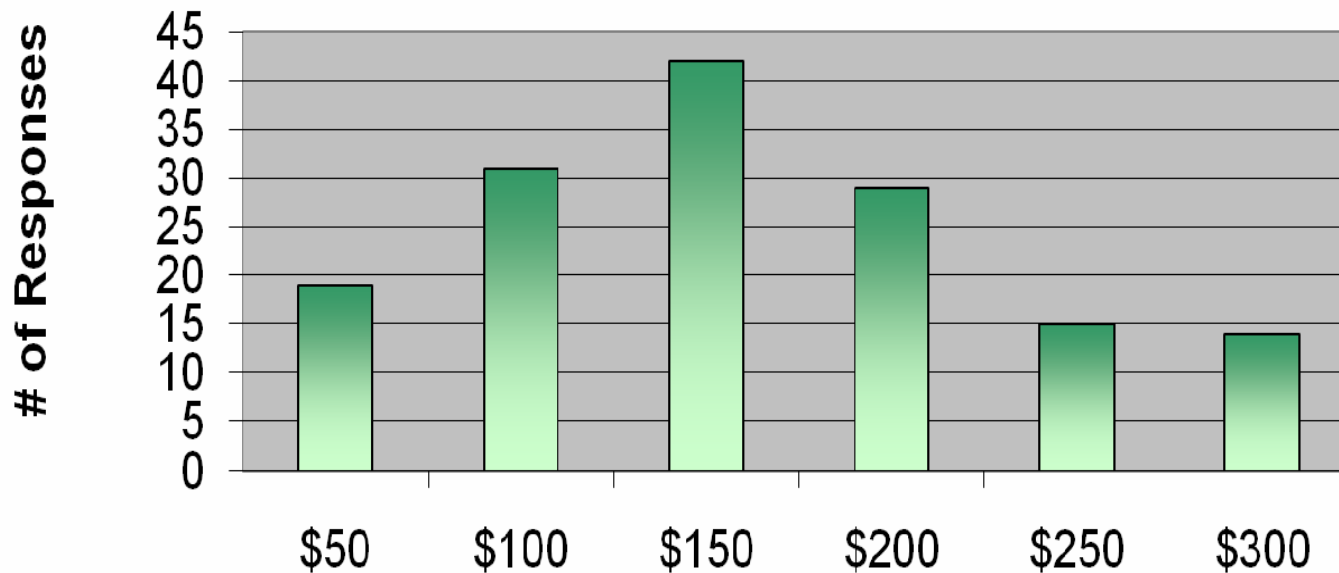
| Variable | Categories | % of Respondents |
|---|------------------------|------------------|
| Know dolphin excursions available in Hawaii | Yes | 74 |
| | No | 26 |
| How did they hear | Brochure | 28 |
| | Magazine ad | 16 |
| | Television ad | 10 |
| | Part of a package tour | 9 |
| | Told by a friend | 14 |
| | Internet | 12 |
| | Other | 7 |
| Have they been on one | Yes | 54 |
| | No | 46 |
| Did they swim with them (N = 62) | Yes | 55 |
| | No | 45 |

Importance of the Tours Attributes

| <i>Factor</i> | <i>Very Important</i> | <i>Somewhat Important</i> | <i>Somewhat Unimportant</i> | <i>Very Unimportant</i> | <i>Don't Know</i> |
|-------------------------------------|-----------------------|---------------------------|-----------------------------|-------------------------|-------------------|
| Boat Type (%) | 28 | 38 | 20 | 5 | 6 |
| Group Size (No. of passengers) (%) | 25 | 40 | 23 | 4 | 6 |
| Activity (viewing vs. swimming) (%) | 48 | 25 | 17 | 5 | 3 |
| Guarantee (%) | 46 | 33 | 10 | 4 | 4 |
| Price (%) | 36 | 36 | 17 | 3 | 5 |

Results: Ideal Excursion

Respondent's Maximum Willingness to Pay for their Ideal Dolphin Experience



The avg. price is \$147 for an ideal tour, while the market price is \$111

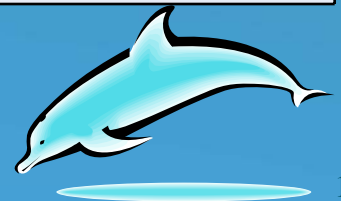
Results: Ideal Excursion

| Factor | Variable | % of Respondents |
|------------------|----------------------------|------------------|
| Boat Type | Zodiac inflatable | 17 |
| | Motor boat | 31 |
| | Catamaran sail boat | 51 |
| Group Size | Under 20 passengers | 57 |
| | 20-35 passengers | 35 |
| | Over 35 passengers | 6 |
| Activity | View dolphins from boat | 33 |
| | Swim with dolphins | 65 |
| | Scuba with dolphins | 2 |
| Guarantee to see | Yes | 88 |
| | No | 12 |

Conjoint Analysis: Survey Design

- Customer profile and demographic data (166 surveys)
- Conjoint cards (choices)

| Features/Attributes | Option A | Option B | Option C |
|---------------------|--------------------------|--------------------------|--------------------------------|
| Boat Type | Motor | Motor | I will not choose |
| Boat Size | Large (31+ pass.) | Small (20- pass.) | either A or B |
| Activity | Swim and snorkel | View | (not take a dolphin excursion) |
| Guarantee | Yes | No | |
| Price | \$250 | \$100 | |
| I would choose | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



Results: LOGIT Coefficient & Significance

| Variable | Coefficient | P[Z >z] |
|----------------------|-------------|----------|
| Constant | -0.922 | 0.000 |
| Boat types | | |
| ZODIAC | -0.866 | 0.004 |
| Motor | -0.215 | 0.060 |
| Group sizes (large) | | |
| Small | 0.541 | 0.000 |
| Medium | 0.181 | 0.180 |
| Activities (viewing) | | |
| Swim/Snorkel | 0.372 | 0.000 |
| SCUBA | 0.357 | 0.008 |
| Guarantee to see | 0.458 | 0.000 |
| PRICE | -0.007 | 0.000 |

Results: LOGIT Marginal Value of Variables

| Value of | Mean (\$) | Std. Dev. |
|----------------------------|------------------|------------------|
| Constant | -132.84 | 21.88 |
| Boat types (vs. sail boat) | | |
| ZODIAC | -64.59 | 21.77 |
| Moter | -31.47 | 16.96 |
| Group (vs. large) | | |
| Small | 77.91 | 19.73 |
| Medium | 25.91 | 19.37 |
| Activities (vs. viewing) | | |
| Snorkel | 53.83 | 15.73 |
| SCUBA | 51.44 | 19.24 |
| Guarantee to see | 69.94 | 14.92 |

Results and Policy Implications

- Demand for ‘swim with dolphin’ is high
 - 67% respondents choose their ideal tour with ‘swim with dolphin’
 - Willingness to pay for an ideal tour is higher than the current market price (\$147 vs. \$111)
 - Marginal value of ‘swim with dolphin’ is about \$52 higher than ‘viewing’
- Education could be an effective tool for conservation
 - 68% of the people believed that viewing or swimming with dolphins in the wild is acceptable
 - 66% of the people would choose to not take a dolphin excursion if they are informed that viewing or swimming with dolphins in the wild was found to negatively affect their behavior
- Potential regulations are necessary
 - Define enforceable laws
 - Swim vs. viewing
 - Close bays during peak sleeping hours

A group of dolphins is swimming in clear, vibrant blue water. One dolphin is in the foreground, swimming towards the left. Another is in the middle ground, swimming towards the right. A third is in the background, swimming towards the left. The water is bright and clear, with some ripples and reflections on the surface.

Thank you
and questions

Photos by PIFSC Justin Hospital, 2007