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18 February 2010

Dr. Alan I. Leshner, CEO and Executive Publisher of *SCIENCE*  
The American Academy for the Advancement of Science  
200 New York Avenue NW  
Washington, DC USA 20005

sent by e-mail

Dr. Leshner,

**RE: Hites et al. (2004) and Krkosek et al. (2007) published in *SCIENCE***

As a third party observer and a member of the public, I am writing to express my concern and my opinions regarding two papers published in *SCIENCE*, and the controversy over farmed salmon and salmon farming that these papers - and their worldwide publicity - have fomented.<sup>1</sup> As this controversy has become a matter of public interest, this is an open letter. I have posted this letter at my web-site: [www.fair-questions.com](http://www.fair-questions.com).

By way of background, please refer to two papers (attached) that I have written:

- o Research on Contaminants in Farmed Salmon: Science or Marketing?
- o Sea Lice Research: Science or Marketing?

On the basis of the information and analysis presented in the attached papers and at [www.fair-questions.com](http://www.fair-questions.com), the published manuscripts about which I am concerned are:

- o Hites, R.A., J.A. Foran, D.O. Carpenter, M.S. Hamilton, B.A. Knuth and S.J. Schwager. 2004. Global Assessment of Organic Contaminants in Farmed Salmon. *SCIENCE*, 9 January 2004. Vol. 303. No. 5655, pgs. 226-229.
- o Krkosek, M., J.S. Ford, A. Morton, S. Lele, R.A. Myers, M.A. Lewis. 2007. Declining Wild Salmon Populations in Relation to Parasites from Farm Salmon. *SCIENCE*, 14 December 2007. Vol. 318. No. 5857, pgs. 1772-1775.

**1. Scientific Merit**

Senior scientists and others have noted serious flaws and peculiarities in Hites et al. (2004) and in Krkosek et al. (2007). These peculiarities appear to me to be serious deviations from the commonly accepted, good practices of the scientific community.

Hites et al. (2004) is criticized for unrepresentative sampling, inappropriate application of guidelines from the Environmental Protection Agency, unconventional presentation of the research findings, and a lack of important contextual information.<sup>1,2,3,4,5,6,7</sup> Hites et al. (2004) did not compare contaminant levels in salmon of the same species. In essence, they

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<sup>1</sup> The Council of Science Editors states, "A number of parties can identify a manuscript whose content or authorship may reflect misconduct (herein termed a *suspect manuscript*). These parties include editors, reviewers, authors, colleagues, third-party observers, and anonymous sources." White Paper on Promoting Integrity in Scientific Journal Publications. Section 3.3.1. [http://www.councilscienceeditors.org/editorial\\_policies/whitepaper/3-3\\_reporting.cfm#3.3.1](http://www.councilscienceeditors.org/editorial_policies/whitepaper/3-3_reporting.cfm#3.3.1)

compared apples to oranges. Hites et al. (2004) found that both farmed and wild salmon contain less than 3 percent of what the U.S. Food and Drug Administration considers to be the tolerable level for polychlorinated biphenyls (PCBs) in fish and yet the authors call for farmed salmon consumption to be limited or entirely avoided.

According to the media, Dr. David Carpenter, one of the co-authors of Hites et al. (2004) has said, "women should avoid eating farmed salmon at all, from the day they are born through menopause," "one should avoid farmed salmon like the plague," and "in farmed salmon, the cancer risk dominated the health benefits,"<sup>28,29,30</sup> According to Dr. Carpenter, Hites et al. (2004) indicates "elevated cancer risk from one meal (of farmed salmon) or even less per month."<sup>31</sup>

Krkosek et al. (2007) and previous studies by this group were criticized for a lack of adequate baseline data, selective use ("cherry-picking") of data, flawed assumptions, selective and inaccurate reporting, and unsubstantiated claims.<sup>8,9,10,11,12,13</sup> Specific concerns include: 1) Sea lice levels at salmon farms are not reported. In fact, during part of the research there were apparently *no fish at the farm under study*. 2) A technique for tracing the origin of sea lice does not yet exist and yet claims are made about "farm-origin" sea lice, 3) Much of the data used is correlative and inconclusive, 4) The use of data in the mathematical modeling was highly selective, and 5) Some of the biological assumptions on which the mathematical modeling is based, are seriously flawed or reported to be untrue. And yet, Krkosek et al. (2007) claim that the findings indicate that sea lice originating from salmon farms put wild pink salmon at serious risk of extinction in the Broughton Archipelago of British Columbia. In view of the points raised by senior scientists, it is clear to me that this claim is false.

In stark contrast to Krkosek et al. (2007), Brooks & Jones (2008) find that when all relevant data are considered, wild pink salmon in the Broughton Archipelago of British Columbia appear to be *increasing*. Twenty scientists from the U.S., Canada and Europe have endorsed the views of Brooks and Jones (2008).<sup>14</sup>

In conjunction with both Hites et al. (2004) and Krkosek et al. (2007), the American Association for the Advancement of Science (AAAS) issued newswires via Eurekalert. The titles and the body of these newswires contain claims that, in light of the above, appear to me to be false:

- o "Farmed salmon more toxic than wild salmon, study finds," 9 January 2004. [http://www.eurekalert.org/pub\\_releases/2004-01/iu-fsm010704.php](http://www.eurekalert.org/pub_releases/2004-01/iu-fsm010704.php)
- o "Fish farms drive wild salmon populations toward extinction," 13 December 2007. [http://www.eurekalert.org/pub\\_releases/2007-12/s-ffd120707.php](http://www.eurekalert.org/pub_releases/2007-12/s-ffd120707.php)

## **2. Editorial Review**

The Council of Publication Ethics states that good editors should adopt processes that encourage accuracy, completeness and clarity of research reporting.<sup>15</sup> In light of the criticisms from scientists and experts as I have outlined in the attached papers, it appears to me that with regards to Hites et al. (2004) and Krkosek et al. (2007), the editorial review process failed in this regard.

The Council of Publication Ethics states that good editors should ensure that any press releases issued by the journal reflect the message of the reported article and put it into context.<sup>16</sup> I have no doubt that the press releases issued by the American Association for the Advancement of Science reflect the intended messages of Hites et al. (2004) and Krkosek et al. (2007). However, in both cases it seems to me that the AAAS's press releases failed to properly put these papers into context.

At the time that both Hites et al. (2004) and Krkosek et al. (2007) were published in *SCIENCE*, the Editor-In-Chief of *SCIENCE* was Dr. Donald E. Kennedy. On 12 December 2007 - *before* Krkosek et al. (2007) was published, I wrote an open letter (attached) to Dr. Kennedy to express concern about the sea lice research from the University of Alberta and about how Hites et al. (2004) has been publicized.<sup>17,18,19</sup> I did not receive a reply.

In 2007, I also wrote to the David and Lucile Packard Foundation to express concern and to raise questions about the publicity of Hites et al. (2004) by Packard-funded organizations. The Packard foundation replied, "We believe that the peer review process and the ongoing scientific discussion in the published literature is the appropriate way to examine those questions."<sup>20</sup> I also wrote to Dr. Mark Lewis, the senior author of Krkosek et al. (2007). Dr. Lewis replied, "... the research is published in the top international journals where it has been evaluated via rigorous peer review by independent scientists. If you have any concerns about the research or its accuracy, please feel free to contact the journal involved."<sup>21</sup>

At the time that I wrote to *SCIENCE*, to Dr. Mark Lewis, and to the Packard foundation, I was not aware that Dr. Kennedy has been a trustee of the David and Lucille Packard Foundation since 2000.<sup>22</sup>

### **3. The David and Lucile Packard Foundation**

The David and Lucile Packard Foundation ("the Packard foundation") states that it is organized and operated for charitable, scientific and educational purposes. With assets of \$US 4.5 billion, the Packard foundation has granted nearly \$3 billion since 2000.<sup>23</sup>

On the basis of my observations, it appears to me that one of the aims of the Packard foundation is to sway consumers and retailers towards Alaskan "wild" salmon, and away from the competition: farmed salmon. My observations are:

- a. **The Monterey Bay Aquarium** - According to my calculations based on U.S. tax returns and the foundation's on-line database, since 2000 the Packard Foundation has granted \$407 million to the Monterey Bay Aquarium including \$6.5 million for the Seafood Watch program. This program green-lists Alaskan "wild-caught" salmon and red-lists farmed Atlantic salmon.<sup>24</sup> A prominent wall display at the aquarium says, "Farming seafood isn't the answer to saving ocean wildlife." The aquarium sells cards that say, "Farmed fish aren't the answer." An interactive video exhibit disparages farmed salmon while promoting "wild-caught" salmon. In the U.S. market, about 95 percent of "wild-caught" salmon is Alaskan.<sup>25</sup>
- b. **The Marine Fisheries Program** - As part of its program for Conservation and Science, the Packard foundation implements a program for Marine Fisheries. This program has a focus on "the U.S. arctic" which presumably is Alaska. According to my analysis and calculations, between 2000 and 2008 the Packard foundation granted \$9.6 million to organizations in Alaska and \$40.1 million to organizations in British Columbia - all of which are not favorable to salmon farming. This included at least \$346,500 granted in 2000 to initiate the Coastal Alliance for Aquaculture Reform (CAAR). CAAR implements two campaigns: 1) Farmed and Dangerous ([www.farmedanddangerous.org](http://www.farmedanddangerous.org)) which includes the Smarten Up Safeway campaign and 2) Wild Salmon Supporters ([www.salmonsuporters.com](http://www.salmonsuporters.com)) which promotes high-end restaurants that feature "wild" salmon.

- c. **Seafood Choices and the "Antifarming Campaign"** - As part of its program for Marine Fisheries, since 1999 the Packard foundation funds a strategy called "*Market Intervention Tools to Conserve Marine Fisheries*." This includes "Seafood Choices" which has three components: 1) Certification by the Marine Stewardship Council (MSC), 2) Large U.S. Buyers, and 3) Context Setting.<sup>26</sup>

According to my calculations based on U.S. tax returns and the foundation's on-line database, since 2000 the Packard foundation has granted about \$75 million for its Market Intervention strategy. Of that, about \$57 million was to support the MSC and promote MSC-certified "wild" fish - including Alaskan ranched salmon, \$16 million was to "reform" aquaculture and demarket farmed salmon, and \$2 million was for related projects.<sup>27</sup> In 2007, 82 percent of MSC-certified "wild" fish was Alaskan (by volume) and about 60 per cent of MSC-certified products were Alaskan salmon.<sup>28</sup>

Calculations based on U.S. tax returns and the foundation's on-line database indicate that since 2000 the Packard foundation has granted about \$20.7 million to SeaWeb including \$8.5 million for Seafood Choices. Information from the grants database of the Gordon and Betty Moore Foundation (shown below), shows that SeaWeb was also paid \$560,000 to co-ordinate an "antifarming campaign" involving "science messages" and "earned media."

SeaWeb		\$560,000	Apr. 2004
Wild Salmon, Consumers, and Conservation Project			
Term	Amount	Date Approved	
24 mo.	\$560,000	Apr. 2004	
<b>Purpose</b>			
This grant helps SeaWeb provide a toolkit and coordination for salmon aquaculture campaigns. Outcomes for this grant include identification of antifarming audience and issues, integration of aquaculture science messages into antifarming campaign, standardization of antifarming messaging tool-kit, creation of an earned-media campaign, and coordination of media for antifarming ENGOs.			
<b>Grantee Websites</b>			
SeaWeb <a href="#">↗</a>			

U.S. tax returns state that the purpose of this campaign was to shift consumer and retailer demand away from farmed salmon.<sup>29,30</sup> Seafood Choices and the "antifarming campaign" appear to me to be related; one is to sway consumers towards MSC-certified fish - much of which is Alaskan salmon - while the other is to demarket the competition. SeaWeb was paid to co-ordinate both.

- d. **The Major Buyer Initiative** - According to my calculations, the Packard foundation has granted at least \$12.7 million for projects to get Wal-Mart and other large U.S. retailers to preferentially source "sustainable seafood" (Table 1). Over roughly the same period, the Packard foundation also granted at least \$2.8 million for campaigns to demarket farmed salmon (Pure Salmon, and Farmed and Dangerous). When Wal-Mart announced - at the behest of the World Wildlife Fund and other Packard-funded organizations - that it would transition to MSC-certified "wild" fish, 95 percent of the initial volume was Alaskan.<sup>31</sup>

On 26 January 2010, Target announced that in 49 states it would stop selling farmed salmon in favor of Alaskan salmon.<sup>32</sup> This move was praised by Greenpeace and by Ms. Julie E. Packard, a trustee of the Packard foundation.<sup>33,34</sup> In 2009, the Packard foundation paid Greenpeace \$300,000 "to lead a North American retailer campaign."<sup>35</sup>

- e. **Flawed advice about PCBs in farmed salmon and farmed salmon consumption** - On the basis of Hites et al. (2004), several Packard-funded organizations claim that farmed salmon consumption should be limited because of high levels of PCBs.<sup>36</sup> This is out of line with the world's leading health authorities.<sup>37,38,39,40</sup>
- f. **Packard-funded organizations** - According to my analysis, a large number of Packard-funded organizations and companies appear to act in concert to sway market demand towards Alaskan salmon and/or away from farmed salmon.<sup>41</sup>

#### **4. SeaWeb and the Centre for Mathematical Biology at the University of Alberta**

Krkosek et al. (2007) was published under the auspices of the Centre for Mathematical Biology (CMB) at the University of Alberta (UofA). The CMB reported to the UofA that the CMB had a "research partnership" with SeaWeb and that SeaWeb generated 148 news stories following the publication of a sea lice paper in 2005.<sup>42</sup> SeaWeb reports that the international communication of the CMB's sea lice research is one of its "top accomplishments."<sup>43</sup>

According to my calculations, the Packard foundation also granted about \$US 5.4 million to SeaWeb and the Tides Center for Communication Partnership for Science and the Sea (COMPASS) which publicized Krkosek et al. (2007) as well as the CMB's sea lice research in 2005.

Krkosek et al. (2007) lists "Tides Canada" as one of its sources of funding. According to my calculations, since 2000 the Packard foundation has granted \$14,110,239 to Tides Canada Foundation which re-grants to at least three of the environmental organizations (the David Suzuki Foundation, Raincoast Research Society and the Watershed Watch Salmon Society) which co-funded and publicized the sea lice research by the CMB.

In addition to funds to start CAAR, the Packard foundation also granted at least \$US 2.7 million for campaigns to get consumers and retailers to not buy farmed salmon (Pure Salmon and Farmed and Dangerous). The CMB's sea lice research findings are the centerpiece of these campaigns.<sup>44,45</sup> On the surface, Krkosek et al. (2007) backs up "Ingredients for Extinction," the tag-line of the Smarten Up Safeway campaign.

#### **5. Publicity and Media Coverage**

In the case of both Hites et al. (2004) and Krkosek et al. (2007) Packard-funded organizations - including SeaWeb - issued press releases the day *before* or the same day that these studies were officially published.<sup>46,47,48,49,50,51</sup> In the newswire published by the American Association for the Advancement of Science in relation to Krkosek et al. (2007), the media contact is SeaWeb.<sup>52</sup>

Amberg and Hall (2008) found that following the publication of Hites et al. (2004), negative media coverage about farmed salmon increased by three-fold for about two years.<sup>53</sup> Ninety percent of the news items associated farmed salmon with increased risk of cancer. Following the worldwide negative media coverage of Hites et al. (2004), farmed salmon imports and sales fell sharply meanwhile the value of Alaskan "wild" salmon increased by 23 per cent in 2004 alone.<sup>54,55,56</sup>

Six years after it was initially published, Hites et al. (2004) is still being widely and inaccurately publicized by a choir of Packard-funded organizations and in many articles.<sup>57</sup> In his recent book, "*The Big Picture: Reflections on Science, Humanity and a Quickly Changing Planet*," David Suzuki inaccurately reports "They (Hites, et al., 2004) consistently found high levels of

contaminants in farmed fish."<sup>58</sup> In January of 2010, CNN again cited the Hites study and an earlier study by the Environmental Working Group.<sup>59,60</sup>

Dr. Krkosek reports that more than 500 news items have reported his sea lice research.<sup>61</sup> In the wake extensive bad press following the publication of Krkosek et al. (2007), a "war on fish farmers" was declared and more than 20,000 people have signed a petition by one of the co-authors of Krkosek et al. (2007), to close salmon farms in British Columbia.<sup>62,63</sup>

If the purpose of the publicity of Hites et al. (2004) and Krkosek et al. (2007) was to benefit the Alaskan salmon industry and thwart the competition, it appears to have been achieved. The problem is, in my opinion, with regards to both Hites et al. (2004) and Krkosek et al. (2007), the research findings have been - and continue to be - selectively and inaccurately communicated in a manner that falsely reflects the actual findings. In my opinion, this stems from the flawed and misleading manner in which Hites et al. (2004) and Krkosek et al. (2007) were written in the first place.

## **6. Why This Matters**

### **a. Controversy Over the Safety of Farmed Salmon**

If Hites et al. (2004) had clearly reported that 1) the level of PCBs detected in farmed Atlantic salmon was less than 3 percent of what the U.S. Food and Drug Administration considers to be the tolerable level, 2) some previous studies have found that wild salmon from some locations carry *higher* levels of PCBs than what Hites et al. (2004) observed in farmed Atlantic salmon, and 3) PCB exposure from farmed salmon is insignificant compared to milk, poultry, beef and other common foods, I doubt that consumers would have been turned away from farmed salmon - which is what Dr. David Carpenter has admitted that he hoped Hites et al. (2004) would do.<sup>64</sup>

On the basis of Hites et al. (2004) the so-called Canada's Seafood Guide - produced with funds from the Packard foundation - indicates that regular consumption of farmed salmon poses a "health threat." The Seafood Watch guide indicates that farmed salmon should be avoided due to concerns about mercury or other contaminants.<sup>65</sup> More than 32 million of these guides have been distributed by the Monterey Bay Aquarium and it is now available on iPhones.<sup>66,67</sup>

The fact is, farmed salmon is an important food. A report published under the auspices of the U.S. Institute of Medicine, finds that farmed salmon is higher in omega-3 fatty acids than any other commonly eaten fish, and very low in mercury.<sup>68</sup> According to a newswire of the American Association for the Advancement of Science, the typical North American diet is deficient in omega-3 fatty acids.<sup>69</sup> Harvard scientists estimate that eating fish weekly can reduce the risk of a fatal heart attack by one third.<sup>70</sup> The American Heart Association estimates that cardiovascular disease and stroke kill 2,300 Americans *every day* and will cost \$503 billion in 2010.<sup>71</sup>

Dr. Dariush Mozaffarian and Dr. Eric Rimm of Harvard University warn, "... The avoidance of modest fish consumption due to confusion regarding risks and benefits, could result in thousands of deaths every year due to cardiovascular disease, and the suboptimal neurodevelopment in young children."<sup>134</sup>

## **b. Controversy Over the Sustainability of Salmon Farming**

About 30 percent of Alaskan "wild" salmon is actually hatched in a plastic tray.<sup>72</sup> These salmon are not wild. These are "ranching" or "ranching-caught" salmon. Ranching salmon are fed pellets, grown in tanks and raised in net pens before they are put into the wild. Two to five percent of ranching salmon are eventually caught by fishers. The other 95 to 98 percent are never harvested. All the feed pellets given to them are virtually wasted.

Salmon farming avoids the risks of over-fishing, by-catch, ghost-nets, inter-breeding between hatchery and wild salmon, the waste of feed for hatchery salmon, and the strain of ranching salmon on the food chain and the carrying capacity of the Pacific ecosystem. Unfortunately, it is too cold for salmon farming in most of Alaska. A U.S. Senator once said that Alaska did not allow salmon farming as they would then not know what to do with the fishers.<sup>73</sup>

In Maine, Washington, and elsewhere, salmon farming sustains thousands of people and their families - most of them in rural communities where jobs are sorely needed. In British Columbia alone, salmon farming creates 6,000 jobs and contributes an estimated \$CAN 800 million to the economy.<sup>74</sup>

If Krkosek et al. (2007) had reported that 1) their group never measured sea lice levels at salmon farms, 2) sea lice are carried by many species of wild fish and there's no way to tell whether sea lice originate from fish farms or from wild fish, and 3) their early studies that found high mortality were not controlled experiments and have not been replicated, 4) their hypothetical, computer-generated forecasts actually included predictions of high *SURVIVAL* - despite exposure to sea lice, I doubt that 20,000 people would have signed a petition to close salmon farms in British Columbia. I also doubt that millions of tax-payers' dollars would have been spent on sea lice research and so-called "closed containment" technology instead of other priorities.

## **7. Conclusion**

On the basis of the information and analysis presented in the attached papers and at [www.fair-questions.com](http://www.fair-questions.com), it does not appear to me that Hites et al. (2004) and Krkosek et al. (2007) were published in *SCIENCE* on the basis of scientific merit. It does appear to me that both of these papers have been - and continue to be - widely cited and publicized as part of the "Context Setting," the "science messages" and the "earned media" of a sophisticated marketing campaign funded by the David and Lucile Packard Foundation.

At the time that Hites et al. (2004) and Krkosek et al. (2007) were published in *SCIENCE*, I believe that the Editor-In-Chief, Dr. Donald E. Kennedy, may have had competing or conflicting interests.

## **8. Request**

In the interest of fairness, I respectfully ask the American Academy for the Advancement of Science to please clarify the actual findings of Hites et al. (2004) and Krkosek et al (2007) in the scientific record, and in the media.

Sincerely,

Vivian Krause

c.c. Dr. Donald E. Kennedy, c/o Mrs. Carol E. Larson, The David & Lucile Packard Foundation  
Dr. Ronald Hites, Indiana University  
Dr. David Carpenter, State University of New York at Albany  
Dr. Mark Lewis, University of Alberta  
Dr. Martin Krkosek, University of Washington  
Ms. Alexandra Morton, Raincoast Research Society  
Dr. Indira Samarasekera, President, University of Alberta  
Dr. David Johnson, Special Advisor to the Provost, University of Alberta  
Ms. Dawn Martin, President, SeaWeb  
Mr. Fred Krupp, President, Environmental Defense  
Mrs. Carol E. Larson, President & CEO, The David & Lucile Packard Foundation  
Mr. Steve McCormick, President, The Gordon & Betty Moore Foundation  
Mrs. Rebecca W. Rimel, President & CEO, Pew Charitable Trusts  
Dr. David Suzuki, Founder, The David Suzuki Foundation  
Mr. Peter Robinson, President & CEO, The David Suzuki Foundation  
Mr. James C. Hoggan, Chairman of the Board, The David Suzuki Foundation

**Attachments:**

1. Research on Contaminants in Farmed Salmon: Science or Marketing? (23 pages)
2. Sea Lice Research: Science or Marketing? (22 pages)
3. The so-called "Canada's Seafood Guide" which indicates that regular consumption of farmed salmon poses a "health threat" because of PCBs.
4. The Seafood Watch Guide of the Monterey Bay Aquarium which indicates that consumption of farmed salmon should be limited due to concerns about mercury of other contaminants.  
[http://www.montereybayaquarium.org/cr/cr\\_seafoodwatch/content/media/MBA\\_SeafoodWatch\\_NationalGuide.pdf](http://www.montereybayaquarium.org/cr/cr_seafoodwatch/content/media/MBA_SeafoodWatch_NationalGuide.pdf)
5. The Pure Salmon campaign poster titled, "*Enough to make you sick*," which cites Hites et al. (2004). [http://www.puresalmon.org/nyt\\_ad.pdf](http://www.puresalmon.org/nyt_ad.pdf)
6. E-mail from the David and Lucile Packard Foundation, 18 July 2007.
7. E-mail from Dr. Mark Lewis, The University of Alberta, 16 November 2007
8. Letter to the Editor-In-Chief of *SCIENCE*, 12 December 2007.
9. Letter from the General Counsel of the University of Alberta, 30 April 2008.
10. Letter to the President of the University of Alberta, 4 November 2009.
11. Pages compiled from U.S. tax returns (IRS-990-PF) and from the on-line database of the David and Lucile Packard Foundation which show grants for a total of \$75,278,176 for projects to influence the seafood market, "reform" aquaculture and demarket farmed salmon (124 pages).

**Table 1. Grants from the David and Lucille Packard Foundation for Projects with Large Seafood Retailers (2000 - 2009): \$12,705,725**

<b>Packard-Funded Organization</b>	<b>Year</b>	<b>Stated Purpose</b>	<b>Amount Granted by the Packard Foundation</b>	
<b>Greenpeace</b>	2009	To lead a North American retailer campaign	\$ 300,000	
<b>Environmental Defense</b>	2008	For the major buyer partnership strategy, consumer awareness, and efforts to explore sustainable fish feed options.	\$ 550,000	
<b>Ecofish</b>	2005	A "program-related investment" in a Wal-Mart supplier	\$ 1,600,000	
<b>Sustainable Fishery Advocates</b>	2004-2006	FishWise point-of-sale labeling (2004 - 2008)	\$ 975,000	\$ 1,864,276
	2007-2008	FishChoice, an on-line database to bring together suppliers and buyers of sustainable seafood	\$ 444,246	
	2009	For general support	\$ 445,000	
<b>New England Aquarium Corp.</b>	2002	Support for the Global Sustainable-Seafood-Sourcing Initiative to improve the purchasing decisions of a major supermarket chain.	\$ 50,000	\$ 1,395,000
	2005	For the ChoiceCatch program, a private-sector NGO partnership for more sustainable seafood consumption.	\$ 185,000	
	2006	For the ChoiceCatch program, a private-sector NGO partnership for more sustainable seafood consumption.	\$ 185,000	
	2007	For strategic planning for ChoiceCatch.	\$ 50,000	
	2007	For the ChoiceCatch program, a private-sector NGO partnership for more sustainable seafood consumption.	\$ 310,000	
	2008	For the ChoiceCatch program, a private-sector NGO partnership for more sustainable seafood consumption.	\$ 310,000	
<b>World Wildlife Fund Inc.</b>	2006	To improve the environmental performance of Wal-Mart's source fisheries.	\$ 700,000	\$ 3,575,000
	2007	To improve the environmental performance of Wal-Mart's source fisheries	\$ 700,000	
	2008	To support MSC certification and to encourage and support commitments of major buyers to source sustainable seafood, including Wal-Mart.	\$ 975,000	
		To transfer project coordination of the Wal-Mart engagement to the Marine Stewardship Council, and to undertake a study of the feasibility of developing an aquaculture certification program.	\$ 250,000	
	2009	To support certification and to encourage and support commitments of major buyers to source sustainable seafood, including Wal-Mart.	\$ 950,000	
<b>FSG Inc.</b>	2008	To initiate design of a strategic learning and evaluation model for nearly twenty NGOs involved in the Major Buyer Initiative	\$ 575,000	\$ 3,421,479
		For Phase II of a strategic learning and evaluation model for nearly twenty NGOs involved in the Major Buyer Initiative	\$ 559,479	
<b>Trust for Conservation Innovation</b>	2006	For Harnessing the Power of Seafood Retailers, a project of the Sustainable Fisheries Partnership, to develop actionable fisheries information and fisheries improvement partnerships.	\$ 700,000	\$ 3,421,479
	2008	For a project of the Conservation and Community Investment Forum and California Environmental Associates to determine whether major buyer NGOs are equipped to handle requests from seafood businesses so as to maximize conservation potential.	\$ 36,500	
<b>Spitfire Strategies</b>	2008	To provide strategic communications services and technical assistance to grantees in the areas of major buyer outreach, aquaculture standards and research around policy issues.	\$ 700,000	\$ 3,421,479
	2009	For continued support to provide strategic communications services and technical assistance to grantees in outreach to major buyers.	\$ 400,000	
<b>Horowitz &amp; Company LLC</b>	2008	Two grants "to assist grantees in developing strategic frameworks for partnerships with major seafood buyers.	\$ 258,000	\$ 3,421,479
<b>Root Learning</b>	2008	To guide grantees through a visual learning mapping process to identify and align strategies to advance conservation commitments among major seafood buyers.	\$ 154,500	
<b>Grove Consultants</b>	2009	For facilitation and process support as well as capacity-building training in group facilitation for the Conservation Alliance for Seafood Solutions.	\$ 38,000	\$ 3,421,479
<b>Total:</b>			<b>\$12,705,725</b>	

## Sources:

- <sup>1</sup> Green, Kenneth. The Great Salmon Panic of 2004. The Fraser Forum. Pages 20-22. [http://www.fraserinstitute.org/Commerce.Web/product\\_files/FraserForum\\_March2004.pdf](http://www.fraserinstitute.org/Commerce.Web/product_files/FraserForum_March2004.pdf)
- <sup>2</sup> Nichols, R. *The scales tip in favor of fish — for now*. The Philadelphia Inquirer. 26 October 2006. [http://www.philly.com/mld/philly/entertainment/columnists/rick\\_nichols/](http://www.philly.com/mld/philly/entertainment/columnists/rick_nichols/)
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