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Striving for Sustainability: Paul Johnston's Contributions to Conservation Biology

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ABSTRACT

Paul Johnston, the lead scientist with Greenpeace International, combines scientific knowledge with public debate and awareness campaigns to work towards environmental change and sustainability. Opposed by numerous people internationally, Johnston is in a constant battle to change negative public perceptions of Greenpeace International and its endeavors. Through his position with Greenpeace International and as a credited biologist with a PhD.in selenium toxicity in aquatic invertebrates, he has been involved in numerous international conferences with public organizations and industries. Johnston has developed a reputation through his tireless efforts and, regardless of criticism, his dedication to his beliefs. The fact that he backs his claims with real-world action demands respect in the fight against environmental degradation. Since few people have not heard of Greenpeace International, he supports the organization's capability to increase debate on various issues. Johnston's contributions to raising public awareness about environmental issues are important if society has a chance of changing.

Introduction

Discussions about Greenpeace International often involve debate over the authenticity of claims and the use of illegal tactics to achieve goals. The organization has been accused of using fear tactics and misleading information to influence public opinion while others immediately discredit the organization due to its civil disobedience (Curtis, 1997, para. 1; LeGault, 1999). The organization's justification for using illegal tactics has been that other methods have failed to stop current climate trends so infringement on property rights, among other actions, is justified because it does less damage than humans are currently doing to the environment, an opinion supported by Al Gore (Burkeman, 2009). In addition, these actions serve to bring greater awareness to the issues involved (Henetz, 2009).

Greenpeace International's response to critics who claim the organization uses inaccurate information and misleading statistics has been to increase its reliance on scientific research. Much of this research is developed as a result of the actions of Paul Johnston who founded the Greenpeace Research Laboratory in 1987. Greenpeace International often uses the publications from the scientists of this lab to fight negative public perceptions that question its credibility and threaten the effectiveness of its environmental campaigns.

The Paul Johnston and the Greenpeace Research Laboratory

Johnston has been an active conservation biologist for many years, beginning when he chose his undergraduate degree in marine biology, which he deemed to have been the main conservation study area at the time. His interest in marine conservation was again evident when he earned a PhD in selenium toxicity in aquatic invertebrates in 1984 (Greenpeace, n.d., How did you end up with the organization?, para. 1; University of Exeter, n.d., para. 2). During this time, Johnston began to follow Greenpeace International, believing in its potential to cause change in the environment and sustainability. However, Johnston did not become actively involved until the opportunity arose to be part of a Toxics Tour around the United Kingdom (Greenpeace, n.d.). Shortly after this tour, in the same year, he was a key figure in opening the Greenpeace Research Laboratory that has become increasingly important as people demand scientific evidence of claims made by those working to impede climate change. The research lab was opened in 1987 and is currently housed at the University of Exeter in the United Kingdom. The lab is part of Greenpeace Environmental Trust whose main goal is to increase public knowledge on the environment (Greenpeace Environmental Trust, 2011, Our Research Laboratories, paras. 1-2; Greenpeace Research Laboratory, 2012, para. 1).

The stated purpose of the lab is to "provide scientific advice and analytical support for Greenpeace offices worldwide" (Greenpeace Research Laboratory, 2012, para. 1). Through the use of various publications, both independent and in scientific papers, the lab aims to better inform people on the issues Greenpeace International has deemed to be most important and to provide credible statistics to those people fighting for the environment.

Greenpeace Research Laboratory Works to Change Public Opinions

The Greenpeace Research Laboratory works to increase scientific knowledge and to initiate public debates through journal articles and commissioned reports, but it also focuses on getting accurate information to the general public through popular media (Greenpeace UK, n.d., paras. 2-3). Greenpeace International's high public image, often supported by widely publicized illegal campaigns, puts it in a position to be extensively criticized by many people, whether justified or not.

Through his involvement with Greenpeace Research Laboratory, Johnston has done research on a variety of issues rather than focusing on one area of study. Furthermore, his research often involves controversial issues and is publicized by Greenpeace International as part of its campaigns for change. While there are those who support his conclusions, there are also those who oppose his results, which often means he must defend his studies publicly. This dynamic is further affected by public stigma and opinions about Greenpeace International and the authenticity of the scientific studies undertaken by the organization (Birmingham, 2011).

Opinions on Greenpeace International are divided, and the organization must sometimes work against preconceived notions that cause people to question its suggestions for change. Often this opposition is directed at the scientific conclusions made by Greenpeace International involving its research lab and the integrity of the scientists employed there, namely Johnston and those working with him. For example, in his book on toxic risk management Aynsley Kellow accused the Greenpeace International scientists of having a political mindset and discredits their findings as not peer reviewed, an opinion opposed by C. V. Howard in his book review (Howard, 2000, p. 317). From this example, it is clear that there are conflicting views on the organization itself rather than individual campaigns. Therefore, if Greenpeace International's stances on environmental issues are to be taken seriously, it must first work to change negative opinions regarding its basic credibility and validity.

More recently, there have been claims that Greenpeace International is an anti-science group of radicals. Much of this criticism stems from actions such as the

destruction of a test crop of genetically modified foods in Australia, costing the producers over $300 000 in damage (Kretowicz, 2011, para. 1; Preston, 2011). A number of people have added their comments to the debate over the ethics of this action and have generalized their arguments to the credibility of Greenpeace International scientists. For example, an outspoken, popular blog writer, John Birmingham, wrote that Greenpeace International merely chooses which science it wishes to cite to support its fight against genetically modified foods and by so doing ignores the scientific method (Birmingham, 2011, paras. 4, 6). The editor of Cosmos Magazine similarly expressed views that the organization "abandoned the rigour of science… when the science has been inconvenient" (da Silva, 2011, para. 3) and that it has become addicted to publicity (para. 5).

The opposing side to the debate surrounding the incident in Australia includes primarily those involved in Greenpeace International defending its actions, which is to be expected given the amount of damage caused when the crop was destroyed. Johnston responded to Kellow's blog by explaining that scientists who work in the Greenpeace Research Laboratory work "to provide scientific and technical advice to Greenpeace" (Johnston, 2011, para. 3) and "work closely with the large number of scientifically qualified people employed by Greenpeace…and with scientists based at many institutions around the world" (para. 3) to achieve its goal. He also stressed that the method used in this campaign is understandably not acceptable to others as it was a last resort to bring to the public's attention the unknown risk of genetically modified foods (paras. 3, 9). Therefore, while Johnston acknowledges there is public opposition, he is convinced the action is justified. Through this example, it is clear that from Johnston's point of view, his first challenge is to convince people of the credibility of the research used to support Greenpeace International campaigns. Only when this happens will the organization be able to convince people to support the various environmental causes Johnston has dedicated his life to supporting.

Johnston's Contributions to the Scientific Community

The work of Johnston has had a direct impact and has resulted in some major perceivable changes. For example, Greenpeace International has worked for many years towards a ban of polyvinyl chloride (PVC) in a variety of products, many of which are children's toys. Johnston was one of a group of scientists that ran an experiment to test the chemical composition of PVC toys from a variety of countries. The results of this study showed that almost all toys contained phthalates, the most common group of chemicals used to soften plastics for commercial use (Stringer, Labunska, Santillo, Johnston, Siddorn & Stephenson, 2000, p. 1). Phthalates have been shown in other

experiments to leach out of plastic into the air and other solvents and to have serious health effects such as slower learning, increased cancer risk, as well as negative impacts on the female reproductive system (Fatoki et al., 2010, p. 1; Lovekamp-Swan & Davis, 2003, p. 1; Stringer et al., 2000, pp. 1, 27-28, 31). This result, along with other studies, was used in an international campaign by Greenpeace International that has been successful in causing changes in both government and industry policy. In Canada, in November 1998, the government warned parents against giving their young children PVC toys if they come in contact with the mouth (Greenpeace, 2003, pp. 11-13). This is just one of many examples where the scientific studies of Johnston have been used by Greenpeace International to cause positive social change and is just another example of the contributions he has made.

Johnston has written many scientific review papers for a variety of journals as well as numerous opinion papers. These articles compile information about Johnston's ideals and are designed to highlight the benefits of the strategies and changes he suggests to improve environmental conservation and sustainability. As a conservation biologist with Greenpeace International, Johnston has looked into various issues, which makes summarizing his contributions to the scientific field challenging. His scientific papers range from experiments on the chemical additives in children's toys to the effect of human chemical use on aquatic species (Smith, Swindlehurst, Johnston, & Vethaak, 1995; Stringer et al., 2000). Furthermore, his scientific reviews compile knowledge surrounding a variety of topics including the negative impacts of using risk assessment as opposed to the precautionary principle in policy decisions, as well as the effects of sewage wastes on the increase of chemicals in aquatic environments (Johnston et al., 1993; Santillo, Stringer, Johnston, & Tickner, 1998). These reviews are not limited to journals; Greenpeace International also releases its own publications, such as Oceans in Peril: Protecting Marine Biodiversity, published in 2007, which outlines the state of the world's oceans and the authors' perceived requirements and suggestions for its conservation (Allsopp, Page, Johnston, & Santillo, 2007).

Through his work with the Greenpeace Research Laboratory, Johnston has built a reputation in the scientific community as well as with the general public. In 2006, he was listed at number forty of the UK Environmental Agency's top 100 "eco heroes," voted on by a number of scientists and political personnel (Environment Agency, n.d., pp. 1, 3). Furthermore, he has been involved in conferences and committees, where he is acknowledged as a representative of the views of Greenpeace International as well as a respected biologist with knowledge from research in many areas. For example, in 2009, he was one of a number of experts, chosen by international governments, as part of the Convention on Biological Diversity in Ottawa which focused on marine protected areas.

The result of this conference was a 55-page report aimed at governments which detailed scientific criteria, guidelines and initial steps that should be used in determining areas requiring protection at the national and international level (Convention on Biological Diversity, 2009).

Johnston was also one of three people on a panel discussing geo-engineering as part of the Royal Geographical Society's 21st Century Challenges in 2009 (2011). He argued against developing techniques such as ocean fertilization and carbon capture storage as means to delay climate change because of concerns that this will take away from working towards permanent solutions with minimal risks (Johnston, 2009). These arguments are part of a larger social discussion that takes place in scientific communities and is also used in the general media to inform the public of these issues.

Also in 2009, Johnston, acknowledged as a high-profile science leader, represented Greenpeace International at a workshop of 21 professionals for the European Commission's Joint Research Centre and the American Association for the Advancement of Science. These professionals developed guidelines for using science during policy formation by focusing on integrity, openness, clarity and engagement regarding the issues. The intent of these guidelines is to avoid biased representations or misleading conclusions in government and industry decisions (European Commission & the American Association for the Advancement of Science, 2009).

Johnston is involved in the scientific community and is also recognized by various industries where he has spoken at a number of conferences. In May 2011, he was a key speaker at the European Tuna Conference which included sessions on sustainability and environmental issues faced by the industry (European Tuna Conference, 2011). He was also a guest speaker at the 2011 members' day for the Paint Research Association, a surface coating manufacturer, to discuss issues around sustainability (Pera Technology, 2011).

This international inclusion in scientific discussions and his contributions in the form of scientific papers and studies are evidence of the reputation Johnston has established through his efforts in promoting conservation, regardless of opposition. Furthermore, it demonstrates his willingness to defend his position on environmental issues within the international scientific community through scientific debate.

Johnston's Push for Sustainability

In an interview for a Greenpeace International publication, Johnston stated his support for Greenpeace International stems from his belief that it "remains the best

organization in the world to promote environmental change and sustainability" (Greenpeace, n.d.), and he spoke of a hope for a sustainable future. Given his personal emphasis on sustainability, and its importance to conservation biology, it is crucial to highlight Johnston's contributions to this idea. He has written one paper primarily on the definition of sustainability to distinguish it from the modern association with sustainable development (Johnston, Everard, Santillo, & Robert, 2007, p. 60). As a guest speaker at industry conferences, his main focus has been the sustainable development of resources. Furthermore, his arguments against geo-engineering involve the fact that these techniques do not promote a sustainable future (Johnston, 2009).

Another of Johnston's arguments for sustainability relates to "the precautionary principle," the idea that new policies should not be implemented if the environmental risks associated with them cannot be determined (Johnston & Santillo, 2006, p. 2). He has written scientific papers on the importance of using this principle as opposed to "risk management," a policy based on known risk of a negative outcome, which can be affected by short comings in the scientific method such as uncertainties (Santillo et al., 1998, pp. 948-949). For example, using risk management, the toxicity of a chemical would be measured based on current knowledge without consideration that future studies may find an increased chance of harm. Other authors have cited Johnston's ideas in a number of papers published in scientific journals such as Conservation Biology (Wilhere, 2002) and Agriculture, Ecosystems & Environment (Brimner & Boland, 2003). This inclusion in other scientific literature provides further validation when the arguments are used to pressure governments that are developing decision making procedures.

Conclusion

As a conservation biologist, Johnston has dedicated his life to studying the human impacts on the environment and to improving current trends to change the stress humans place on ecosystems. While studies that he has performed have been limited, his major contributions to conservation biology are the improved accessibility and compilation of the conclusions of others as well as his emphasis on sustainability. He is able to raise issues about the environment and to inspire people to talk about the impacts and consider the possibility of changing current trends. His position as the top scientist for Greenpeace International has opened him up to criticism, as has his support of illegal actions such as the destruction of the genetically modified crop in Australia (Kretowicz, 2011, para. 1; Preston, 2011).

Greenpeace International remains a controversial organization and while members of the public may not necessarily agree with its radical opinions, the fact remains that these high-publicity acts, which are often illegal, are the campaigns that get publicity and improve dialogue and debate on the issues. Few members of the general public have read Johnston's papers on marine protection areas because they are not deemed newsworthy. In this respect, this scientist's conviction that Greenpeace International is the best means to cause change is understandable because society as a whole must change rather than just government policy and industry actions. For this to happen, the general public must also discuss conservation issues (Greenpeace, n.d., "What does Greenpeace mean to you", para. 1). Furthermore, Johnston has taken a stance on environmental conservation and has continued to stick to these beliefs and act on them regardless of opposition, which is important in conservation efforts where politics can often get in the way of real change. While individuals may not agree with all of Johnston's specific beliefs, his goal and determination to change the trend of ecosystem destruction caused by humans and to promote sustainability throughout the world remains respectable. Many people criticize Johnston's beliefs but few of these individuals offer solutions to problems.

**Writer: Lynn Squires is a third-year Bachelor of Science student at Grant MacEwan University, with a major in biology and a minor in physics. She became more aware of and more interested in environmental issues both at the school and the international level after taking a conservation biology course.*

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