SQUID INK

Written Accounts Inspired by Involvements in the Marine Conservation Field

by

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Acknowledgements

Perhaps it is considered literarily incorrect to dedicate a Master's degree capstone project to any individual or any collective number of direct influences within one's life. Even if so, this hopeful beginning to my professional writing career is dedicated to the woman who inevitably makes me laugh the most regularly, and often, the hardest – my mom. Despite life's rather unwelcome difficulties that we tend to first squint at and then, eventually, begrudgingly face, life is far too incredible and much too short to ever be taken too seriously. Thank you, Mom, for encouraging me to "take the pencil out of my ass" and keep writing my stories from the field. It's been a fun ride, particularly after the pencil removal.

I would also like to dedicate this project to the incredible number of individuals who have encouraged me along my professional pathway (often in different words from those so lovingly spoken by my mother), opened my senses to various realities within the conservation field, and who have challenged my personal development to continue growing, no matter the obstacles that present themselves in the future ahead. These are only the first few pages of, what I expect to be, many, many more written toward my passionate pursuit to communicate wildlife conservation efforts and concerns – not a single drop of ink would have touched a page without the ceaseless support that my friends, family, and colleagues have expressed for me along the way.

Lastly, I cannot help but thank those damned, life-size orca models hanging from the Monterey Bay Aquarium ceiling. Without realizing it then, the endless hours I spent gaping at these replicas up above me as a kid on most weekends resulted in an insatiable curiosity for marine mammals and the associated intelligences contained beneath the ocean's surface. Despite their subtly persistent influence on my pursuit of a relatively penniless profession, I still hope that they continue to inspire and amaze many generations of marine conservationists to come. Whether I'm pinching pennies or rolling dimes forty years from now, observing orcas in the wild will always rank as one of the richest experiences in my life.

There is a vitality, a life-force, an energy, a quickening that is translated through you into action. And because there is only one of you in all time, this expression is unique. And if you block it, it will never exist through any other medium, and be lost. The world will not have it. It is not your business to determine how good it is, nor how valuable, nor how it compares with other expressions. It is your business to keep it yours clearly and directly, to keep the channel open.

-- Martha Graham

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An Introduction to SQUID INK

Project Background and Aims

I have spent this past year in the Master's program arriving at a project I have entitled, SQUID INK. The foundation beneath my SQUID INK concept began over two years ago when I started developing a mental business plan for what I envisioned as a creative, environmentally oriented publishing company to whom nature enthusiasts could turn to publicly express and develop their artistic expressions and conservation concerns. Currently, SQUID INK stands at the mere toddler stages of its overall, intended development. In this project, I have more narrowly defined the steps through which I would like to see this idea evolve, and how I envision this creative think tank will serve the conservation communities at final maturation. That being said, of course there is plenty of flexible "wiggle room" in SQUID INK's business plan for ideas to change direction and freely evolve – space that, I feel, is necessary throughout any creative process. As the subtitle of this project indicates, I have primarily utilized this capstone project to nurture and explore my own creative expressions from experiences in the marine conservation field. This has allowed me to begin a creative writing portfolio that I hope will eventually serve three roles:

(1) In a more self-serving context, to develop my own skills as a creative conservation writer and an effective science and environmental policy translator;

(2) To eventually post this portfolio within an online, public domain to encourage other aspiring or professional writers and artists to creatively express and develop their own conservation concerns; and

(3) To help instill a safe and supportive sense of community by being the first to offer my expressions – simple, erratic, conservative, or just fun – thus releasing any notion of value judgment placed on such creativity.

At full maturation, I hope that SQUID INK will serve as an encouraging medium through which the interdisciplinary nature of marine conservation may be explored and shared, creatively. At its current elementary stages, I intend to continue developing my own

creative expressions, and to continue developing ideas behind SQUID INK's more communal, public persona.

I would like to introduce the woman from whom this project idea was inspired, so as to help explain the potential, far-reaching significance that science communication possesses at large scales. Many of you have already come to know this woman through your own experiences, whether within the scientific, political, historical, or literary arenas. She was born on May 27th, 1907, and has since deceased at the age of 56 from an ongoing battle with cancer. Yet, her personal and professional pursuits created an ever-lasting hallmark for the environmental movement and its growth within our nation's borders and well beyond. She was a marine biologist whose passion for nature and, in particular, the marine environment, was limitless. She published a number of books, like Under the Sea Wind, The Edge of the Sea, and The Sea Around Us. Her most notable success, Silent Spring, demanded immediate attention toward our nation's irresponsible use of pesticides like DDT. Her well-researched activism led to her expert witness testimony in front of President John F. Kennedy's Science Advisory Committee in Court in 1963, and, posthumously, led to the national ban of DDT and the eventual creation of the Environmental Protection Agency. As you may have been well aware, I am referring to Rachel Louise Carson: A marine biologist, a conservationist, and -- in the vitally significant role that spreads her beneficial influences still today, worldwide – a writer.

Many other environmental, conservationist, science, and travel writers have inspired me to pursue this path of writing. Whether absorbing an almost encyclopedic history and ecology of the Australian continent while simultaneously nearly wetting myself from Bill Bryson's comical traveling misfortunes and discoveries in his book, In a Sunburnt Country; or reading in awe about the imitative capabilities of a bottlenose dolphin calf from Rachel Smolker's book, To Touch a Wild Dolphin, as she recalls her research efforts throughout the years – there are many talented writers who portray their world as nothing less of a pulsating, breathing, and laughing organization of captivating stories. Other writers such as Theo Colborn, Robyn Davidson, Richard Dawkins, Jared Diamond, Annie Dillard, Dianna Dumanoski, Sylvia A. Earle, Gretel Ehrlich, Rita Golden Gelman,

Vice President Al Gore, Stephen J. Gould, Robert Kull, Barry Lopez, Lori Marino, Peter Matthiessen, Alexandra Morton, John Peterson Myers, David Quammen, Oliver Sacks, Eva Saulitis, John Steinbeck, and Julia Whitty also serve as glowing beacons from which I intend to guide my own direction of sail. It is because of talented writers such as these, that I have remained continually inspired to explore the natural world with an interdisciplinary appreciation. More importantly, they have (unknowingly) encouraged me to express my own discoveries in ways that, I hope, will open the eyes and hearts of people across a broad spectrum of specialties. I wish that, like these writers' works, my own spectrum of written influence (if my writing is to develop to full fruition and actually withhold any sort of influence beyond my own mother) will expand beyond mere scientists or policy-makers, and will extend to the layperson who may, at first, only express a minor interest in the field of conservation, but after reading such written accounts, will develop his or her curiosity into something further. Perhaps this curiosity, like my own, will be encouraged for further development and exploration, and lead to well-informed changes within the field.

I fully appreciate that I am only at the mere beginning stages of what I hope to become my professional career as a conservation writer. I entered this program, like many of my classmates, having witnessed disheartening acts in the field – mostly anthropogenic – that are violently altering our planet's ecosystems at ever-increasing, irreparable rates. This program has provided me with a more well-rounded perspective of many of these issues by enhancing my understanding of their political, social, economic, and oceanographic backgrounds. Most importantly, it has reinforced a vital message that I have personally witnessed all too many times in the field: The message that a clear and publicly approachable communication of these environmental concerns is severely lacking, and that these concerns are often extremely complex and require effective communication across many disciplines in order for well-informed changes to take place.

Prior to attending this program, my conservation involvements were mostly based in marine mammal research efforts in Australia and Alaska. Most eye-opening, however, have been my employment stints as a marine mammal observer in New Zealand and the

Gulf of Mexico: A role designed to enforce environmental regulations to protect marine wildlife during offshore oil and gas exploratory operations.

My attempts this year and in past years to develop the more traditional scientific skill sets (through data analysis, GIS courses, studying physical oceanographic noise propagation models, whale vocalization and seismic airgun underwater acoustics collection and analysis, photo identification, and practicing biopsy and digital tagging techniques) have all added to my understanding for the field. However, I am continually inspired by the over-arching significance of Rachel Carson's work, and feel similarly compelled to express my understandings of the field in an effort to draw necessary attention to threats within the marine environment – no matter how profound the footprints are in which I intend to follow.

Knowing that I may have a unique perspective to offer an audience outside of my field of specialty for their enhanced understanding of offshore resource exploration or marine mammal conservation concerns, I intend to share my own experiences in written form. SQUID INK is only the start of what I hope will become a much larger movement in the making. For this project itself, I have composed a variety of written accounts, all relevant to my observations in the field of marine mammalogy. Their topics are based on what I have come to experience in my career thus far, but many of the lessons attracting further political and scientific cross-communications, are applicable to a much broader audience – an audience who shares this passion for the oceans and for our planet's natural resource sustainability movements. I hope that eventually SQUID INK can serve as a public forum through which other inspired marine conservationists can share their own creative written accounts.

Every single one of us has our collection of stories. This year, my colleagues and I have been challenged to express our energetic concerns for marine conservation. SQUID INK is my own response to this challenge. It is a collection of written accounts from the field of marine conservation. So, with whom I may now assume to be my first willing (and/or captive) audience, I hope you are able to gain a more precise understanding for my

professional aims through this capstone project. It has been a wonderful process of creative exploration, and still remains flexible for an inevitable future of furthered shifting and shaping as my ideas evolve. I hope it provides as enjoyable a read as it has been to develop and write. More importantly, I hope it provides a slight indication of how science, politics, and any other interdisciplinary concerns beneath an environmental matter can be communicated in (hopefully) effective ways by appealing to the universal properties of human emotion, much like Rachel Carson and others have done with their writings published in the past. This is, at least, the goal toward which my writing and SQUID INK aspires. The general outline in which SQUID INK is to be developed, is as follows:

(A.) Creative Portfolio: To assemble my own Creative Portfolio of creatively written conservation expressions;

(B.) Supportive Community: To establish a supportive online forum in which other aspiring or professional writers and artists may creatively express their own conservation concerns and experiences within the field, without fear of value-judgments being placed upon their works; and

(C.) Broad Environmental Impacts: To allow this open and creative discussion of conservation topics to filter across a broader audience than perhaps mere scientific or political journal articles may reach otherwise; the understanding of environmental concerns may then influence a wider array of people who, in turn, impact far-reaching conservation efforts from the creativity of their own responsive expressions (be it through means of writing, painting, photography, travel, dance, sculpture, clothing designs, volunteered efforts in the field, petitioning, poetry reading, etc.).

SQUID INK Business Development

Tentacles of Action

1. **Write.** Assemble my personal creative portfolio: A collection of written accounts based on experiences within the marine conservation field.

2. **Network.** Research places for like-minded publications and writers to associate with, and align yourself with aspiring mentors. Surround yourself with writers or establishments that challenge you to become better, and allow yourself the room to be discouraged at time, but grow into this new element of your profession.

3. **Be vulnerable.** Submit your work to various publications and start spreading the word through your efforts and publications that you are a conservation writer.

4. **Expand online.** Develop an online presence. Do not spread the word of this online development until it is well organized, aesthetically pleasing, displays excerpts of your own creative work for others to use as submittal guidance and/or encouragement, and has at least a small handful of other conservation artists and writers represented through their own online postings or forwarded web addresses to their own creative works and/or websites.

5. **Create an image.** Develop a company logo and company products, encouraging the creative expressions of conservation concerns. Produce SQUID INK company business cards, screen-printed company apparel available through online orders, and attractive outreach to significant conservation issues with a name that begins to actually mean something and have a respectable image for your supporters and the public.

6. **Intellectual Property Rights.** Educate yourself and network with others (e.g. Dave Gibbons) who are aware if the intellectual property rights necessary for the protection of your idea, your company name, and any means of marketing the company undergoes.

7. **Spread the word.** Market your company name, primarily through the communication of its mission statement of creative conservation-oriented expressions and the company's online presence. Contact various NGOs to advertize this interdisciplinary communication. Meet with NGO representatives to see how you might be able to help communicate particular concerns through creative SQUID INK expressions.

8. **Funding.** Self-fund the company's online development and marketing methods. Be receptive to ideas for improvement for the company's mission, creative online expression collection, or establishing filters on the kind of creative materials willingly displayed within the online forum. The online medium allows for this ebb and flow of ideas, therefore granting the creative flexibility needed to fine-tune the objectives and expansive audience reach of well-produced creative conservation expressions. Once there has been a steady name and support network built beneath SQUID INK's mission, begin seeking outside funding. With a well-defined company mission statement (fine-tuned with the online ebb and flow of idea shaping and shifting), interdisciplinary submissions, and a steady popularity established to encourage creative contests, public exhibitions, and academic- or business-oriented sponsorship, SQUID INK will be able to find investors.

Targeting SQUID INK

Defining The Audience to Whom I Write

The assortment of written pieces to follow is intended for that rather large identity of human beings whose vague entitlement under the term "general audience" -- a broad label that causes any respectable English teacher to grip his chalk segment with a fist and grind his molars sideways in immediate fury. I have witnessed such distraught behavior resulting from an assumed use of the phrase, and as I do not wish to cause any literary harm to my (potentially professorial) readers at this time, will do my best to better define the audience – through a decidedly *less* general means.

So, despite my initial inclination to bracket my audience beneath the aforementioned forbidden phrase, I will define it as follows: Humans (or any literate non-humans) who intrinsically gravitate toward the subject of marine mammals, marine conservation, the environment, concerns regarding humans' use of and impact upon the environment, the ocean, water, Earth, life, or any combination of these subjects or any other matters that one feels have been ignorantly left out from this list (as determined after reading the pieces).

While the majority of the subjects listed are all-encompassing enough to be somewhat self-explanatory (as in, relevant to anyone with a pulse and/or soul), I will further comment on my focus toward marine mammals -- some of the ocean's largest and most charismatic creatures. It is difficult to imagine a group of people disinclined to appreciate *something* about marine mammals – unless it is a group of fishermen competing for the same diminishing resource of fish, or offshore oil and gas industrials threatened by the environmental guidelines now required in many areas of the world during exploratory and exploitative resource practices.

Yet, even considering mainstream-divergent subpopulations, I would like to encourage any individuals entirely turned off from marine mammals as a subject matter, to reconsider my previous use of the phrase "gravitate toward." Whether one can identifiably *gravitate toward* marine mammals with awe or nauseating disgust – whether

one is passionate about protecting periled porpoises or frustrated by sperm whale fiends stealing fish off one's failing long-line fishery – there is a purpose for these written accounts to reach a wide array of recipient readers.

For those readers who remain doubtful of the potential significance yet to be witnessed in words, I begin this series of written accounts with a piece commenting on why, exactly, marine mammalogy – or the study of marine mammals -- is vitally important for marine conservation, the environment, concerns regarding humans' use of and impact upon the environment, the ocean, water, Earth, life, or any combination of these subjects or any other matters that one feels have been ignorantly left out from this list (as determined after reading the pieces).

And in case the current reader is not a teeth-grinding English teacher nor a professor seeking to understand the intended audience for which the following pieces have been written, I will return to my initial inclination in designating my intended audience by claiming the following: These pieces are, in fact, intended for a general audience. I hope you – whoever you may be or to whichever audience you may belong – enjoy.

Short Pieces

What's in a Name?
An Evolved Understanding of Profession

What's in a name? That which we call a rose
By any other name would smell as sweet.
-- Juliet in Shakespeare's *Romeo and Juliet* (*II*, *ii*, *1-2*)

I.

Marine mammalogist.

A girl hears the profession mentioned in passing while waiting in SeaWorld's admissions line. Upon considering the phrase, and allowing it to tumble across the polished stones of her sixteen-year-old memory embankment, she fastens to the enriched memory of her first SeaWorld visit to view Shamu. She is instantly thirteen years back, recalling the scene, and now sitting at the western face of the crowded arena:

The orca launches one of his neoprened trainers into the air – a trainer who then effortlessly somersaults into a midair diving position and slips underwater as discretely as morning dew reabsorbed back into the ground. Shamu sleekly beaches himself onto the smooth shallows of the SeaWorld platform, curling inwards the sides of his pink tongue and making parrot-like nods toward the other proud, performing trainers on stage. The crowd applauds wildly. The children sporadically clap with their small, cotton-candied palms, flattening the pink sugary webs between their sticky fingers, and dancing in anticipatory glee.

She again recalls her then, three-year-old, chubby frame leaning into that restricting pink child harness and hoping that perhaps, just once, the leash handle would willfully slip down her mother's wrist. She would be granted the opportune freedom necessary for approaching the glass encasement of that spectacular creature's inhabitance. Unfortunately, she remembers, the leash handle withstood its stringent grip. Yet, her toddler imagination had freed itself long before in an imaginary, booming voice announcing her every futuristic move as a world-renowned, naturally instinctive orca

trainer:

This novice trainer has bravely slipped aboard this recently captured wild animal that you see before your very eyes. In what is now the wild orca's first human encounter, this girl is now performing faultless handstands that straddle the orca's curious blowhole. The connection between these two is undeniable, and nothing shy of eerily powerful. The orca explores the tank's circumference for two full rounds before he launches the young lady spinning into the air, only for this natural talent to land standing on the orca's arched tail, above water. This confident young lady waves to receive her sunburnt applause, leaps aback the orca, and rides out of the rink saluting her prideful patriotism toward the American flag wafting wildly above the arena. Ladies and gentlemen, this performance will be seen by audiences worldwide – contrasted to all other human-dolphin stunts before; yet outdone by absolutely no one!

At that instant, the leash had pulled her back from her forty-five-degree, hopeful lean forward. She was picked up and spun around to straddle her mother's hip and protruding fanny pack, and soon headed off to witness her next staged future performance: A floating funhouse where Earl, the waddling California sea lion, escapes his searching captor, the peg-legged singing pirate. The toddler girl leaned into her harness and despite the cold, greasy reapplications of sunscreen her mother insisted upon smearing into her ears and forehead, she could already envision it:

Spectacular, never-before-seen acrobatics that this trainer and her two trusty sea lion accomplices will perform while tight-rope-walking toward a purple rowboat full of sardines. The crowd, again… absolutely wild!

II.

Marine mammalogist.

Thirteen years have passed since that first SeaWorld experience, and the sixteen-year-old tomboyish girl passes through admissions and sits forward once again on the cold, gray linoleum of the stadium bench surrounding Shamu's performance tank. Her hooded

sweatshirt fits loosely over jeans and matches her black-and-blue slip-on Vans. She is watching Shamu perform for the second time in her life, anxious to experience that magical drive to become bigger than life once again. Yet, she feels uncertain of exactly how to think about this apparent cetacean circus she is now witnessing. Instinctually, she feels uneasy. A nauseous discomfort overrides all other senses for the teenage girl, observing what she can only reason must be a greatly diminished existence for this orca prisoner in relation to his natural existence in the wild. She wonders how much the show has changed since the origin of her childhood fixation with dolphin and whale training thirteen years prior. She rests her chin into a judgmental palm, trying to imagine where she could ever see herself fitting into the somewhat Disneyland-reminiscent scene:

This show is way too fake. These people are getting off as if they control these massive animals. It's all too obvious that with a half-baked tail flop or breach, these trainers would effortlessly become lifeless, floating smithereens. How do these marine mammal trainers sleep at night knowing that they are, in one way or another, supporting wildlife captivity and choreographing the equivalent of tap-dancing prisoner performances?

Are these audience members honestly fooled by the so-called "smiling" façade of these animals? Do these "smiles" and the orcas' regular trainer compliance convince the SeaWorld staff and spectators that the captive orcas here are, in fact, "happy" in such a whistle-blowing, hand-clapping, fishbowl frenzy?

Upside-down, Shamu rotates his white fluke underside toward one end of the crowd, around the arena to the other end. About every ten seconds, he quickly flexes that peduncle muscle attaching his fluke to body, and sends tens of gallons of chilled tank water atop select, screaming audience members. The teenage tomboy stands up, slides the torn Quiksilver wallet back into her jeans' left butt pocket, and exits the overly-excited, high-pitched auditorium before the captive tsunami waves reach her end of the arena.

None of these tourists seem to get it, do they? They're apparent ignorance and lack of remorse for these captive killer whales are almost worse than their captivity, alone. I can't believe that adults support this kind of soulless showmanship for means of entertainment for their kids. Don't they know better?

Exiting the staged arena, she hears a face-painted pirate practicing his ballads in the adjacent auditorium. Approaching the stage front, she gawks in disbelief at the grotesque sight: A brightly-dressed California sea lion tips his white sailor hat sideways with a front flipper, and nods his head upwards at the blue neon sign above him, flashing, "EARL THE SEAL."

I need to get out of here now. This is far too depressing. And in all honesty, is "Earl" the best SeaWorld can do for a pinniped stage name that rhymes with the word "seal?" I can only hope this place has gone downhill since my last, so-recalled inspirational toddler visit.

III.

Marine mammalogist.

Childhood fantasies for SeaWorld fame seem to evaporate for most, leaving only the distant memory of greasy garlic fries on the palate and a weathered stuffed animal polar bear in the storage bin above the garage. Flexing her jaw in response to the changing cabin pressure, she considers the arrival documentation in front of her once again: Are there even enough boxes for "M-A-R-I-N-E M-A-M-M-A-L-O-G-I-S-T?" The male flight attendant politely asks her to adjust her seat forward in preparation for landing. Her heart skips a beat, seemingly more alive than ever before in her twenty-one years of living. She's not sure if it's because of the attendant's charming Australian accent or the fact that the dream she conjured up twelve years ago, as a nine-year-old, is finally coming true: She is landing in the country of her dreams; the country of perfectly unique wildlife; the country whose environment is far from tame. Australia.

The document lacks enough blank boxes to fit all the letters of the occupation, but she simply scrunches the last six letters into the right-hand margin: "-LOGIST". There. That works. "M-A-R-I-N-E M-A-M-M-A -LOGIST." She thinks to herself that this is the first of many international flights her future career as a marine mammalogist will bring. The

thought forms butterflies in her gut. She'll finish her undergraduate degree after this year abroad. She will finally gain her first experiences researching wild cetaceans in the field. She will immerse herself within whatever lab work she can while she's at university. She is going to change the world. Nothing can stop her now.

Although she hands the document to the visa checkpoint security guard for approval, she decides that she prefers the shortened title that the boxes contain: "MARINE MAMMA." She passes through with her first passport stamp, and simply cannot help but smile. She jokingly imagines herself as a boisterous Mother Ocean figure, passionately acting from the very core of her being:

Marine Mamma, coming through! Watch out, people – this is conservation with an attitude! Her fingers snap any distractions aside, as someone with all the righteous confidence that comes with acting true to heart to dreams formulated a decade prior. Dozens of Australian researchers contacted; dozens of labs visited. And all for one purpose: She is becoming a marine mammal researcher and conservationist. She is simply one handshake shy of following orcas in a Zodiak; one volunteer stint short of filming wild orcas underwater; and one field research project completion before understanding the naturally evolved, environmentally relevant cognitive behaviors displayed by those wildly intelligent "Wolves of the Sea" orcas.

IV.

Marine mammalogist.

She is a young woman at twenty-three years of age. She has compiled experiences as a whale acoustics lab researcher, a bottlenose and Indo-Pacific humpback dolphin field researcher, and a humpback whale field researcher in Australia. These involvements have provided her insight into a world balanced between long, mind-numbing hours coding acoustics data in front of a computer screen; full days spent staring at the horizon for any sign of dorsal fins breaking surface in the near or far, never-ending distance; carrying heavy equipment up and down blazing hot hillsides to take theodolite GPS fixations on

migrating humpback whales; and, the seldom opportunity to assist the water-borne tagging team as they charge surfacing mother humpback whales and suction cup digital tracking devices on the humbling gigantism of the species.

There are very seldom sightings of orcas this far north on the Australian coastline, despite their apparent worldwide distribution according to researchers. She has delved deep into whale acoustics in the meantime, and covers the entirety of her apartment floor with library books discussing cetacean cognition, marine mammal behavior, and evolutionary approaches toward animal intelligence. She loves her experiences in the field, as they serve as her first opportunity to truly appreciate the animals in their own habitat, observing their natural behaviors.

She has yet to get paid for any of her time or research efforts, but she knows that this is how one must climb the ranks in this field. She has worked every odd job imaginable just to make ends meet so she can volunteer her time away, and learn about marine mammal research both in the lab and field environments. She loves what she is doing with her life, and the passionate, intelligent people with whom she is sharing it. For the first time in years, her heart is at ease knowing that this is the profession she will pursue for ages to come. She is having fun, working hard, and is fulfilled at the conservation issues resting at the basis of her every effort.

She is a novice, purely voluntary marine mammalogist with much to learn beyond her library book mountain cascading across the carpet at home.

V.

Marine mammalogist.

A couple saltine crackers serve as her lone meal throughout the entire Thanksgiving day. They are the only food items any member of the crew is able to keep down. She is aboard her first offshore oil and gas seismic exploration vessel off the east coast of New Zealand's north island. This is her first paid job as a marine mammalogist. She quickly

realizes why she is being monetarily compensated for the job: Not everyone could handle this environment. The vessel is battling seven-meter swells – thick, blue water swallows the bow with every passing monstrosity of a wave, and then spits angry whitewash ten meters upwards, crashing against the bridge windowpanes. As only one of two women among a crew of forty-five men, she is employed for these next five weeks to visually and acoustically monitor the Pacific Ocean's surrounding horizon for any sign of nearby marine mammals. Just shy of twenty-four years old, she is any other crew member's junior by at least fifteen years; yet amidst the male vessel master, captain, and first mates with whom she shares the wheelhouse viewing platform, by thirty, at the least.

Calmer seas allow better opportunities for the offshore oil and gas industry to effectively map potential oil and gas reserves beneath the ocean floor sedimentation. These efforts are achieved by means of reflecting noise off the ocean floor – *loud* noise. Stories brew among the crew, telling of men washed overboard in the past who had lost their hearing for several days due to exposure to these booming noise sources in the water. She believes these stories, for as soon as her vessel began producing test runs of these same acoustic blasts at the beginning of the survey, researcher affiliates off New Zealand's south island coast could reportedly hear her vessel's activities loud and clear with their hydrophones, hundreds of kilometers away. Concerned ecotourism operators on the same distant coast are rightfully fearful that the start of offshore seismic activity in New Zealand waters will scare away the sperm whale population that attract seasonal tourists from around the globe. Ten meters above the water's surface, perched in the seismic vessel's wheelhouse, her body can feel the booming vibrations of these noise sources as they explode every seven to eight seconds from underwater towed mechanical arrays one hundred and fifty meters behind the vessel's stern. And there she is, scanning the surface waters with her binoculars for twelve hours a day, just waiting for a confirmed glimpse of a marine mammal so she could *recommend* the noise source mechanics to shut-down their operations. She thinks to herself, filled with angst and self-ridicule:

This has to be a joke. My job is to look for acoustically-dependant wild animals within a 1.5-kilometer diameter from the seismic sound source so that I can merely <u>suggest</u> shutting off these noises that are otherwise shattering the acoustic environment of

the surrounding ocean as a whole? This absolutely must be a joke. Yet, when I suggest shutting down operations with a marine mammal sighting, the crew questions my authority, and berates my team's recommendation with the fact that any shut-down costs their oil company thousands, if not millions, of dollars in lost revenue. Is this the competitor that marine wildlife must fight to preserve their environments? Mute and sporadically human-detectable marine wildlife defenders versus multi-billion dollar, international oil and gas corporations? We have a serious problem on our hands.

The Conservation of Charisma

Charismatic. It is likely to be one of the most common adjectives people use when describing marine mammals. Some oceanographers and marine ecologists use the word to belittle the importance of researching marine mammals, or to even point blame at how our society seemingly prefers for the large, "cute" creatures to steal the conservation spotlight away from other, arguably more endangered, marine creatures. As a marine mammalogist, I tend to agree that yes, marine mammals are extremely charismatic. They are intelligent creatures with well-evolved, highly complex brains, and I have been fixated on studying their cognitive capabilities ever since I set foot in the Monterey Bay Aquarium as a toddler. To say the least, I am slightly biased. However, there is a huge significance behind this marine mammal charisma that even spotlight-deprived oceanographers and marine ecologists should be aware.

I will first begin by evening the playing field: There are some entirely adorable microorganisms in the ocean, as well as sufficiently attractive mid-sized species, to which the media has yet to point its all-encompassing attention. It just so seems, however, that a breaching humpback whale or an orca flinging a somersaulting California sea lion into the air generally seems to capture the public's eye more than the repetitive tumbles and propelled underwater spasms of a translucent microorganism with bugged-out, eye-like blobs popping back at you through a high-powered microscope. And I must say that I am continuously perplexed why mainstream media hasn't taken full advantage of these micro-creatures as much as say, the producers of movies like *Free Willy*, *Free Willy 2: The Adventure Home*, *Free Willy 3: The Rescue*, *Free Willy: Escape from Pirate's Cove*, or ABC's single, eleven-episode season of *Free Willy*, the TV series, in 1994. Of course, these all sprouted from the four different *Flipper* movies and two separate *Flipper* TV series originating back in the early 1960s. So if the dolphin family has paddled down the underwater red carpet with public aquaria and Hollywood gimmicks, where are the convulsing microorganisms that make up so much more of the ocean's biomass being represented? It is a legitimate concern for a more thoroughly educated public perception of ocean health and ecosystems. So what is it, exactly, that marine mammals possess to

cater to our undeniable craving for charisma? Should we hold this spotlight-hogging against the field of marine mammalogy?

The general public's perceptual senses for marine mammals may already be abused to a bloody pulp of critical skepticism from its over-exposure under the Hollywood and, therefore, conservation spotlights. And, this pulpy public burn-out is not unlike like many of the marine biologists who straight-arm against getting involved in marine mammal research for their probable one of two reasons: First, because they were worried about being taken seriously as credentialed scientists; or secondly, and most likely, that they simply didn't possess the bronzed skin and long, flowing blonde hair that is obviously needed to succeed in what Hollywood and public aquaria have encapsulated as the media-driven ideas behind marine mammal research. If only more people could know that even some of the bronzed blondies of the marine mammal research field spend months aboard offshore exploratory seismic vessels huddled in long-sleeve t-shirts and baggy pants, no make-up, and rat-nested, seasick hair to survive the male-dominated, emotionally-sterile, and money-driven operations of the offshore oil and gas industry. Not every marine mammal researcher partakes in this kind of fun work environment, but in defense of those who do, please read on.

To those who express the automated eye-roll when hearing the multitudinous difficulties or seemingly romanticized notions of working as a marine mammal researcher, I suppose I'd like to add a morsel to the literature or media bites already out there by saying this: Practice a new expression. We've seen the eye-roll -- not only from other marine scientists and oceanographers, or those still scabbing from their false, Hollywood- and SeaWorld-produced perceptions of the research field, but from the multi-billion-dollar, international oil and gas corporations who we battle up against for enhanced, effective marine policy to protect, yes, the charismatic, misconceivedly smiling "Flipper"s, "Shamu"s, and "Freed Willy"s of the world's oceans. But also, these policy developments and enforcements inclusively protect every other marine trophic level and the associated flora and fauna that support marine mammal livelihoods. Without these "Hollywood stars" of the seas, our national and international ocean policies are likely to have been

decades behind what we have now simply by lacking means of attracting enough attention and necessary political will for non-marine-focused professionals and politicians to express their sympathies with their voted influences. And, yes, this means that even the microscopic, translucent, nearly-invisible-eye-popping microorganisms that spend their time spastically flipping in the convulsive, micro-planktonic soup that comprises much of the unseen marine environment -- this means that, yes, they are protected, too. So, instead of discrediting marine mammalogists for their labors because sometimes they do have to apply sunscreen when their sea-sprayed locks are being blown into the warm, tropical air off some South Pacific island, understand that the same bronzed biceps that Hollywood was inevitably attracted to for their films and TV series are also the same biceps carrying theodolites up mountain sides to geographically track migrating cetaceans along the coastline; the same tanned hands to steady their line of binocular vision for hours on end upon pods surfacing across the horizon in order to attain an accurate as possible population count for conservation concerns attributed to a species' survival; and the same sun-kissed shoulders aiming to retrieve biopsy samples from an endangered species for genetic analysis, pollutant contaminant levels, and monitoring the sex ratios of the given population for the betterment of the ocean systems as a whole. And, not to worry because, off camera, these bronzed skins also fade back to their pasty white pigmentation back in the land-locked lab where they spend the next few weeks, months, even *years*, analyzing the field data to better inform policy-makers of marine mammal population baselines. This is how we attain knowledge regarding the health of associated predator-prey relationships within studied geographic areas, pollution levels bioaccumulating throughout the ocean's food webs, and any observable changes in migratory, feeding, breeding, calving, or resting behavior in relation to offshore human activities and development. So, we understand where the eye-roll is coming from. But in all honesty, we use marine mammals' environmental stardom for the benefit of ocean conservation, as a whole.

To the general public who whimpers over that charismatic dolphin "smile" in performing aquaria, I have a few words for you, too. From someone who has learnt a bit of what information these data are bringing back from many of the marine mammal research

efforts out there, thank goodness that many dolphin species appear to be smiling from the characteristic structure of their jaw beneath often rounded melons. If they could express their true facial expressions as well as our human, automated eye-rolling marine mammalogist discreditors are obviously capable, I am convinced we'd be seeing much of the following: Unhealthy, pollutant-poisoned frowns; spatially encroached-upon furrows; tragically unforgiving broken hearts of pod members depleted of their now captive or sashimi-ed mates from the wild; we would definitely get the dolphins' equivalent of the flipped bird for overfishing; bodily-vibrating scowls from our continuous blasts into their waters with propagating noise pollution produced by offshore oil and gas exploration, exploitation, and development; and not to exclude the motionless, blank stares that beached dolphins produce after sonar effects settle into their immediate, lifeless shock. Ah, yes, the charisma hidden beneath the physical make-up of a dolphin's rostrum and jaw.

As you can see, the life of a marine mammal researcher is absolutely chock-full of Hollywood-worthy, sunbathing glory. There are obviously so few battles to be fought for the environmental protection of the marine environments, and by no means do marine mammals serve as the poster child for what legislators and public officials can save. What we can promote as actions saving marine mammals often serve as umbrella protective devices for even the googly-eyed microorganisms in trophic levels far below. That so-called "smiling" dolphin charisma carries weight far beyond tuna can, dolphin-safe labels.

Look: The problems are real. The solutions are conceivable. The political battles are endless.

With flippant attitudes, sun-kissed skins, and (naturally, of course) sun-bleached blonde hair, we marine mammalogists take on some of the ocean's biggest battles beyond the fact that the outcomes are relevant to marine mammal-centric causes. The outcomes of these political and scientific battles are often best represented by marine mammals because their air-breathing, breaching, and "smiling" charisma is relatable to humans in ways that

ignite the emotional significance of marine conservation. Our human efforts to live within this natural world as the environmentally dominating and overly adaptable species that we have become, are brought to the surface with every cetacean breath. With this emotional tie to our marine environment, we are reminded to live more sustainably within, and less *beyond*, the realms of this natural world.

So, until Hollywood realizes the ocean's microscopic and mid-sized opportunities for red carpet charisma, I will continue to support the driving political forces that are carried upon the backs of marine mammals. They serve as our ambassadors of the sea. With the multitude of marine conservation issues that we face, I feel at utmost gratitude for the continued existence and protection of large marine animals. They provide the world a very important image to hold onto – a visual hope with which conservation issues can still appear obviously personal.

To the discerning environmental colleagues seemingly robbed of what I am sure is a much-deserved spotlight for your own foci of research: Charisma is a good thing for our shared big picture of marine conservation.

To lights flashing, people dancing, Hollywood: Please, continue to eat your hearts out at our planet's natural wonders and do explore the less obvious charisma contained beneath the ocean's surface. Despite their often translucent figures and blobbed appendages, the microorganisms, like any other organism, have their own story to be told. Do tell these other stories.

And, to the general public: Romanticize your hearts away. After all, it is the personal dream of becoming someone who shares his or her worldly understanding with other marine creatures that then leads to the tireless determination of one day living such a reality. We were all inspired at some point. It requires a bold character to offer your sweat, blood, and tears to protect those less capable of their own preservation. It requires charisma.

Brief Excerpts

The Senseless Chaos Preceding a Desensitized Profession

Becoming a Marine Mammal Observer

I landed in Wellington, a city renowned for its gusty presence on the southern coast of New Zealand's north island. It was past one o'clock in the morning. I was by myself, waiting in the customs line at the airport with a stack of six black Pelicases, my backpack, and a shaky intuition that, this time, I really was in over my head.

A colleague of mine, with whom I had researched humpback whales off the east coast of Australia over the past two years, had hired me, on the spot, to work aboard a seismic vessel off the New Zealand coast. Upon our sturdy handshake two weeks prior to my Wellington arrival, I had immediately been handed the professional title of an "Independent Marine Environmental Consultant" now working under my colleague's consulting company. This same handshake then resulted in what may only be described as organized chaos.

I flew out early the next day from that year's Australian humpback whale study to attend an offshore safety training course on New Zealand's west coast. Here, I was trained to escape simulated helicopter crashes underwater in an exercise pool; and to find the safe exits hidden within pitch-dark, smoke-filled engine rooms, with, of course, realistic shopping carts and lifting weights acting as shin-bruising obstacles in my path toward simulated safety. After puffing the correct number of resuscitating breaths into a hollowed plastic dummy, I flew back to Australia sufficiently exhausted from surviving so many imitated disasters, but carrying with me the necessary Basic Offshore Safety Instruction Emergency Training (BOSIET) certificate needed for my upcoming job. Meanwhile, I prayed that the course was a mere precautionary protocol, and not a true reflection of the tasks soon to be demanded of me offshore.

My research colleague (and then, new boss) welcomed me back to Australia with open arms. I was simply grateful that my plane had landed safely from its leap across the Tasman Sea, and that I didn't have to practice unbuckling seatbelts underwater again – given, of course, the seemingly small chance that anyone would survive such an event. It

is amazing what fears become solidified in one's mind after watching real-life video footage of helicopters crashing into the ocean. Needless to say, I gave thanks to the landing and was practicing digital tag placements on our pretend humpback whales in no time. The strategically placed boogie boards and floating buoys prepared me for tagging the back of the next migrating *Megaptera novaeangliae* – or for those who are thankfully less Latin-inclined -- the humpback whale.

Our humpback field season had come to a much-too-quick conclusion. The fine-tuning of my newly acquired Super Woman survival skills over in New Zealand had cost me a runway placement in our research group's annual highlighted social event: A PooPee Pants Promenade. Now, please, let me explain. A traditional red-carpeted modeling event took place to reveal designer adult diapers – decorated Depends that we had designed for those inconvenient, yet undeniably natural tendencies when one has to urinate or, heaven forbid, defecate while researching out in the field. Of course, you might be thinking that as marine mammalogists, we could simply do "our business" over port and starboard, let alone off the more concealed, stern-born stepladder. And most of us are all too comfortable while doing so – particularly the men. However, twelve-hour aerial surveys spent counting whales is yet one example of when men grow intimate with their emptied water bottles and women… Well, women facilitate – and might I add, *awkwardly* facilitate – urinary tools like the infamous "shenis." Yes, this research tool with its overly charming name is yet another of the field's well-kept secrets held amidst the more outdoorsy females who seek practical solutions to their necessary bodily functions. The "shenis" helps women funnel their urine into bottles just the same as the men's counterpart assists them in their own funneling operations. It's a matter of equality for us ladies, really. Of course, while this provides a solution to those women necessarily squatting behind the back row of seats in a plane's cabin on population counts during aerial surveys, our research crew came up with the more subtle, designer-level fashion of marine mammalogist-certified PooPee Pants: Adult diapers to serve an already practical niche of professionals while simultaneously advertising an undeniably trendy name.

Upon my Australian return, I was inundated with photographs of the season's runway success, only to help celebrate the obvious patenting potential of our ingenious collective creativity. Data analysis, theodolite tracking, acoustics recording, and digital tag placements and retrievals continued, proceeded by our 5:00AM morning surf sessions. We then packed up our research equipment, rolled up the fashion designs for next year's modeling runway, and traveled our separate ways to the next research gig. I was off to Australia's capitol city to collect a new set of research equipment and to absorb the New Zealand guidelines recommended for my upcoming seismic vessel job.

I suppose here is as good a place as any to describe what I mean by a "seismic vessel job."

(… Continued with account of "marine mammal observer" job description as I was first told; then the actualities of the job in the field and how the two stories varied; what the realities signify for marine policy needs, technological developments, environmental education, policy enforcement, and future scientific studies, etc.)

Staying Afloat with Blubber in Water

Simply No Room for the Crude

What I had once seen hanging from the ceiling of the Monterey Bay Aquarium as my youth's acceptance of a true life-size model, now swam next to me in Alaska's Kenai Fjords National Park, dwarfing the bust of the twenty-seven-foot research boat on which I stood. He was a full size bull orca, on his side, paddling his tail up and down like the smooth caress of a bucking bronco kicking underwater in slow-motion. He transfixed his eye on me. It was the first time I could ever clearly distinguish an orca's eye from the surrounding black pigment of its jigsaw puzzle facial patterns. The whites of his body shocked the turquoise watery environment like the bright and perfected face paints on a New York City street mime: The lower jaw turned to reveal its bright underside, the bleached tear patch trailing behind his blackened marble eye, the faded photograph negative streaked behind his dorsal fin, and that perfect thumb print of snow flanked just before his streamlined peduncle. These seemingly fluorescent contrasts were the only distinct notations of the monster sweeping his fluke alongside the boat's starboard, keeping his opaque eye transfixed on me. And with every momentous thrust of his fluke, a flash of tail under-white would distract my eye like the flashing silver fishing lure does a predatory Chinook in chase. The research vessel's motor hummed steadily, seeping warm diesel fumes that penetrated the otherwise pristinely cold surrounding air; the orca's momentous tail was trailed by the swirling kisses of his boiling curiosity upon the water's surface.

There are moments in my life when the intensity of my own revelations has shocked me into a continuous moment of silence, right at the spot. They are understandings I feel honored to have been rewarded, regardless of the influences their caused disgust, fear, anger, ecstasy, perfection, or awe have had on my life, thereafter. I came to Alaska to escape one such revelation – a revelation that I felt was all too powerful for me to handle at my age and level of status in that "bigger world". I denied being ready for such awareness, but in truth, was probably far behind such an understanding than others my own age ought to possess.

(… Followed by account of working as the lead Marine Mammal Observer and Passive Acoustic Monitoring Operator onboard a BP exploratory seismic vessel in the Gulf of Mexico during the explosion of the BP DeepWater Horizon tragedy last year; my emotional need to be reminded of why it is important to fight the battles to protect the marine environment despite the often David and Goliath situations of facing multi-billion dollar, international offshore oil and gas corporations, such as this experience had served me; and wrapped up with my month-long inhabitance in a barn in Seward, Alaska (amongst nature) where I then landed an extremely fortunate opportunity to research the wild orca populations and allow my memory to be instilled with the most unbelievable images and experiences I have ever had in my life thus far. Needless to say, I was reminded of why conservationists choose to battle the "big guys". I was researching survivors of the Exxon Valdez tragedy from twenty-five years previous.)

Home, Sweet Home

The Drastic Arctic Environment as Home to Many Conflicting Interests

Polar bear eye balls swirled in their jar of formaldehyde and stared back at me, uncoordinated and floating, last September. I was alone, staying in an abandoned Navy base in the Eskimo village of Barrow, in a building wearing the splintered wooden placard of "ARF" – Arctic Research Facility. I explored my new place of residence, and for the next ten days, couldn't help but feel that I had slipped into a scene from John Steinbeck's Cannery Row. I found myself amidst some kind of Doc Rickett's Arctic wildlife collection: Cut baleen dripping oil on the cement lab floor, ice seal reproductive organs displays through glass encasements, and more of those watchful, yet wandering eyes.

I had flown to the most northern point of Alaska to simply "get a feel" for the realities of which, up until then, I had only heard of by word of mouth or read in written accounts. I had no plan other than to observe, meet a couple of wildlife researchers, and ask a few questions regarding the plans for offshore oil and gas development along the way. On my first night at the ARF, a researcher popped in to hand me a couple of cans of polar bear spray, a Velcro harness to help fasten the cans to my belt loops, and to educate me of the stealth, predatory means by which polar bears are renowned for stalking their prey for several days preceding their fatal attacks. "Oh, and lastly," he added, "tomorrow is Sunday so I and the other researchers will be off work and away from the lab. You're on your own if you decide to head outside. Good luck." Behind his exit, he closed the two sets of doors leading out into the twilight-cold world outside, and alone once again, I readied myself for what I could sense would be a very eerie night's rest preceding an even more anxiety-ridden day ahead.

(... Continued written account of patience for allowing things to unfold in a relatively slow-moving community; witnessing sixty bowhead whales feeding off the coast in a whaling boat with native Inupiaqs; meeting the first man to make it to the North Pole by sled, and helping him run his sled dogs across the open tundra; learning of the fanatical kicking defense strategy needed when fending off rabid Arctic foxes around town;

attending a New York writer's presentation to a local Inupiaq writing class and being encouraged to write about the Arctic's offshore oil industry in relation to marine mammal regulations and native sustainability traditions; hiking the tundra with an English teacher and wildlife biologist, only to casually stroll upon a human skull which apparently is fairly common; attending an Inupiaq family reunion celebrating the Barrow-famous Brower family and their eldest married couple's anniversary; and becoming aware of the heavy political and monetary chains that link the oil and gas companies all too closely with the wildlife departments, schools, local government, tribal hunting regulations, and essential commodities present in the Barrow village.)

The Last Fading Cloud of Ink

Concluding Remarks

The previously included short pieces and brief excerpts are intended to offer a sample of some of my written accounts from the marine conservation field. These written accounts also provide a snapshot view of the creative, exploratory process in which I have searched for the most effective point of view to offer the reader, as well as the writing style that may captivate the broadest audience.

As I have mentioned previously, this capstone project is only the very beginning of what I hope will evolve into my professional writing career. This Master's program has enabled me to trial various approaches toward marine conservation by taking in courses as far apart across the spectrum as communications to environmental economics, or project management to international marine law and policy. It is with this diverse academic background as well as the confidence gained from my committee members' and colleagues' constructive feedback that I feel I may now enter a writing career more aptly aware of the role I may serve in the marine conservation community, and hopefully, beyond.

Thank you, once again, for serving as my first captive audience. I hope you have enjoyed the written accounts and excerpts displayed within this project. With the continual evolvement of SQUID INK's foundational objectives and flexible business layout, I intend to expand the supportive network in which diverse creative expressions from the field of marine conservation may be openly shared.

References

BPlans: Your Business Plan Starts Here. 2011. Palo Alto Software, Inc. 3 June 2011. http://articles.bplans.com/writing-a-business-plan/a-standard-business-plan-outline/29.

Carson, Rachel. The Edge of the Sea. New York: The New American Library, Inc., 1955.

Carson, Rachel. The Sea Around Us. New York: The New American Library, Inc., 1950.

Carson, Rachel. Silent Spring. Boston: Houghton Mifflin Company, 1962.

Carson, Rachel. Under the Sea Wind. New York: The New American Library, Inc., 1941.

Colborn, Theo, Dianna Dumanoski, and John Peterson Myers. Our Stolen Future: Are We Threatening our Fertility, Intelligence, and Survival? A Scientific Detective Story. New York: Plume, Penguin Books USA Inc., 1997.

Davidson, Robyn. Tracks: A Woman's Solo Trek Across 1,700 Miles of Australian Outback. New York: Vintage Books, Random House, Inc., 1980.

Dawkins, Richard. The Selfish Gene. Oxford: Oxford University Press, 1989.

Dillard, Annie. Pilgrim at Tinker Creek. New York: Harper & Row, Publishers, 1974.

Dillard, Annie. Teaching a Stone to Talk: Expeditions and Encounters. New York: Harper & Row, Publishers, 1982.

Dinerstein, Eric. Tigerland and Other Unintended Destinations. Washington: Island Press, Shearwater Books, 2005.

Earle, Sylvia A. The World is Blue: How Our Fate and the Ocean's Are One. Washington, D.C.: National Geographic Society, 2009.

Ehrlich, Gretel. The Solace of Open Spaces. New York: Penguin Books USA Inc., 1985.

Gelman, Rita Golden. Tales of a Female Nomad: Living at Large in the World. New York: Three Rivers Press, Random House, Inc., 2001.

Goldberg, Natalie. Wild Mind: Living the Writer's Life. New York: Bantam Books, 1990.

Goldberg, Natalie. Writing Down the Bones: Freeing the Writer Within. Boston: Shambhala Publications, Inc., 1986.

Gore, Al. Earth in the Balance: Ecology and the Human Spirit. New York: Rodale, Inc., 1992.

Gore, Al. Our Choice: A Plan to Solve the Climate Crisis. Read by Al Gore. Audio book CD series. New York: Rodale, Inc., 2009.

Heath, Chip and Dan Heath. Made to Stick: Why Some Ideas Survive and Others Die. New York: Random House, Inc., 2007.

Kull, Robert. Solitude: Seeking Wisdom in Extremes. Navato, California: New World Library, 2008.

Lear, Linda. Rachel Carson: Witness for Nature. New York: Mariner Books, Houghton Mifflin Harcourt Publishing Company, 2009.

Lilly, John Cunningham. Lilly on Dolphins: Humans of the Sea. Garden City, New York: Anchor Books, 1975.

Lopez, Barry. Arctic Dreams. New York: Charles Scribner's Sons, 1986.

Marino, Lori, Richard C. Connor, R. Ewan Fordyce, Louis M. Herman, Patrick R. Hof, Louis Lefebvre, David Lusseau, Brenda McCowan, Esther A. Nimchinsky, Adam A. Pack, Luke Rendell, Joy S. Reidenberg, Diana Reiss, Mark D. Uhen, Estel Van der Gucht, and Hal Whitehead. "Cetaceans Have Complex Brains for Complex Cognition." *PLoS Biology*, e. 139(v. 5): May 2007.

Matthiessen, Peter. The Snow Leopard. New York: The Viking Press, 1978.

Morton, Alexandra. Listening to Whales: What the Orcas Have Taught Us. New York: The Ballantine Publishing Group, Random House, Inc., 2002.

Portny, Stanley E. Project Management for Dummies. 2nd ed. Indianapolis, Indiana: Wiley Publishing, Inc. 2007.

Quammen, David. The Boilerplate Rhino: Nature in the Eye of the Beholder. New York: Scribner, Simon & Schuster, 2000.

Roberts, Paul. The End of Oil. Boston: Mariner Books, Houghton Mifflin Company, 2005.

Smolker, Rachel. To Touch a Wild Dolphin: A Journey of Discovery with the Sea's Most Intelligent Creatures. New York: Nan A Talese, Doubleday, Random House, Inc., 2001.

Steinbeck, John. Cannery Row. New York, Bantam Books, The Viking Press, Inc., 1945.

Weiner, Jonathan, ed. and Tim Folger, series ed. The Best American Science and Nature Writing 2005. Boston: Houghton Mifflin Company, 2005.