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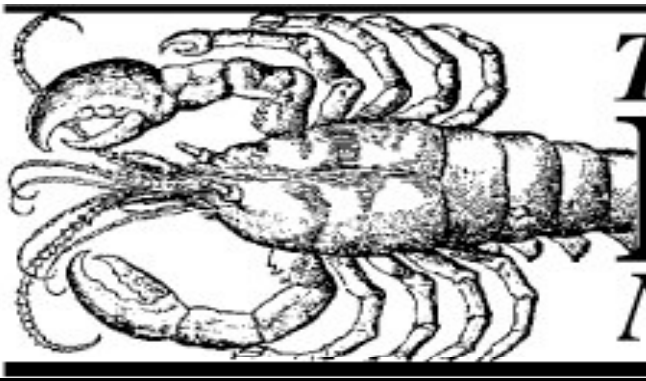


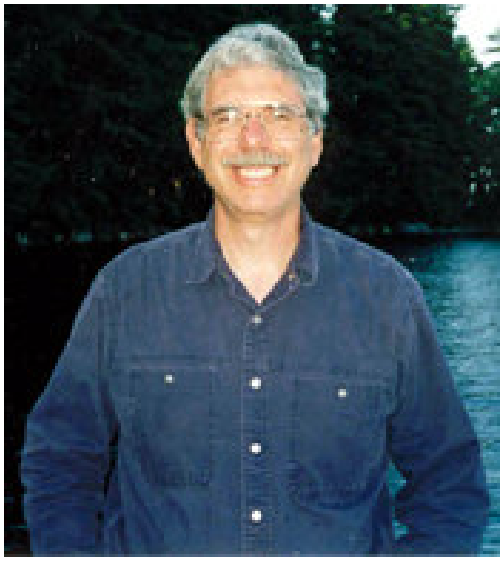
The Lobster NEWSLETTER

ANNOUNCEMENTS

Rhode Island Sea Grant Science Symposium 2005

"Lobsters as Model Organisms for Interfacing Behavior, Ecology, and Fisheries"

To Honor Originator of *The Lobster Newsletter* Professor J. Stanley Cobb



The Annual Sea Grant Science Symposium will be held on July 14, 2005, at Corless Auditorium, University of Rhode Island (URI) Graduate School of Oceanography, Narragansett, R.I. The symposium, entitled "Lobsters as Model Organisms for Interfacing Behavior, Ecology, and Fisheries," will honor J. Stanley Cobb, URI biological sciences professor, who will be retiring in 2005. As most colleagues and Rhode Island fishermen know, Stan Cobb has been teaching as a professor at URI since 1970, doing extensive work with lobsters, and this symposium will recognize his many contributions to the field of lobster biology. The day will include two synthesis talks, summarizing recent multi-collaborator fisheries ecology research programs on the American clawed lobster, Homarus americanus, and the Carribean spiny lobster, Panulirus argus, and discussions regarding current and future challenges for the lobster fishery. There will also be a poster session. The symposium is sponsored by Rhode Island Sea Grant and Maine Sea Grant. For more information, visit the symposium website at:

http://seagrant.gso.uri.edu/reg_fish/lobster_symposium.html

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Details of Next International Lobster Conference Revealed!

The 8th International Conference and Workshop on Lobster Biology and Management will be held in Charlottetown, Prince Edward Island, Canada, from September 23 to 28, 2007. The Atlantic Veterinary College Lobster Science Centre and the Prince Edward Island Department of Agriculture, Fisheries and Aquaculture will co-host the Charlottetown conference. Barry MacPhee, Manager of Marine Fisheries for the PEI Department of Agriculture, Fisheries and Aquaculture, along with Jean Lavallée, Clinical Scientist at the AVC Lobster Science Centre, will be co-chairing the Charlottetown conference. Some of the possible session themes for the conference include broad topics such as climate change implications for lobster fisheries, ecosystem-based management, and lobster health concerns, or more focussed topics such as species introductions and transfers. We welcome and value your opinions so do not hesitate to contact either of the co-chairs with ideas for sessions themes and topics!

Charlottetown has one of the most unique histories as a meeting place, and good prospects for successfully meeting expectations for this lobster conference series. After all, the first major meeting in Charlottetown resulted in the birth of a nation: Canada. The Charlottetown conference promises to be an exciting opportunity for Prince Edward Island to showcase itself to the world. Prince Edward Island is world-renowned for its hospitality and for the distinctive flavour and high quality of its seafood. Not only does this smallest of all Canadian provinces have a tremendous lobster industry with annual landings of more than 9,000 metric tonnes, but products such as Malpeque oysters and PEI blue mussels are indigenous to and synonymous with Prince Edward Island. For this reason, we are holding the conference back-to-back with the International PEI Shellfish Festival. And don't forget to bring your golf club… Prince Edward Island is the best golf destination in Canada with over 30 golf courses!

For more information about the conference, contact Barry MacPhee (jbmacphee@gov.pe.ca) or Jean Lavallée (jlavallee@upei.ca), or check the website on a regular basis as the site is changing and evolving as more details of the conference are put in place:

http://www.lobsterscience.ca/conference/

We hope to see and meet as many people as possible from across the globe, in Charlottetown in September 2007!

RESEARCH NEWS

Jasus edwardsii: are young juveniles *really* asocial?

FROM: John Booth

It seems to be common for juvenile palinurids first to be asocial, and then to become communal at about 1 year of age. Accordingly, in tank studies juvenile *Jasus edwardsii* remained asocial and mainly solitary—like the puerulus—until they reached about 35 cm CL (about 1 year) (Butler et al. 1999; Booth 2001). Most of the field evidence is generally consistent with this: for example, in widespread surveys in Tasmania, Edmunds (1995) found that most juveniles <35 mm CL were solitary. But there have been incongruent observations: MacDiarmid (1994) reported that off northern New Zealand only about 15% of juveniles <30 mm CL in the field resided alone. And results from a recent laboratory experiment also suggest communality, at least in some situations.

I addressed experimentally the issue of sociality among puerulus and young juvenile *J. edwardsii* using a different approach. Where there is the choice of two blocks in a tank, does the presence of a lobster in one of the blocks influence which block a new lobster introduced into the tank will take refuge in? This was tested for a range of lobster size groups in static water.

A semi-transparent plastic container perforated with many 5 mm holes was wedged into the central hole of Each of a pair of blocks in the circular tank; the blocks were separated by about 0.5 m. One of the perforated containers held 1–6 lobsters (the number depending on lobster size, and with none being close to a moult) of the same size group as the test animal. The other container was empty. An individual test lobster was placed half way between the two blocks

Near dusk and the block into which it had moved determined the next morning. Each test animal was used only once. At least 10 replicates were run for each size group. The block to hold the container, which housed the incumbent lobsters, was alternated among the replicates.

The results show that whereas pueruli displayed no tendency to associate with incumbent lobsters, nor to avoid them, all juvenile size groups except first-instar juveniles—up to almost 2 y of age—were significantly associated with the incumbent lobsters. For the first-instar juveniles, 75% were associated with incumbent lobsters, but this was not significant. If the juvenile lobsters were asocial then in 50% of the replicates the test lobster would be expected to be in the brick without any incumbent lobsters.

Under the conditions of this experiment, juvenile rock lobsters were gregarious from soon after settlement. This result is at odds with those of Butler et al. (1999) and with most—but not all—the field observations. The reason for the disparities are unknown. The cues could be one or a mix of visual, olfactory, and auditory, but my results shed no light on this. The results may have implication for field enhancement as well as aquaculture of J. edwardsii. Whereas asociality would suggest that individual refuges or communal refuges would be equally OK, communality suggests something different: if the lobsters are to thrive, with as little stress as possible, perhaps only refuges that house more than one lobster should be provided.

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Table 1. Size groups (and approximate age) of individual *Jasus edwardsii* lobsters tested for their predisposition to associate with lobsters of the same size group. With incumbents, the test lobster had taken refuge in the block that held the container of lobsters.

Size group (mm CL)	Approx. age (mo)	No. replicates	With incumbents	Without incumbents	Percentage with incumbents	P
Pueruli	0	10	5	5	50.0	ns
First instar juveniles	0.5	12	9	3	75.0	ns
15-19	2	12	11	1	91.2	**
20-24	4	16	12	4	75.0	*
25-29	7	14	11	3	78.6	*
30-39	10	11	9	2	81.8	*
40-49	15	10	9	1	90.0	*
50-59	22	13	13	0	100.0	***

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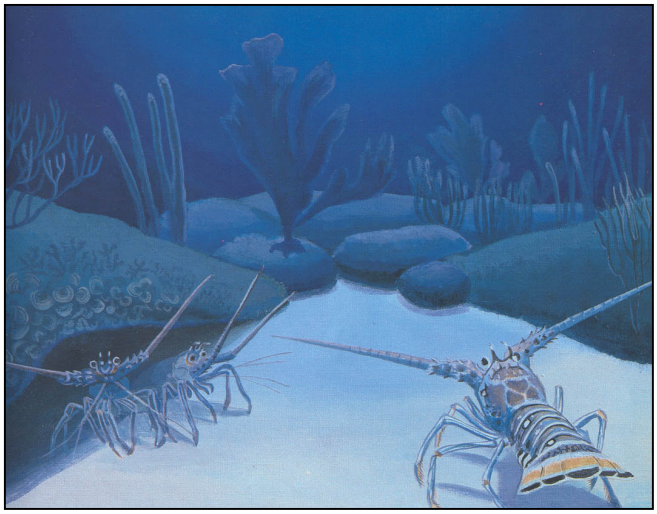

Graphic Credit: from the children's book "*Leroy the Lobster*" by Kathryn Orr (1986), MacMillan Press, NY

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Population dynamics and predation effects of spiny lobsters on fished and unfished reefs in New Zealand

From: Debbie Freeman and Alison MacDiarmid

Large increases in lobster density or biomass have the potential to initiate significant changes in the population structure, growth rates, movement patterns and feeding ecology of lobsters, through competition for mates and resources such as den space and prey. No-take marine reserves in New Zealand have been shown to support high densities and biomass of *Jasus edwardsii* (MacDiarmid & Breen 1992, Kelly *et al* 2000, Davidson *et al* 2002). Over the past two years, we have studied the lobster populations within and around a 2452 ha no-take area (Te Tapuwae o Rongokako Marine Reserve), on the east coast of the North Island of New Zealand.

To describe the growth rates and movement patterns of lobsters on fished and unfished reefs, we tagged over 5000 lobsters within the reserve and on surrounding reef systems during November/December 2003, using Hallprint T-bar tags. Every three months thereafter, pot surveys were undertaken within and outside the reserve, in collaboration with local commercial fishers, to determine lobster population structure and to recapture tagged lobsters. Over the past year, about 15% of the tagged lobsters have been recaptured at least once, with more than 100 lobsters being recaptured more than once.

On a reef system within the reserve, there was a clear pattern of movement of male lobsters inshore between summer and winter, and offshore between winter and summer. This is consistent with previous observations for this species (MacDiarmid 1991, Kelly 2001). Several of the males tagged offshore in 30-40 m depth last November were recaptured approximately 2 km further inshore between June and August 2004, then again offshore in November 2004 - in most cases within 100 m of where they were first captured. A small number of lobsters have moved between reef systems and across the boundary of the marine reserve, generally crossing the boundary during an inshore/offshore movement. However, most tagged lobsters have remained within a single reef system either within or outside the reserve.

The pot surveys have highlighted the issue of catchability. Within the reserve, the catch has been overwhelmingly large male lobsters, with CPUE reaching 40 kg of legal-sized male lobsters per pot lift. Yet, subsequent diver transects have shown that smaller lobsters (including females) are present. Seasonal changes in the catchability of females may also be masking the movement patterns of females. To date, very little movement of female lobsters has been detected.

An interesting finding has been that in several instances, individual lobsters caught in one pot in November 2003 and tagged, were recaptured together in the same pot, in a similar location, a year later. This may indicate that the social interactions among lobsters of this species are even more complex than previously believed. Further research is underway aimed at describing the finer-scale distributional patterns of lobsters within and outside the reserve, to establish whether there are differences in den social structure.

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To establish whether the observed increase in lobster biomass and density within the reserve is affecting the feeding ecology of this population, we are studying the activity patterns, nutritional condition, and diet of lobsters within and outside the reserve. In addition, the distribution and abundance of lobster prey species have been recorded. We found that some lobsters within the reserve are foraging intertidally at high tide both during the day and at night (Fig. 1).

Figure 1: Debbie Freeman observes daytime foraging of J. edwardsii in intertidal zone in NZ.

Gut content analysis has shown that these lobsters are ingesting primarily turfing coralline algae and turf-dwelling fauna such as small crustaceans and gastropods. Surveys of the intertidal reef community have shown that since the establishment of the marine reserve (and subsequent increase in lobster density and biomass), there have been significant changes in the structure of the intertidal reef community, with marked decreases in the extent of coralline turf. Experimental work is underway to establish whether the foraging activity of the lobsters within the reserve has contributed to these changes in the intertidal reef community.

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Male mating capacity in the New Zealand red rock lobster

From: Alison MacDiarmid and Robert Stewart

The capacity of different sized males to mate is a fundamental aspect of the mating system in lobsters. It is particularly important when considering the impact of exploitation on egg production because if mating capacity increases with male size, removal of larger males by the fishery may reduce the numbers of females mated or the proportion of eggs fertilized and thus affect larval production (Fig. 1).

Earlier experiments by MSc student Jenny Mauger showed that male red rock lobster *Jasus edwardsii* don't regenerate sperm supplies during the 6 week mating season and that small males had 25 fold smaller sperm supplies than larger males. Jenny 's research, based on histological examination of the vas deferens after single and multiple matings, also suggested that male sperm supplies were dependent on both the start-of-season size of the males gonads and the cumulative weight of females already mated. These data provided a theoretical limit to the cumulative weight of females that males of different size could mate during a single mating season but behavioral evidence was lacking.

We conducted a laboratory experiment to determine the mating capacity of males. Males ranging in size from 94 to 184 mm carapace length (CL) were provided with an excess of post-moult unmated females and allowed to mate. The females were matched in size to the males as earlier experiments had indicated a marked reluctance for larger females to mate with small males. At the end of the mating season, females were checked for the presence of an external clutch and the eggs removed and weighed by cutting through the ovigerous setae.

The experiment showed that 500 g males (~100 mm CL) can mate with 1-5 females totaling 1-2 kg in a single mating season while large males of almost 3 kg (185 mm CL) can mate with up to 17-18 females totaling 17 kg. The consequences for larval production are equally impressive with females mated by a single 500 g male together able to produce only about 270,000 larvae per season while females mated by a single 3 kg male can together produce almost 3 million larvae - an 11-fold difference. These findings suggest that where fishing has skewed sex ratios strongly towards females, and large males are rare or absent, some females may not find a mate and egg production could be reduced.

Figure 1: Female *Jasus edwardsii* hatching larvae

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Male - but not female - mate choice by the red rock lobster is influenced by numbers of potential mates in a den

From: Alison MacDiarmid and Rob Stewart

Just how lobsters choose their mates is critical when trying to determine how changes in the local abundance and sex ratio caused by fishing ultimately affect reproduction and larval production. Earlier laboratory experiments on the New Zealand red rock lobster, *Jasus edwardsii,* indicated that mature post-moult but unmated females predominately shelter with the largest male while large (>2 kg) males shelter with larger females (>120 mm CL) more often than expected by chance alone. These experiments were conducted with single lobsters inhabiting shelters but what happens if, in a more realistic scenario, multiple potential mates occupy shelters? Is the response of females influenced by the number of smaller secondary males that often co-occur in large male dens during the mating season? Are males attracted to dens containing more post-moult females?

We conducted experiments in large outdoor seawater pools (Fig. 1). For the female choice experiments we tethered a 2 kg male (~167 mm CL) to large 500 x 500 mm shelters in each corner (Fig. 2). Within each shelter we also placed a basket containing 0, 1, 2 or 4 smaller mature males each weighing about 500 g. Eighteen post-moult, unmated females were placed in the pools one at a time for 24 h and their final den positions recorded. The male choice experiments were very similar except the baskets in each shelter contained 0, 1, 2 or 4 500g post-moult unmated females, there were no tethered lobsters, and we tested the responses of twenty ~145 mm CL males for 24 h each.

Figure 1: Outdoor test pools at NIWA, Wellington, New Zealand

Figure 2: A tethered male red rock lobster

We found that the presence of smaller mature males did not affect the outcome of female choice but that males responded strongly to the shelter containing the largest biomass of females. These results, in combination with earlier experiments, suggest that to increase their probability of mating with the largest male, females should either search for that male or share a den with other females to increase their target size. However, because like-sized large females also compete for access to males large females should attempt to den with smaller females. Similarly, males should search for the shelters containing the most post-moult females and attempt to displace the resident male or reside in one shelter and wait for females to arrive.

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Field observations suggest that different sized males adopt different strategies, with 140-150 mm CL males searching day and night for females whereas very large males are largely resident in the largest shelters capable of sheltering many females. Females may adopt both strategies - searching for males at night but residing in shelters during the day. These data will be used in models of the red rock lobster mating system to estimate larval production under differing rates of exploitation.

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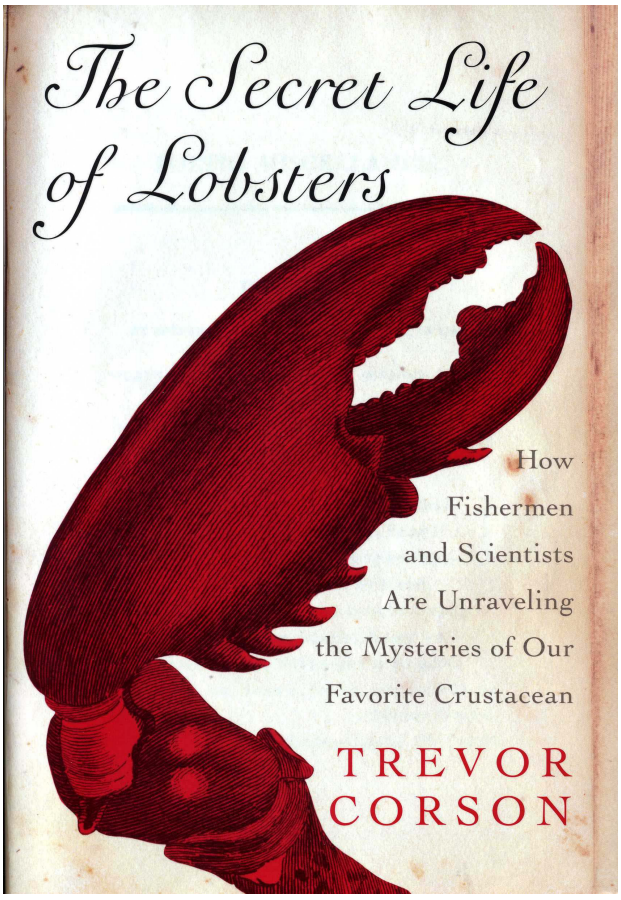
BOOK REVIEW

Decoding *"The Secret Life of Lobsters"*

From Michael Fogarty



Trevor Corson's book ***The Secret Life of Lobsters*** (2004, HarperCollins Publ., NY) provides an entertaining and highly readable account of the intersecting lives of lobsters and humans along the New England coast. Those of you who have had the experience of greeting the dawn to the rhythms of a lobster boat setting to sea with the indescribable scent of salted bait, exhaust, and fresh salt air and the steady thrum of a diesel engine in the background, will appreciate the vivid descriptions of days in the life of a lobster fisher. The strong work ethic as well as the strong conservation ethic of lobster fishers is very much in evidence in these pages. We see these men and women as skilled naturalists as they capture their quarry with hard won and keenly observed knowledge of the behavior and ecology of lobsters.

We meet many of the researchers who have so enriched our understanding of lobster biology in recent years including (in order of appearance) Bob Steneck, Carl Wilson, Jelle Atema, Diane Cowan, Stan Cobb, Rick Wahle, Susan Waddy, Lew Incze, and Win Watson.

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Readers of this newsletter will be gratified to find descriptions of how several of our colleagues came to study our favorite crustacean. We learn of the path that led Jelle as a talented flautist and researcher to Woods Hole from the Netherlands and to the study of lobster pheromones. We discover Bob's early love of natural history and how he became intrigued by lobsters as he expanded his initial research focus in tropical marine ecosystems to encompass temperate ones from his new position at the University of Maine. Diane's fascination with lobsters can be traced to the ninth grade and we see clearly the dedication and resolve that led her through her degree program and ultimately to the establishment of the effective and much needed Lobster Conservancy. Rick's first encounter with the diversity marine life came during a trip to the Caribbean at the age of ten and his introduction to diving at the hands of an enigmatic character, Her Majesty's Salvager, in the British West Indies.

There are a number of readily identifiable themes and narrative devices running through the book. The reader encounters the first of these in the interwoven descriptions of courtship in lobsters and in some of the humans connected to them, providing a strong human interest angle that shines through the early chapters. Another major theme is one of scientific intrigue and conflict. This one concerns me greatly and I think it is worth exploring the truth of the allegations contained in the book. Some very serious charges are made and the readers of this newsletter, in particular, deserve to know if the accounts provided in the book are accurate.

Mr. Corson's web of intrigue weaves several different tales of supposed duplicity into an overall indictment of government scientists. These include alleged withholding of information from NMFS trawl surveys from Bob to hide an increase in lobster abundance, suppression of information by the Maine Department of Marine Resources from the lobster industry, and conflict over Bob's argument concerning the advisability of raising the minimum legal size. So how do these charges stack up? Here's a score card:

Book Account: The attempt to hide trawl survey information culminates in a climactic scene in which lobster trawl survey data are leaked to Bob by an anonymous source inside the National Marine Fisheries Service (NMFS) – presumably to expose the hidden information showing an increase in abundance.

Reality Check: On this and on two previous occasions, I assembled lobster trawl data with the help of a colleague and openly sent the information to Bob. There was certainly no leak — nor was there anything to hide. Stock assessment information showing the increase in lobster abundance starting in the early-mid 1990s was made widely available in a number of public documents and presentations and in trade papers such as Commercial Fisheries News (CFN).

Book Account: Mr. Corson implies that the Maine DMR attempted to suppress information in an independent report by Lou Botsford dealing with, among other topics, v-notching as a management tool. It is further implied that DMR tried to hide this information in order to "roll back" the v-notching regulation in favor of increasing the minimum legal size.

Reality Check: The report was commissioned by the Committee on Marine Resources of the Maine Legislature, which was solely responsible for its distribution. DMR was a customer, on equal footing with the lobster fishers, processors, and others. DMR did not control the report. The

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findings were widely disseminated through public presentations by Lou and reported in various public media in Maine, including local television and trade publications such as CFN. There was never any consideration of eliminating v-notching at the meetings depicted in the book or of substituting an increase in the gauge for this regulation.

Book Account: During Bob's fight to halt planned increases in the minimum legal size he is hauled before a "forbidding court of experts" described as "the committee of government scientists that oversaw lobster management", to make his case and is rebuffed

Reality Check: Bob was, in fact, invited to address the Scientific and Statistical (S&S) Committee of the New England Fishery Management Council, comprised of independent academic researchers and chaired by a colleague of his at the University of Maine. The committee's role was that of an honest broker. The committee members had no role in lobster management and no axe to grind. They decided that the weight of the evidence did not support the argument to defer the gauge increase. In the book, this verdict is intoned by a government scientist at a council meeting to the disappointment of the assembled lobster fishers. In fact, it was delivered by a member of the S&S committee.

In contrast to tales of conflict, examples of cooperation and collaborative work are never mentioned. For example, government scientists from the U.S. and Canada joined Bob as Co-Principal Investigators in five submersible projects funded by the National Undersea Research Program during the period 1993-1999. As for collaboration with lobster fishers, no mention is ever made of the many projects in which government scientists joined with industry to conduct gear studies, large-scale tagging experiments, and other cooperative research projects. No mention is made of the joint effort of government scientists and lobster fishers to find effective management solutions through the establishment of Effort Management Teams designed to talk through different points of view. Nor is any mention made of the extensive efforts of government scientists on behalf of the U.S. lobster industry in a trade dispute with Canada that ultimately went to arbitration in the Hague, with the U.S. prevailing and thereby protecting the sacrifices made by U.S. fishers in raising the minimum legal size.

So how did it come to this? It seems to me that it is linked to the establishment of the basic themes throughout the book. The theme of conflict and intrigue, a tried and true literary device, is a sure winner (and book seller). The heros and villains were cast early on and it remained only to script the play as a Manichean struggle between light and dark.

Mr. Corson is a gifted storyteller. Yet in letting his craft trump the facts in the service of his theme he has, in my opinion, done a real disservice to the reader who should expect a straight factual accounting of what actually happened. The merits of the book in bringing science to a lay audience and in portraying the dedication and ingenuity with which researchers approach their work are marred by this deep flaw. In decoding ***The Secret Life of Lobsters***, it will pay the reader to be aware of the themes coursing through the book and how the story is structured to fit them.

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A Response to Dr. Michael Fogarty's review of *The Secret Life of Lobsters*

From Trevor Corson

I am grateful for the many kind words Dr. Fogarty has for my book. I am also grateful for the opportunity to provide additional information regarding some of the issues he has raised. The National Marine Fisheries Service (NMFS) failed to make taxpayer-funded data available for scrutiny during a two-year period from 1996 to 1998. The data in question was a much larger data set than those Dr. Fogarty provided on two previous occasions. Verbal requests to NMFS employees for this larger data set were met variously with silence, no instruction on how to obtain the data, and a statement that only a Freedom of Information Act request would produce the data. The data was finally released not through official channels but by a NMFS employee on leave from the agency whose identity I was asked to keep anonymous. I followed the common journalistic practice of altering minor details to obscure this person's identity; otherwise, the account in my book adhered strictly to testimony about these events from a source with intimate knowledge of them, who provided me with entirely consistent descriptions in two tape-recorded interviews separated by nearly two years. This source has since reconfirmed the accuracy of my portrayal. A second source, also with intimate knowledge of these events, has further confirmed that my portrayal is accurate. Nine months prior to the publication of my book, I asked Dr. Fogarty to confirm or deny the accuracy of this account of events and he declined to comment.

Dr. Fogarty is correct that published NMFS trawl data showed increasing abundance at minimum legal size and above (CL ≥ 83 mm). But that was not the issue. The issue was that scientists at the NMFS had argued that despite this increasing abundance, too many lobsters were being trapped at too small a size, endangering the reproductive stock. Scientists outside the NMFS had been unable to confirm the legitimacy of this argument because the agency had not published trawl data specific to reproductive-size lobsters. The purpose of requesting the full data set from the NMFS was to allow scientists outside the agency to disaggregate the data to determine the trend specific to reproductive size lobsters (CL ≥ 90 mm).

At the Third Lobster Summit in Rockland, Maine, in 1999, a NMFS scientist stated that according to the full data set, the abundance of reproductive-size lobsters (which he defined as CL ≥ 93 mm) had "stayed flat or declined" and "had not increased" over the previous twenty years. (The NMFS has since claimed that this statement referred only to abundance since 1996, but the transcript of the meeting, available from the New England Aquarium, makes it unequivocally clear that the statement referred to the previous twenty years.) By then the full data set had been made available to a scientist outside the NMFS. The data indicated that the abundance of reproductive-size lobsters over the previous twenty years had, actually, increased, contradicting the NMFS scientist's public statement.

Regarding V-notching, as late as 1985 the management plan advocated by the NMFS and the Maine Department of Marine Resources (DMR) included the elimination of V-notching from consideration as a conservation measure and the institution instead of an increase in the minimum legal size, as the anthropologist Dr. James Acheson has documented in his book, Capturing the Commons. In mid-1985, as reported by Commercial Fisheries News that August, the chairman of the New England Fisheries Management Council stated that ongoing NMFS opposition to V-notching was preventing agreement with industry. As reported in my book, the Maine Legislature commissioned the Botsford

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Report in 1985 to solicit a third-party assessment of these issues. Dr. Botsford and his colleagues stated in their report that V-notching was comparable in conservation effectiveness to an increase in the minimum legal size. This vindicated similar arguments made by industry and de-legitimized the opposition to V-notching that had been maintained by the NMFS and the DMR prior to the report's release. The meetings described in my book took place against this backdrop. Moreover, I report in my book that a member of industry encountered difficulty obtaining a copy of the Botsford Report from state officials, and that an influential DMR scientist ignored the report's endorsement of V-notching until he was confronted by members of industry; the accuracy of the former event was corroborated by two separate sources and the latter event was witnessed by attendees of a public meeting. I am grateful to Dr. Fogarty for bringing to my attention a prior public meeting at which the Botsford Report was first made available to the public; future editions of my book will refer to this meeting as well.

My description of the meeting of the Scientific and Statistical Committee (SSC) at which Dr. Steneck's research was reviewed in 1989 adheres strictly to tape-recorded or written testimony I collected from four separate witnesses who were all present at the meeting. Dr. Fogarty's assertion that SSC members were disinterested parties with "no axe to grind" contrasts markedly with statements that the chairman of the SSC made at the time; the chairman commented to The Portland Press Herald that many of the SSC's scientists had, for the past fifteen years, been strong advocates of a particular government management plan. Dr. Fogarty's further assertion that SSC members had no role in lobster management is refuted by press reports at the time -- including articles in The Washington Post, The Portland Press Herald, and Commercial Fisheries News -- in which SSC members employed in lobster management positions by federal and state agencies voiced opinions rejecting the relevance of Dr. Steneck's research.

Examples of the collaborative efforts that Dr. Fogarty claims my book ignores can be found on pages 92 (tagging), 214ff (sea-sampling), and 235 (population modeling); also, government support for industry in international negotiations is mentioned on page 126. Regarding the 1993–1999 submersible dives, the earlier dives in this series turned out to be irrelevant to Gulf of Maine recruitment and thus to my book, and the later dives did not involve direct participation by federal scientists.

Lastly, it was never my understanding that Dr. Steneck was "fighting" to "halt planned increases in the minimum legal size." The record indicates, rather, that Dr. Steneck was trying to bring a greater variety of data-collection techniques to the assessment process, a goal that is widely shared in lobster management efforts around the world.

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Response to Trevor Corson Regarding "The Secret Life of Lobsters"

From Michael Fogarty

I welcome the opportunity to respond to the important points raised by Mr. Corson. To be clear, I was never asked if I wished to remain anonymous in his book. Had I known Mr. Corson intended to invent an incident involving "leaking" of data (with all its connotations), I would have insisted on being identified. The details in the book do nothing to protect my anonymity. They do convey the false impression that information was being hidden. Bob Steneck wrote to me last year: "*I was surprised to see Trevor say in the [book] that I got the disks in a plain manilla envelope with no return address with no idea where it came from. I knew it arrived to me due to your help*." [1]

Bob has indicated to me that he verbally requested lobster data in a conversation with a NMFS administrator in 1996 and was told to place a request through the freedom of information act[2]. This would simply involve writing a letter describing the information needed, nothing more. No such request was made. An agency intent on suppressing information would hardly direct a requester to channels involving the most exacting standards of accountability. Had a simple letter been written in 1996, this wouldn't be an issue today.

I have no first-hand knowledge of any other verbal requests that may have been made, or any responses, but if Bob was not instructed again to make a written request, it is most unfortunate. I learned of Bob's interest in obtaining more trawl data when I was on leave in 1998. I placed the request for him, enlisted help from a colleague at NMFS without any difficulty, and we sent the data[3]. I was disappointed to see our earlier collaboration and the data we sent summarily dismissed.

Mr. Corson states that data on lobster abundance I cite "was not the issue". Overfishing was described in the lobster management plan as: "*Harvesting at a rate which is greater than the long-term average rate of replacement of individuals in the population through reproductive activity*". This replacement is called recruitment. I pointed to readily available estimates of recruitment, harvest rates, and legal-sized abundance [which for these data is highly correlated with adult abundance (r = 0.95)[4]]. This information is not only relevant, it is the very heart of the issue. Two international peer review panels (in 1996 and 2000) saw this information and advised maintaining a precautionary approach in lobster management.

The NMFS employee questioned at the Third Lobster Summit was the very person who assembled trawl data to send to Bob the previous year. He simply provided his interpretation of the trends[4] and certainly did not try to mislead anyone.

NMFS did indeed disallow the v-notch provision in the first federal lobster plan, but for very different reasons than those portrayed. It was rejected because the New England Council would not enact it on a coastwide basis[5]. The NMFS decision was dictated by the provisions of the Magnuson Act which calls for uniform regulations throughout the range of a species[6]. Amendment 2 of the lobster plan included coastwide v-notch protection and it was approved by NMFS in 1987[7]. Despite Mr Corson's assertions, elimination of v-notching in Maine was never an issue, only whether it would be implemented in all areas.

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Mr. Corson continues to misunderstand the composition of the Council's S&S Committee (SSC) and its role. Not one of the individuals quoted in the accounts he cites were SSC members, except its chair. He has obviously confused the SSC and lobster technical committee members (who were spectators at the meeting described but had absolutely no say in the final decision of the SSC concerning the evaluation of Bob's work).

Mr. Corson does mention tagging in passing and sea sampling (which is described as too limited to be effective). To be fair, he does note that sea sampling was the right idea. With respect to the trade dispute with Canada, I referred to a much different issue involving a year-long effort of government scientist to protect the investment in conservation of our fishers. His assessment of the cooperation between government scientists and Bob Steneck in submersible studies quite misses my point concerning collaboration.

Looking at new ways to assess lobster status is indeed important. Starting in 1993, a number of us worked on adding additional indicators to the overfishing definition[8]. These were implemented in Amendment 5 of the Lobster Plan in 1994. Bob played an important role in this. He was not alone – he worked with government scientists.

[1] Steneck e-mail to Fogarty September 17, 2004
[2] Steneck e-mail to Fogarty September 17, 2004
[3] Fogarty e-mail to Steneck July 27, 1998 and response on same date acknowledging myself and a colleague at NMFS. My leave status was immaterial to whether the data transfer was "official".
[4] For copies of these data and analyses contact me at Michael.Fogarty@noaa.gov. These show the correlation between female legal-sized and adult (>90mm CL) abundance. Also provided is a trend analysis of adult abundance for 1976-97. Increases were observed; however the slope of the trend line is not statistically significant.
[5] Commercial Fisheries News (CFN) December 1984, p.13
[6] CFN October 1986 p. 32.
[7] CFN November 1987 p. 24.
[8] *Steneck letter to Fogarty February 9, 1993*

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The Lobster NEWSLETTER

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The following is an index of articles that have appeared in The Lobster Newsletter since its inception. This index along with pdf files of all of the past volumes will soon be available on *The Lobster Newsletter* website. Stay tuned for more details.

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Contact John Booth or Mark Butler about submission of articles.

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for inquiries or corrections to our mailing list.

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