An exploration of ways to improve news coverage of complex marine ecosystem science through journalist-scientist working relations

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Komathi Kolandai-Matchett, Maria Armoudian, Simon Thrush, Jenny Hillman, Luitgard Schwendenmann, Julia Jakobsson, Tim Haggitt, Caitlin O'Hara Blain, Gavin Lear

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Public perceptions about marine threats

- Overfishing
- Pollution
The oceans face multiple threats that are cumulative and interconnected:

- Terrestrial nutrient runoff
- Sewage
- Deep sea mining
- Noise pollution
- Oil explorations
- Sand & gravel dredging
- Invasive species
- Aquaculture nutrients, pharmaceuticals & pathogens
- Overfishing
- Altered sea water temperature
- Sea level rise
- Sedimentation
- Microplastics
- Oil spills
- Sea water acidification
- Trawling
- Marine debris
- Calcifiers
- Non-calcifiers
- Microbes
- Pico/nanoplankton
- Microplankton

Source: doi:10.1073/pnas.1510856112
The oceans have long faced two well-known stress factors – overfishing and pollution. Our research shows evidence of multiple stressors (microplastics, chemicals, nutrients/fertilisers, sewage, sediments, invasive species, ocean acidification, altered temperatures, and human-made noise) that affect ocean life and destabilise ocean ecosystems. While kelp forest decline and mussel reef loss are some examples of impacts on the marine environment, cumulative effects from multiple stressors can lead to ecosystem tipping points, dead zones, biodiversity loss, and extinction.

We think cumulative effects and abrupt changes are important for the public to understand. Even brief mention of these multiple interrelated problems in news reports on marine-related issues could be helpful. For instance, journalists reporting the decline of an iconic species could incorporate the cumulative effects of multiple stressors, including climate change. Similarly, journalists reporting overfishing could include how the decline of the fish stock then weakens ecosystem resilience. We think that providing the public with this type of information better conveys the depth and interconnectedness of these problems and helps people make well-informed personal and collective decisions. This is critical, given the enormous scope and unprecedented rate of human-caused stress on ocean ecosystems. It is also in line with the aims of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030) to encourage all sectors within society to move from a “business as usual” mind-set towards real changes for ocean sustainability.

Methods

- Statement by 7 UoA scientists – importance of reporting marine ecosystem complexities
- Online questionnaires – responses to the statement, various aspects of news reporting and journalist-scientist working relations
- Expert sampling – scientists whose research work concern the marine environment and journalists who have covered at least one environmental story
Sources of frustration

<table>
<thead>
<tr>
<th>Issue</th>
<th>Scientists (N=71)</th>
<th>Journalists (N=81)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information quantity</td>
<td>55%</td>
<td>30%</td>
</tr>
<tr>
<td>Story revisions</td>
<td>44%</td>
<td>27%</td>
</tr>
<tr>
<td>Immediacy</td>
<td>46%</td>
<td>57%</td>
</tr>
<tr>
<td>Omission of facts</td>
<td>44%</td>
<td>44%</td>
</tr>
<tr>
<td>Clear statements</td>
<td>35%</td>
<td>31%</td>
</tr>
<tr>
<td>Inaccurate interpretation</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Position adoption</td>
<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>Language</td>
<td>27%</td>
<td>30%</td>
</tr>
<tr>
<td>Ingelfinger rule</td>
<td>18%</td>
<td>19%</td>
</tr>
<tr>
<td>Opinions</td>
<td>13%</td>
<td>28%</td>
</tr>
<tr>
<td>Methodological details</td>
<td>11%</td>
<td>7%</td>
</tr>
<tr>
<td>None indicated</td>
<td>20%</td>
<td>44%</td>
</tr>
</tbody>
</table>
Journalists and scientists take time to understand the contextual factors that contribute to their relationship challenges – i.e., a result of differing training, work practices and expectations concerning news outputs.

Recommendation #1
Views on marine news coverage

Mean ratings on a 1-10 scale

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Journalists</th>
<th>Scientists</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.7</td>
<td>4.7</td>
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</table>

<table>
<thead>
<tr>
<th>Breath</th>
<th>Journalists</th>
<th>Scientists</th>
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<tbody>
<tr>
<td>4.7</td>
<td>4.3</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality</th>
<th>Journalists</th>
<th>Scientists</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

$p < 0.05$
Perceived importance of aspects to include in marine news

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Journalists</th>
<th>Scientists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declaration of funding sources</td>
<td>7.31</td>
<td>6.64</td>
</tr>
<tr>
<td>Confirmation of scientific precision</td>
<td>7.71</td>
<td>7.33</td>
</tr>
<tr>
<td>Details about steps taken to ensure scientific precision</td>
<td>6.55</td>
<td>5.97</td>
</tr>
<tr>
<td>Confirmation of peer-reviewed vetting</td>
<td>7.22</td>
<td>7.52</td>
</tr>
<tr>
<td>Details of research methods</td>
<td>6.74</td>
<td>5.72</td>
</tr>
<tr>
<td>Confirmation of uncertainty due to insufficient/variable scientific consensus findings</td>
<td>7.96</td>
<td>8.06</td>
</tr>
<tr>
<td>Confirmation of established scientific consensus</td>
<td>7.53</td>
<td>7.97</td>
</tr>
</tbody>
</table>

Average ratings on a 1-10 scale

Not at all important | Highly important

p < 0.01
Successes from working together

- Led to a high number of clicks and shares on social media: 19%
- Exclusivity: 25%
- Produced a high-impact news story: 51%

- Attracted other researchers' interest: 46%
- Attracted broader media attention: 51%
- Chance to contribution to society: 53%
- Chance to showcase publicly-funded research: 54%
- Enhanced public profile: 57%
- Led to public interest: 68%

Journalists (N=85) vs. Scientists (N=72)
Recommendation #2

Focus on what unites journalists and scientists:

• A commonly held view that there is room for improvement in marine news reporting
• Agreements on news content
• Commonly shared interest in public impact
Recommendation #3

Given that both groups aspire societal impact, training programs could direct attention to how news framings can affect public views, understanding, and response.
Journalists’ visual information needs & scientists’ capacity to provide these
Recommendation #4

Compile and make marine visuals & footage readily accessible to journalists

- Attracts audience attention
- Connects viewers to remote ocean issues
Scientists’ challenges when communicating via the media

- Lack of institutional support: 14%
- No prior media training: 24%
- Lack of time to prepare: 34%
- Institutional control: 35%
Journalists’ challenges when covering marine stories

- Deadlines & lack of time: 27% Experienced (N=71), 18% Perceived (N=22)
- Making a case for their newsworthiness: 30% Experienced, 45% Perceived
- Difficulty understanding the science: 35% Experienced, 55% Perceived
- Making the story sound interesting enough: 49% Experienced, 64% Perceived

Journalist: “Access barriers erected by their institutions, attempts by institutions to stop scientists speaking directly to media”
Ways to connect journalists and scientists:

• Both journalists and scientists rated direct contact as an effective way for connecting

• Journalist: “Access to interview an actual person, not just PR or comms statements”.

![Bar chart showing mean ratings on a 1-10 scale for various methods of connecting journalists and scientists. The methods include online science news platforms, press releases, journalists contacting scientists directly, and scientists contacting journalists directly. The chart indicates higher ratings for direct contact methods.]
Ways to connect:

**Mutual agreement approach**
Journalists and scientists discuss the public implications of the topic and come to mutual agreements about news content.

**Conventional approach**
The journalist decides on the news topic and content; the scientist remains a source of information.

![Bar chart showing mean ratings on a 1-10 scale for Mutual agreements about news content and Journalist decides news topic & content for Journalists and Scientists. The chart indicates significant differences (p < 0.01) between the two approaches.]
Recommendation #5

Institutional policies that support direct journalist-scientist communication

- Preferred method of interaction
- A way to overcome relationship challenges
- Facilitates accurate reporting
- Fosters trustful relationship – hence higher quality interviews and reporting
Recommendation #6

Trustful and mutually beneficial journalist-scientist relationships – a basis for a more collaborative marine news generation process (i.e., balanced power over news content).
Agreement to UoA scientists’ suggestions for additional information in news stories to enhance public understanding of the complexity of marine ecosystem problems

**Cumulative effects from multiple stressors**
- Disagree: 7.57
- Agree: 8.27
- Mean rating: 8.27

**Climate change effects in the mix of multiple stressors**
- Disagree: 7.75
- Agree: 8.03
- Mean rating: 8.03

**Implications for ecosystem resilience**
- Disagree: 8.35
- Agree: 8.29
- Mean rating: 8.29

**Interconnectedness with other problems in marine ecosystems**
- Disagree: 7.5
- Agree: 8.19
- Mean rating: 8.19

*Journalists* vs *Scientists*
Scientists’ capacity to provide journalists with additional information about ecosystem complexities

Scientists (N=62)

- Yes, 50%
- No, 24%
- Unsure, 26%

23 endorsed the statement

Journalists’ capacity to include such information in news reports

Journalists (N=68)

- Yes, 40%
- No, 18%
- Unsure, 43%
Effects on newsworthiness

Journalists (N=68)

- Would increase newsworthiness, 44%
- Won't increase newsworthiness, 7%
- May or may not increase newsworthiness, 49%

Additions to newsworthiness:

- Overly complex: 39%
- Suppositional: 29%
- Tragic: 24%
- Media agenda fit: 16%
- Shareability: 13%
- National relevance: 39%
- Urgency: 13%
- Newness: 39%

Survey results:

- 70%: Would increase newsworthiness
- 54%: May or may not increase newsworthiness
- 40%: Won't increase newsworthiness
- 11%: Newness
- 10%: National relevance
- 10%: Shareability
- 10%: Urgency
- 11%: Tragic
- 2%: Suppositional
- 2%: Media agenda fit
- 7%: Overly complex

Survey participants:

Journalists (N=68)
Recommendation #7

Highlight the newsworthiness of marine ecosystem complexities (journalist-scientist conversations, journalists’ training)

• E.g., timeliness, impact, proximity, magnitude
• Bring marine news on a par with other science news in the media’s judgement of newsworthiness
Recommendation #8

Encourage media social responsibility in reporting marine conservation issues

- Educative effects of environmental news, albeit unintentional
Questions or comments?

Photo by Daniel Torobekov (Pexels)
Recruitment

**SCIENTISTS**
- Website searches (10 NZ institutions) – Email addresses of 288 scientists and researchers whose work related to the marine environment
- NZ Coastal Society and NZ Marine Science Society

**JOURNALISTS**
- Factiva database and Google searches – email addresses of 330 potential journalists
- 94 editors/general enquiry email addresses for mainstream and community media
- Kiwi Journalists Association Facebook page