

CÔMPASS

The Message Box Workbook

Communicating Your Science Effectively

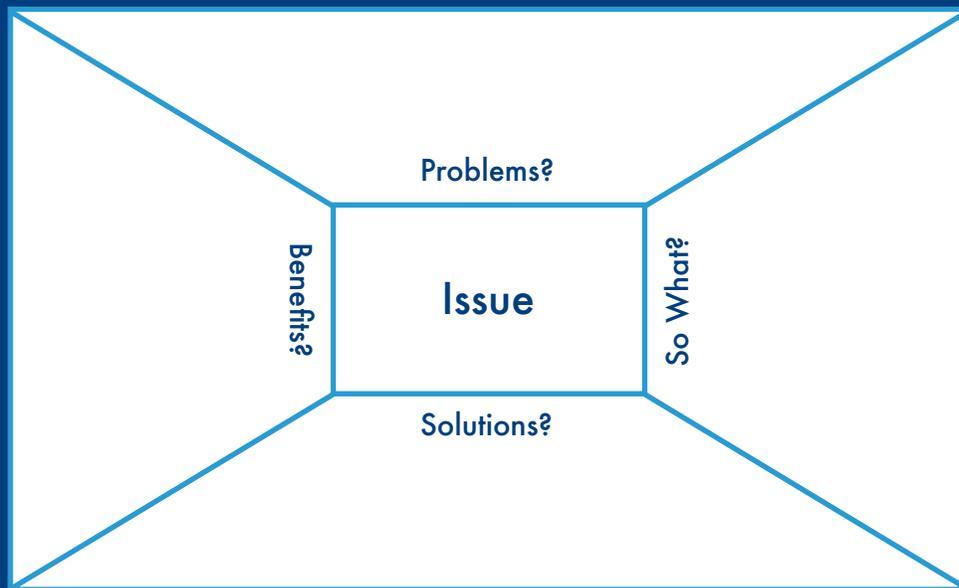




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Section I: Why the Message Box?

Welcome!

If you're reading this, you're probably interested in how you can share your science with the rest of the world. Too often, scientific knowledge is locked up in professional journals because scientists traditionally haven't been trained to communicate effectively beyond their peers. Communicating in peer-reviewed journals or technical reports is an important part of science. But, if you want your work to be relevant to non-scientific audiences—from journalists, to policymakers, to members of your community, or others—you need to think differently about how you communicate. To help you distill the complexity of your research in a way that's meaningful for your particular audience, we're excited to share our most fundamental tool, the **Message Box**.

This deceptively simple tool is incredibly versatile. It can help you prepare for interviews with journalists or employers, plan a presentation, outline papers or lectures, prepare grant proposals, or explain what you do and why it matters to family and friends.

As a pioneer in the practice of science communication, COMPASS has successfully trained thousands of scientists from a wide range of disciplines and institutions, inspired journalists to create and sustain coverage of science-related topics previously not on the public radar, and facilitated connections between scientists and policymakers that have enriched policy dialogues in meaningful ways. Working with us, scientists have shaped the public discourse on key issues such as ocean acidification, fisheries, water security in the American West, wildfire, ecosystem-based management, and more. Although COMPASS focuses largely on the environmental sciences, the Message Box is a useful tool for any scientist seeking to distill what they do and why it matters for a particular audience.

Making your research accessible and relevant takes effort, but no one is better equipped to do it than you. Your passion, experience, and expertise are unique to you and policy makers, managers, journalists, and society want to hear from you! We hope that this workbook will help you build strong communication skills, achieve meaningful engagement, and articulate messages that will resonate with your audiences.

The Message Box on Twitter!



Section II: What is the Message Box?

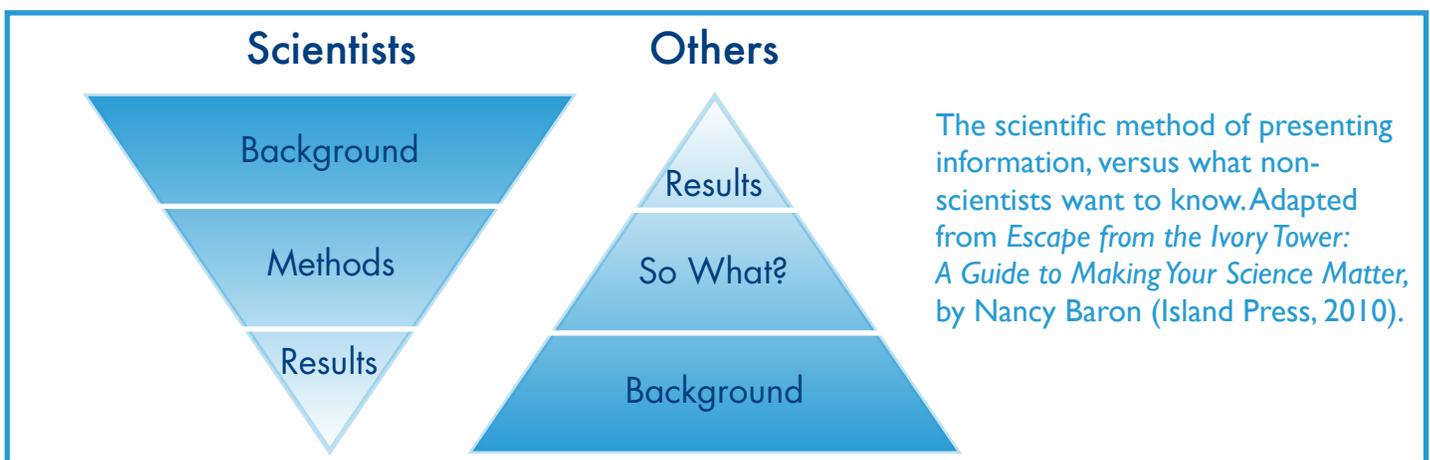
The Message Box is a tool to help you sift through the mountain of information you hold in your head about your work and identify the essential nuggets for your chosen audience. The Message Box consists of five sections to help you sort and distill your knowledge in a way that resonates with your audience. It's flexible, so you can use it for a wide variety of purposes and audiences. It's based on the scientific underpinnings of how to communicate effectively.

There isn't a right or wrong way to use the Message Box, though some approaches will work better for certain audiences. It's also important to know that the Message Box isn't a linear process; you can start in any section that makes sense to you, and work from there. The important thing is to get started!

But before you begin working on your own Message Box, it's helpful to understand a few key principles of science communication.

First, your audience—whether a journalist, a policymaker, a room of colleagues at a professional meeting, or a class of second-graders—doesn't have deep knowledge of your subject matter. But that doesn't mean you should explain everything you know in a fire hose of information. In fact, cognitive research tells us that the human brain can only absorb three to five pieces of information at a time.¹ So prioritize what you share based on what your audience needs to know. Your goal as you fill out your Message Box is to identify the information that is critical to your audience—what really matters to *them*—and share that. Effective science communication is less about expounding on all the exciting details that you might want to convey, and more about knowing your audience and providing them with what they need or want to know from you.

Second, effective science communication requires recognizing the differences between how scientists traditionally have been taught to communicate, and how the rest of the world communicates. In fact, scientific papers and presentations generally follow a different format than most other types of communication. In a scientific paper, you establish credibility in the introduction and methods, provide detailed data in results, and then share the significance of your work in the discussion and conclusions. But the rest of the world leads with the conclusions, because that's what people want to know. What are your findings and why is this relevant to them? In other words, what's your bottom line?



¹Cowan, N. 2010. The Magical Mystery Four: How is Working Memory Capacity Limited, and Why? *Curr Dir Psychol Sci.* February 1; 19(1): 51-57.

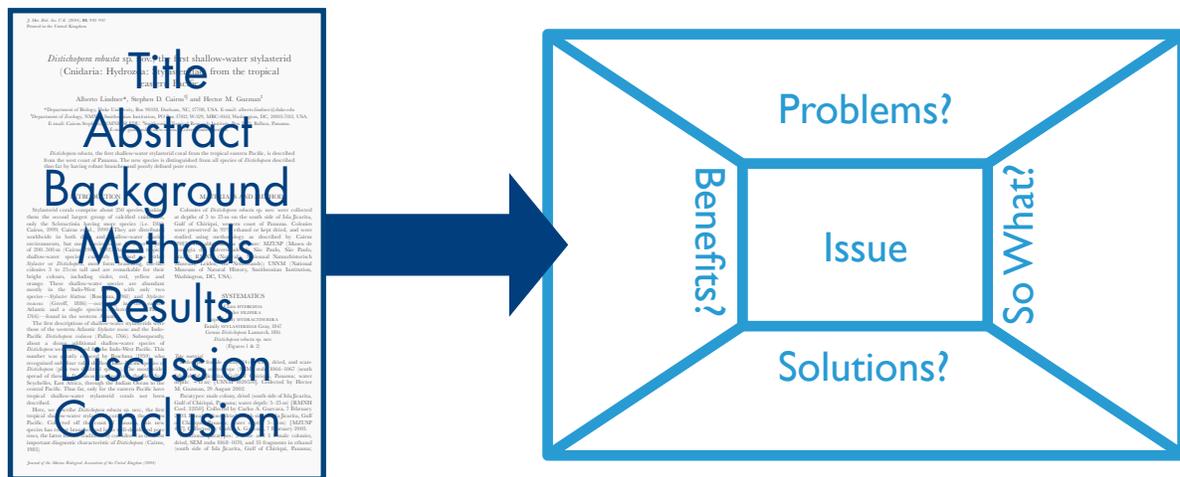
Third, many scientists believe that if they simply share what they know with nonscientists, they'll convince them to change their views, including on issues such as climate change, vaccination, or other topics. But research in the field of science communication demonstrates that simply sharing more scientific information doesn't change minds, attitudes, or behaviors. Instead, people interpret information through the lens of their own values and cultural identities, and will reject information that they feel is threatening to those values.² In this workbook, we'll discuss how to frame your messages in ways that will resonate with your chosen audience.

“One should use common words to say uncommon things.”
 - Arthur Schopenhauer, Philosopher

“One day I will find the right words, and they will be simple.”
 - Jack Kerouac, Novelist
 (from *The Dharma Bums*)

And fourth, always avoid jargon. Jargon is precise, but to those outside of your discipline, it might as well be a foreign language. Jargon gets in the way and excludes people from your meaning. Even if you try to define key terms throughout your discussion, you'll quickly exceed the three to five pieces of information your audience can readily grasp at a time. Then, every time you repeat the terms, your audience will be several steps behind you, trying to translate unfamiliar words, rather than focused on the message you want to convey.

So how does the Message Box work? We'll walk through each section of the box below, using a Message Box developed during our training and coaching of biologist Kathy Zeller. After discussing each section of Kathy's Message Box, we'll then share examples of Message Boxes prepared by other scientists we've worked with.



Translating the research paper format into a Message Box to distill your science.

²National Academies of Sciences, Engineering, and Medicine. 2016. *Communicating Science Effectively: A Research Agenda*. Washington, DC: The National Academies Press. doi: 10.17226/23674.

“Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius—and a lot of courage to move in the opposite direction”

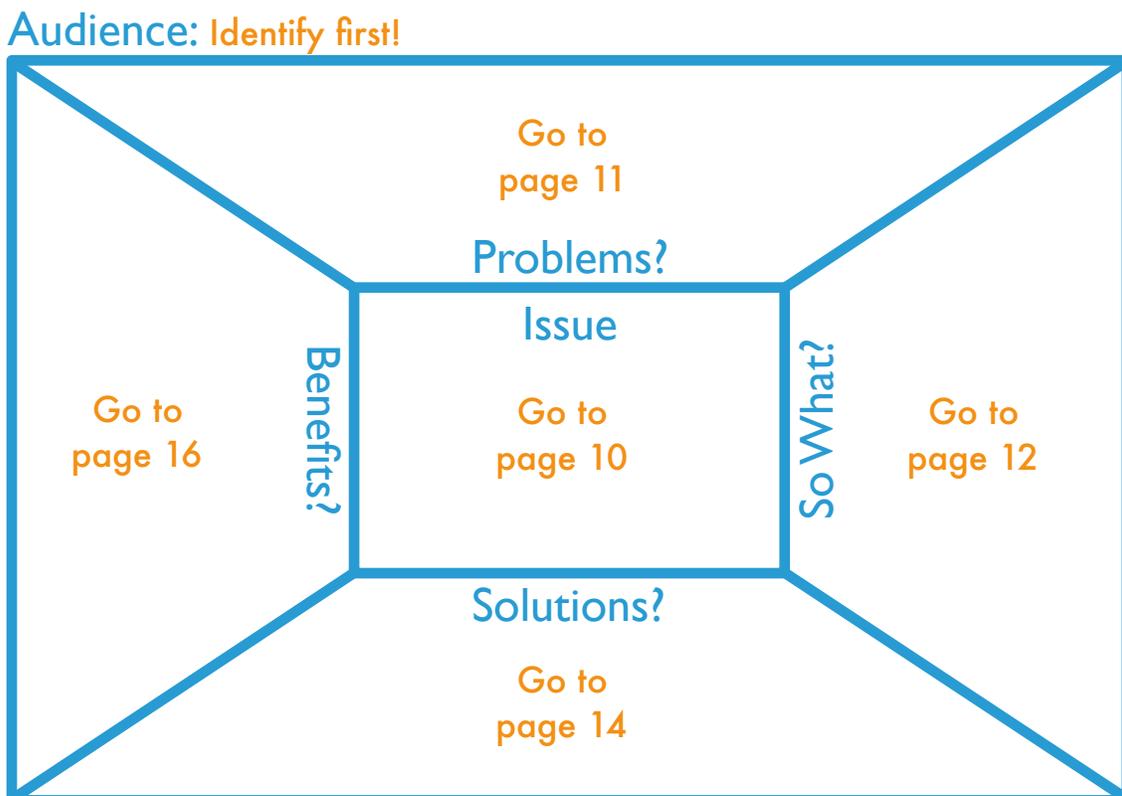
- Ernst F. Schumacher, Economist

Although we'll work through each section piece-by-piece, the Message Box isn't a linear process; you can start in any section that makes sense to you, and work from there. Don't expect your first draft to be your final draft; people often start out providing too much detail in each section, and then refine and distill sections with each new version. Through each iteration, you will make choices about what's most important, and whittle away at the language until it succinctly captures the key messages that you want to convey about your work. By the end of the process, you should have no more than a few lines for each section.

But there is one critical first step: you have to identify your audience. Avoid using 'the general public' as your audience: the general public is comprised of many different groups of people, with different interests and motivations and values. We also commonly encounter scientists who identify that their audience is the problem. It goes without saying that this is not usually the most productive path to relevance and conversation. The bottom line is who are you trying to communicate with? Why? What do they care about?

For some of you, your audience is crystal clear. Maybe you want to reach journalists who can help raise public awareness? Or policymakers who would benefit from your expertise? Or resource users whose livelihoods will be affected? Or concerned citizens who should know about impacts to their communities?

In order to find the “So what?” of your work, you need to focus on the particular audience you want to communicate with, and gear your Message Box to what matters to *them*.



▶ Section III: The Message Box—Section by Section

Kathy Zeller was a Ph.D. candidate focused on conservation biology at the University of Massachusetts at Amherst when she first worked on a Message Box with COMPASS. By then, she was already an expert on large cat species and their habitat needs. Having grown up in densely populated Connecticut, she first became fascinated with conserving open landscapes as a field technician in Alaska after finishing college. That fascination prompted her to pursue a Master’s Degree at the University of Montana. She spent the next few years modeling how jaguars move through landscapes, and how best to connect their different habitats to one another. As solitary top predators, jaguars need to cover a lot of ground to find mates and sufficient prey, and they tend to avoid human contact. Kathy worked with the conservation groups Wildlife Conservation Society and Panthera to help them establish habitat corridors for jaguars throughout Central and South America and protect the species throughout its range.

But she was also troubled. Her work during this time raised a lot of questions about how habitat connectivity was being modeled by most biologists. Kathy sensed that those models weren’t really capturing the way animals move across landscapes. So she decided to pursue a Ph.D. to explore and identify more effective ways to model corridors. While she found her Ph.D. research rewarding, she discovered that she missed applying her work directly to real-life conservation problems. “I felt somewhat isolated in the ivory tower,” she said. And so she applied to the Switzer Environmental Fellowship Program, a leadership and communication training program funded by the Robert & Patricia Switzer Foundation, to reconnect with the applied biology network. As part of that Fellowship, Kathy worked with COMPASS in Washington, D.C. to learn how to communicate her science more effectively with policymakers. That’s when she first developed a Message Box.

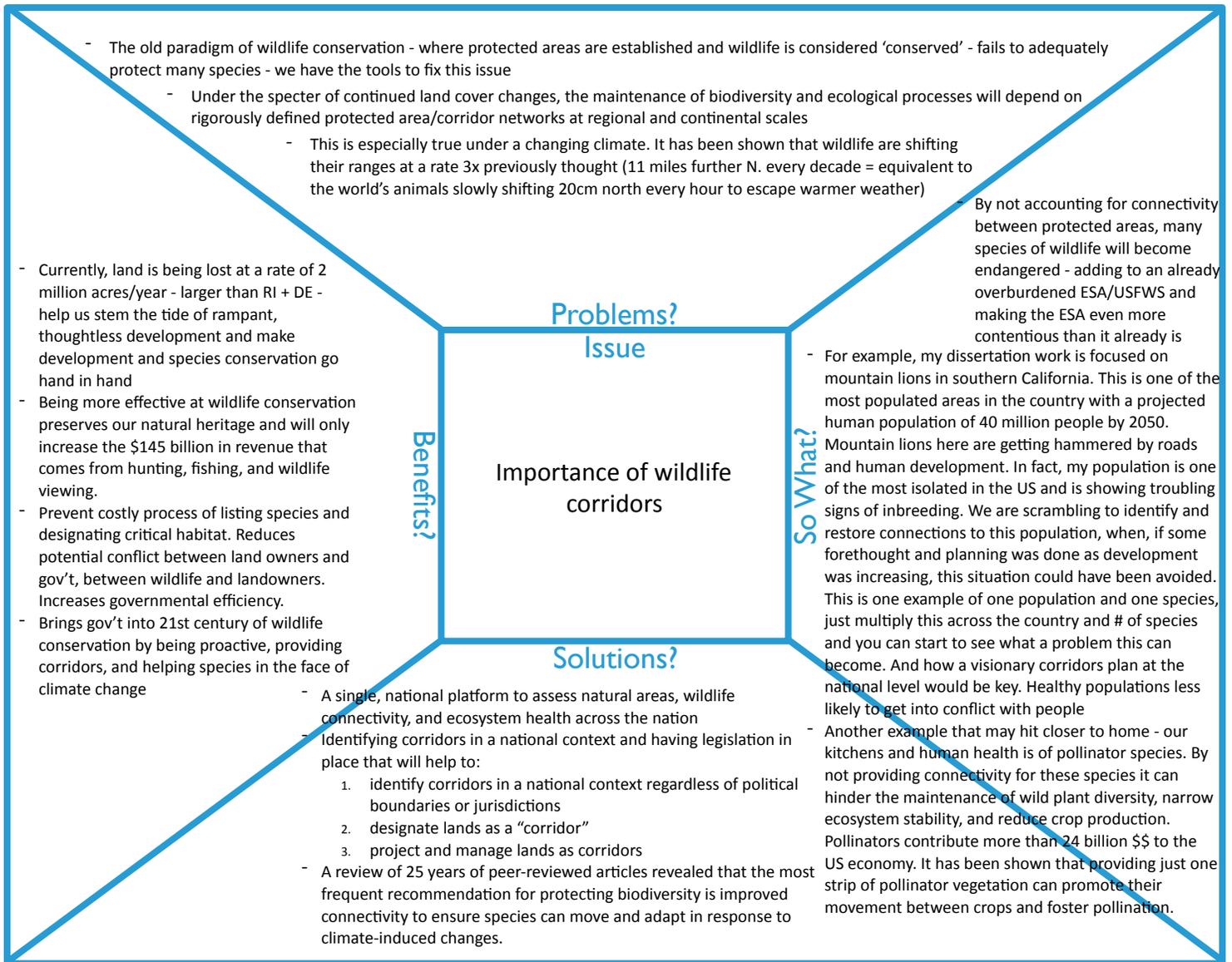
To identify a meaningful audience for her science, Kathy contacted people she knew in conservation groups. She learned that Congressman Don Beyer of Virginia was interested in developing legislation to address wildlife habitat needs, and arranged a meeting with two of his staff. Her first Message Box reflects her initial attempt to distill the science of conservation corridors for the Congressman and his staff in a way that would motivate action and guide the development of effective legislation.



FYI

There are several blank Message Boxes at the end of this workbook for you to practice with as you work through the workbook. For an editable PDF version, visit us online at www.COMPASSscicomm.org.

Audience: Staffers in Rep. Beyer's office

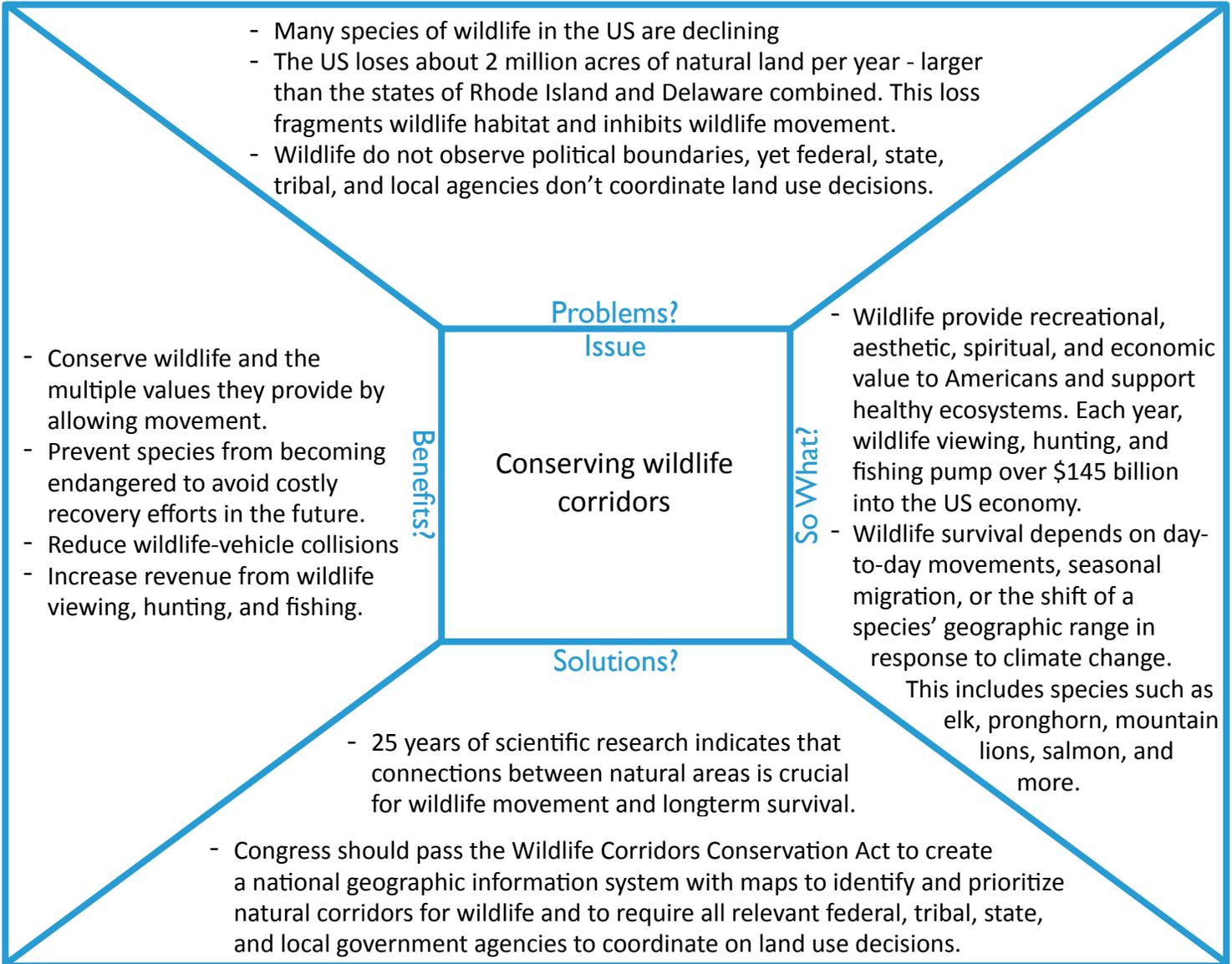


Biologist Kathy Zeller's Initial Message Box

As you can see, Kathy's *Initial Message Box* has a lot of detail. But working on her Message Box prompted her to identify key information from the scientific literature that she realized the Congressman would be interested in, such as the amount of habitat lost each year and the costs associated with inaction. She got the staff's attention, and that first meeting led to a lot of follow-up communication with the Congressman's office. They asked Kathy for additional information, such as a summary of conservation benefits based on current scientific understanding. She worked to frame her material in ways that would resonate with the Congressman's constituents by including information relevant to the Appalachian Trail that runs through Virginia's Blue Ridge Mountains.

Several months after Kathy’s meeting with his staff, Congressman Beyer introduced the Wildlife Corridors Conservation Act. The bill incorporated several key components that Kathy had outlined, including establishing a national database on protected areas and habitat corridors, and directing government agencies to work together to establish corridors. By then, Kathy had become a post-doctoral researcher at San Diego State University Foundation. She drew on her Message Box to craft a letter addressed to members of Congress that was signed by a dozen prominent conservation biologists, reiterating her main points and urging support for the legislation. And she worked with COMPASS to refine her Message Box further. Her *Refined* Message Box (below) distills the science further and frames it in ways that can engage a wide range of congressional interests, not just Congressman Beyer’s.

Audience: Members of Congress & their staff



Biologist Kathy Zeller's *Refined* Message Box

In the discussion below, we'll walk through each section of the Message Box using Kathy's *Initial* and *Refined* Message Boxes as an example, highlighting how each section helps sort complex information and how each iteration of the Message Box helps distill the message further, increasing its effectiveness. Working on your Message Box never really ends—it's an ongoing process that, over time, reveals the essence of what you want to convey in a way that connects with your intended audience.

▶ The Issue

The **Issue** section in the center of the box identifies and describes the overarching issue or topic that you're addressing in broad terms. It's the big-picture context of your work. This should be very concise and clear; no more than a short phrase. You might find you revisit the **Issue** after you've filled out your Message Box, to see if your thinking on the overarching topic has changed since you started.



FAQ for The Issue

- ▶ **How broad/narrow is too broad/narrow?**
 - ▶ The **Issue** needs to be broad enough to encompass the key points you want to get across, but specific enough that it sets up what's to come.
- ▶ **My research is only one small part of this topic. Is that okay?**
 - ▶ Yes. Putting your work into the broader context helps you to take a step back and articulate the other parts of the Message Box and why they should matter to your audience. It can also help guide you as you work through the Message Box. Often, one piece of the Message Box will feel very clear, the others, maybe not so much. So taking a broader view and thinking about the national or international context can be helpful.
- ▶ **Why does word choice matter?**
 - ▶ The **Issue** can cue or 'frame' the rest of your Message Box, so while it seems very simple, it's still important for signaling the scale, severity, or significance of your message.
 - ▶ In Kathy's example, using the word "conserving" in her *Refined* Message Box in place of "the importance of" in her *Initial* Message Box provides a little more specificity about what she wants to say. That is, she's going to discuss how to conserve these corridors for wildlife, not just why they are important.

▶ The Problem

The **Problem** is the chunk of the broader issue that you're addressing in your area of expertise. It's your piece of the pie, reflecting your work and expert knowledge. Think about your research questions and what aspect of the specific problem you're addressing would matter to your audience. The **Problem** is also where you set up the **So What** and describe the situation you see and want to address.

In Kathy's example, she included a fair bit of factual detail in her *Initial* Message Box, but much of it focused on the solution she was proposing, before she had clearly spelled out the problem. In her *Refined* Message Box, she spelled out the basic problem first—that wildlife are declining—and then listed two key points about why that was happening that relate to her **Issue** of wildlife corridors.



FAQ for the Problem



Reminder!

There are more examples of the MB in use at the end of this workbook!

▶ **What's the difference between the **Problem** and the **Issue**?**

- ▶ The **Issue** box provides the broader context and sets the stage, while the **Problem** box is more focused and specific to your work or research question. The **Issue** box is helpful for providing context and indicating how the **Problem** you've identified fits into the bigger picture.

▶ **What if there's more than one **Problem**?**

- ▶ There might well be more than one **Problem** that you're seeing—the world is complex and nuanced. And some problems have several key components. Consider whether you need to talk about two problems with this audience. If one of these problems is more urgent or important than the other, use that as your main problem, and spend less time on, or leave out, the second problem. We generally recommend focusing on just one problem per audience, but it all depends on the context. If this is a situation where you feel you can include more information, give it a try. But be judicious and mindful of what will be relevant and useful to the audience you're targeting.

▶ **How can I find the **Problem**?**

- ▶ For many scientists, the **Problem** is their research question. A problem might also reveal itself through a troubling trend in the data, or a situation that will have a negative effect on people or the environment.

► The So What

The crux of the Message Box, and the critical question the COMPASS team seeks to help scientists answer, is “So what?”

Why should your audience care? What about your research or work is important for them to know? Why are you talking to them about it? The answer to this question may change from audience to audience, and you’ll want to be able to adjust based on their interests and needs. We like to use the analogy of putting a message through a prism that clarifies the importance to different audiences. Each audience will be interested in different facets of your work, and you want your message to reflect their interests and accommodate their needs. The prism below includes a spectrum of audiences you might want to reach, and some of the questions they might have about your work.



The “So What?” Prism. Adapted from *Escape from the Ivory Tower: A Guide to Making Your Science Matter*, by Nancy Baron (Island Press, 2010).

Instead of simply dispensing knowledge, try to understand the people you are talking to by asking questions and learning more about what is important to them. This also helps you to know which aspects of your research are most relevant to them, and what you should prioritize as you're sharing your work. Every audience interprets information through their own lens. Understanding that lens will help you frame your message as effectively as possible, so that your audience takes home the message you want to convey. Asking yourself a few key questions can help. For example: What outlets does the journalist write for and what angle does she typically take? Is the policymaker an elected official who answers to constituents, or an agency official who must respond to specific legislative mandates? What is the focus or mission of this organization or agency? What cultural issues do you need to consider when addressing communities and concerned citizens?

Remember, communication is a two-way street. It's not about perfecting a monologue. Effective communication requires listening to your audience, understanding their concerns and having a conversation. A conversation can help you discern the **So What** that matters most to them and frame your message in a way that will resonate with them. In some cases, those conversations can shape the research questions you choose to ask down the road.

"It takes a great man to be a good listener."

- Calvin Coolidge, 30th President of the United States

"It takes two to speak the truth— one to speak and another to hear."

- Henry David Thoreau, Naturalist and Writer

In Kathy's *Initial So What* she includes a lot of detail, such as statistics on human population growth in one region of the country, inbreeding in mountain lions, the issue of land use planning, a variety of impacts on pollinators, and some acronyms that her audience might not understand. The essence of why her audience should care can get lost in the details. In her *Refined So What*, Kathy makes two main points: that wildlife are important and that their survival depends on their ability to move across landscapes. In discussing why wildlife are important, she frames her message in a way that includes a diverse range of values that members of Congress and their constituents might care about, including economic, recreational, aesthetic and spiritual.



FAQ for So What

▶ Can I include more than one reason to care in my **So What**?

- ▶ Yes. Just be sure to keep each example succinct, and remember to stick to three to five ideas total.

▶ How can I be sure my audience will care about my work?

- ▶ Do some research on your audience to gain insight on what aspects of your work will be relevant to them. But it's helpful to remember that most audiences will not be as interested in the scientific or theoretical aspects of your work, and certainly not the details and nuances. They are typically more interested in practical applications—what might your results mean for livelihoods, health, well-being, or security? Consider how your work can affect their lives—if not now, then in the future—and how you might appeal to their hearts as well as their minds. Sharing your own passion for your work, and why you care, can often help you reach others.

▶ What if I'm doing basic research?

- ▶ If your audience is other scientists, then adding to the scientific foundations of your field might be the primary relevance of your work. If your audience is non-scientists, then consider what aspects of your work might resonate with them. Those aspects might include some of the practical applications of your work that could emerge in the future. Or it might address how increasing our understanding of X could lead to better understanding of Y—assuming that Y is something that resonates with your audience. Alternatively, you might emphasize the awe-factor of your work, what's new about it, or how it changes our understanding of the world. Do you have a discovery to share that would be amazing and inherently interesting to an audience of non-scientists? It's important to be mindful of what your audience cares about—how can you connect with what they value, their concerns, or their hopes for the future? The bottom line is to find the intersection between what you care about and what your audience cares about.



Reminder!
There are more examples of the MB in use at the end of this workbook!

▶ The Solution

The **Solution** section outlines the options for solving the problem you identified. When presenting possible solutions, consider whether they are something your audience can influence or act upon. And remind yourself of your communication goals: Why are you communicating with this audience? What do you want to accomplish?

In Kathy's *Initial* Message Box, she lists several components needed in national legislation to create wildlife corridors, and refers to the large body of scientific literature indicating that corridors are necessary for wildlife survival. Kathy's *Refined* Message Box reflects not only her work on refining her message, but also events that occurred after her initial meeting with Congressman Beyer's staff on Capitol Hill; namely, the introduction of legislation. In her *Refined* box, Kathy's audience is a more general congressional audience—typically very busy people dealing with dozens of issues simultaneously, with limited time to grasp complex concepts. She mentions the science supporting the need for the bill, and then simply urges her audience to support the introduced bill with a brief description of what it would do.



FAQ for The Solution

▶ **How many ideas should I have in the **Solution** section?**

- ▶ There may be several ideas you want to include—just make sure that they are all relevant to the particular audience and the specific problem(s) you are addressing, and are stated succinctly. But remember, the Message Box is intended to help you prioritize what is most important to convey, so think hard about that. Also consider whether your **Problem** statement is too broad and could be more specific. In some cases, revisiting the **Problem** statement can help narrow down the focus of the topic and what needs to be done to address it.

▶ **How do I handle the issue of advocating for a particular solution?**

- ▶ Whether you want to advocate for a particular solution or course of action is a deeply personal choice. In some scientific fields, advocating for a specific position is common practice. In others, it raises concerns that advocacy could undermine scientific objectivity or credibility. Deciding to advocate for a given solution depends on the audience, your professional role, and the context in which you're presenting your information. Have you been asked by decision-makers to share your professional judgment? Is a particular solution critical to solving the problem? How important is the problem?
- ▶ In the side-by-side MB example from Kathy Zeller, she chose to advocate for national legislation because she considered that solution necessary to solve the problem. However, many problems can be addressed in ways that don't involve changes in public policy. Word choice matters here, too. Without suggesting that a particular action "should" be taken, you can help decision-makers evaluate options, and use if/then statements to describe the likely consequences of a given action. For example, "If this action is taken (or not taken), then this is the expected outcome." This helps expand the range of possible solutions for decision-makers to consider.



FAQ for The Solution

- ▶ **What if the only Solution that I can think of is simply more research?**
 - ▶ The solution in some cases might simply be to obtain a greater understanding of X, Y, or Z. But in many cases, having this as your only **Solution** is an indication that the **Problem** statement or the **So What** needs further distillation. Consider whether either (or both) of these sections are too in-the-weeds of your scientific discipline, and aren't framed as topics that matter in people's lives. Try to rework them to make sure that they are relevant to your audience.
- ▶ **What if my Solution doesn't really impact the Problem?**
 - ▶ If your **Solutions** don't relate to the **Problem** you identified, then either adjust the **Problem** or adjust the **Solution** so that they do relate. Some questions to consider include whether your **Problem** and **Solution** points are operating at the same scale (i.e., if the problem is that wildlife aren't able to move vast distances across the country due to barriers, but your solution is to have town hall meetings in only one state, you would need to adjust the scale of your suggested solution). Another question to consider might be whether your **Solution** is specific enough, or if it is stated too vaguely to actually solve the **Problem**.

▶ The Benefit

In the **Benefit** section, you list the benefits of addressing the **Problem**—all the good things that could happen if your **Solution** section is implemented. This ties into the **So What** of why your audience cares, but focuses on the positive results of taking action (the **So What** may be a negative thing—for example, inaction could lead to consequences that your audience cares about). If possible, it can be helpful to be specific here—concrete examples are more compelling than abstract. Who is likely to benefit, and where, and when?

Kathy’s *Initial Benefit* section lists multiple benefits of creating corridors across the country for wildlife. But she also includes some information that outlines the problem (that is, the loss of natural areas across the country). In her *Refined Message Box* she moved that important information about habitat loss to the **Problem** section to help establish her **So What**. Her *Refined Benefit* section provides less detail. She can always add that detail back in during discussions with members of Congress and their staff if she discovers she has time. But her *Message Box* helps her distill her key points down to their essence, so she knows what main points she wants to hit.



FAQ for The Benefit

- ▶ **My So What is similar to the Benefits. Is that a problem?**
 - ▶ No that’s not a problem. The *Message Box* is a sorting tool to help you decide what is most important. You may end up with only three key messages, or even less. It’s not about filling the boxes, it’s about deciding what is the most important thing to say, out of all the things you could say. If the **So What** and **Benefit** are similar, that’s fine. But make them relevant to your target audience.
- ▶ **What if the only Benefit I can think of applies to future researchers?**
 - ▶ That’s fine, if your audience is scientists who are interested in long-term benefits for research. For an audience of non-scientists, though, try to think about how your research could connect back to the **So What**. If this was basic research that told you something new about the world, consider the applications down the road that this audience might care about, or why these discoveries might connect with them emotionally.
- ▶ **How do I avoid over-promising the Benefit?**
 - ▶ Often, societal and environmental benefits accrue through a combination of efforts, approaches, and solutions. Your work might only be one part of that larger solution. It’s okay to identify the larger-scale benefits your work will contribute to. Just make it clear that the solutions you’ve identified are only one piece of the puzzle. You might also revisit your **Problem** statement and make sure that it’s appropriately scaled for the **Solution** identified. If necessary, you can include qualifiers such as “could,” though be prudent with your caveats and only use them when you really have to.



General Message Box FAQ

▶ How do I know when my Message Box is done?

- ▶ A Message Box doesn't really ever get finished; it just keeps evolving to suit your needs. The Message Box principles are easy, but it takes time to develop messages that will work for you and your audiences. Ultimately, you want to pare down your ideas so that each section is a few clear sentences. If you still have a paragraph, keep working to refine your messages, and they will evolve and get better over time. Remember, the "So what?" can vary depending on what each audience cares about. This can influence the problems you identify, the solutions you highlight and the benefits you emphasize. Once you feel you have distilled your message down to its essence, work on taking your message to the next step by making it memorable (see page 18).

▶ How many Message Boxes do I need to do?

- ▶ One for each audience! Different audiences have different interests, needs, and values. You'll want to reflect that in your messages.

▶ How long do people typically spend crafting their Message Boxes?

- ▶ It varies. Crafting an effective Message Box is an iterative process. You might start with the three to five pieces of information that you think are most important in each section, and then boil it down. That distillation can come from conversations with your intended audience—what's resonating? What do you now better understand about their interests and values? Or it could come from peer feedback. Each person's experience is unique and might change depending on how controversial the issue is, the audience they want to address, and what they hope to accomplish by communicating their science.

Crafting a Message Box is often an iterative process. Tessa ultimately completed four iterations of her box for this interview.

Melissa Kenney @melissakenney Oct 4
I'm a little behind on podcasts, but check out @Tessa_M_Hill on @scifri.. ocean acidification #climate & public engagement! #LeshnerFellows

Science Friday @scifri
For Oysters, Challenges and Hope in the Changing Ocean scifri.me/pl

Melissa Kenney @melissakenney Oct 4
@Tessa_M_Hill what did you do to prepare for @scifri or when you talk to journalists in general? #EngageESA #LeshnerFellows

Tessa Hill
@Tessa_M_Hill
@melissakenney @scifri I wrote out a @COMPASSonline message box and then went for a run. compassonline.org/sites/all/file...
6:04am · 4 Oct 2016 · Twitter for iPhone

▶ Section IV: Making Your Messages Memorable

Think of the Message Box as a framework. It allows you to focus on what's most important and what will resonate with your audience. But once you've got a clear message, you'll want to add flesh to those bones. How do you take the essential ideas and make them memorable and compelling to your audience? Consider anecdotes, examples, metaphors, sound-bites, and facts that would resonate with your audience and can supplement and reinforce your messages. This is where some of the detail and data you took out of your Message Box can come back into play. But the communication guidelines we discussed above don't disappear once your Message Box is ready to use. As you prepare for your paper, presentation, meeting, or interview, here are some points to keep in mind to communicate effectively:

- ▶ **Support your message with data**, but limit the number of ideas. Remember, the human brain can only take in about three to five pieces of information at a time.
- ▶ **Limit the use of numbers and statistics**, but do include them if they're illustrative. Kathy's *Refined* Message Box includes two important numbers: that 2 million acres of natural land are lost per year, and that recreational activities in natural lands puts \$145 billion back into the economy each year. Those were important numbers for her audiences.
- ▶ **Use specific examples**, and make them memorable and quick to explain, with judicious use of metaphors or other tools to help people put them into context.
- ▶ **Compare numbers or concepts with something most people can relate to**, including metaphors or analogies when possible. Kathy helped people grasp the scale of those 2 million acres of natural land lost each year by pointing out that that is an area larger than the states of Rhode Island and Delaware combined.
- ▶ **Don't use jargon**. After completing your Message Box, re-read it to double check that you're not relying on words that are familiar to scientists in your discipline, but that wouldn't make sense to family members.
- ▶ **Lead with what you know**, not with what you don't know. Uncertainty exists, and you need to be honest about the limits of your research and scientific understanding, but don't bury the message in caveats.
- ▶ **Remember**: effective communication requires listening and truly engaging with your audience in a two-way conversation. Listen to what your audience cares about. What questions did they ask? Which of your points really seemed to trigger a response? Incorporate that feedback into future Message Boxes and materials.

"In the Midwest, it's 7 °F warmer in the winter than it was in 1974. That's the difference between wearing and not wearing long underwear."

*- Tracey Holloway, Professor,
University of Wisconsin*



After creating and refining your Message Box, consider what bottom line message it conveys by crafting a headline or Tweet that captures your main point in just a few words. If you can't convey your message that succinctly, you may want to distill it further.

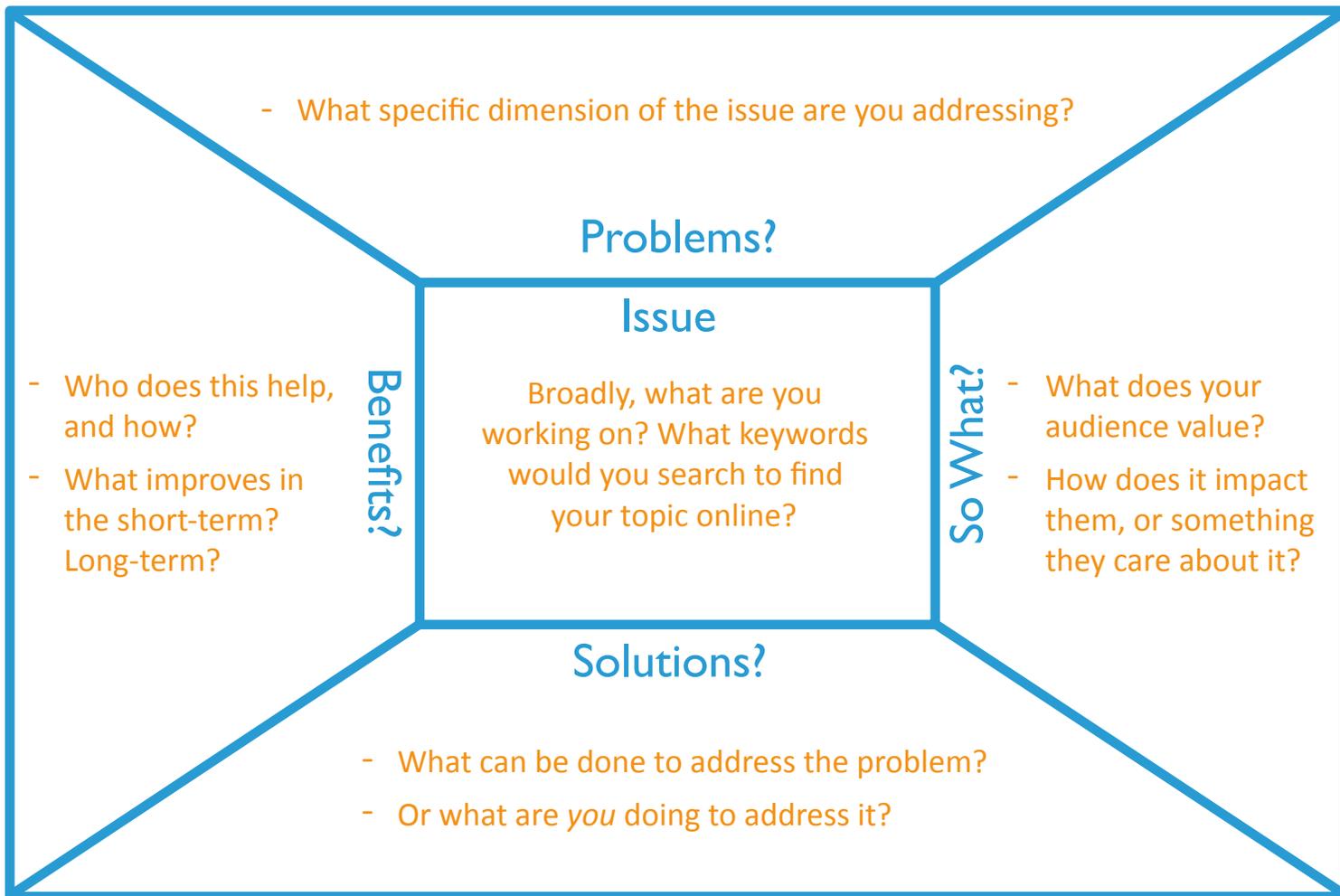
In Kathy's case, the main point is "support the Wildlife Corridors Conservation Act." Although Congress has changed hands since the bill was introduced, supporters hope that the bill, now drafted, can be reintroduced at some point in the future.

▶ Section V: Using the Message Box

The graphic below highlights some of questions that may help prime your thinking as you begin to draft your own Message Boxes and use them. There isn't a right or a wrong way to use Message Box, though some approaches will work better for certain audiences. The important thing is to get started!

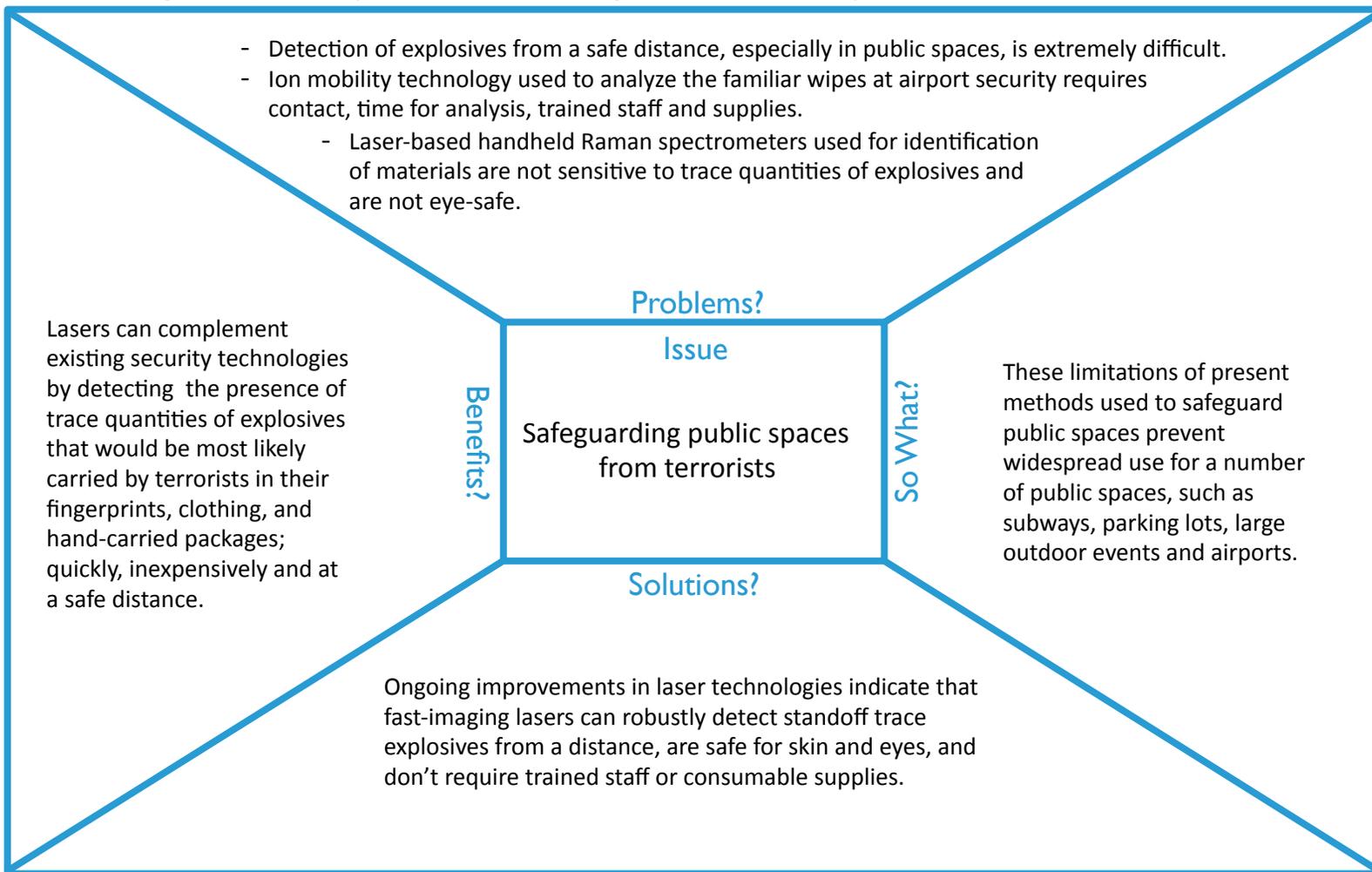
You may also find yourself being asked some of these questions when you are sharing your science, so they can also be a helpful way to prepare for those conversations.

Audience: Who is impacted by this? Who can change this? Who cares about this?

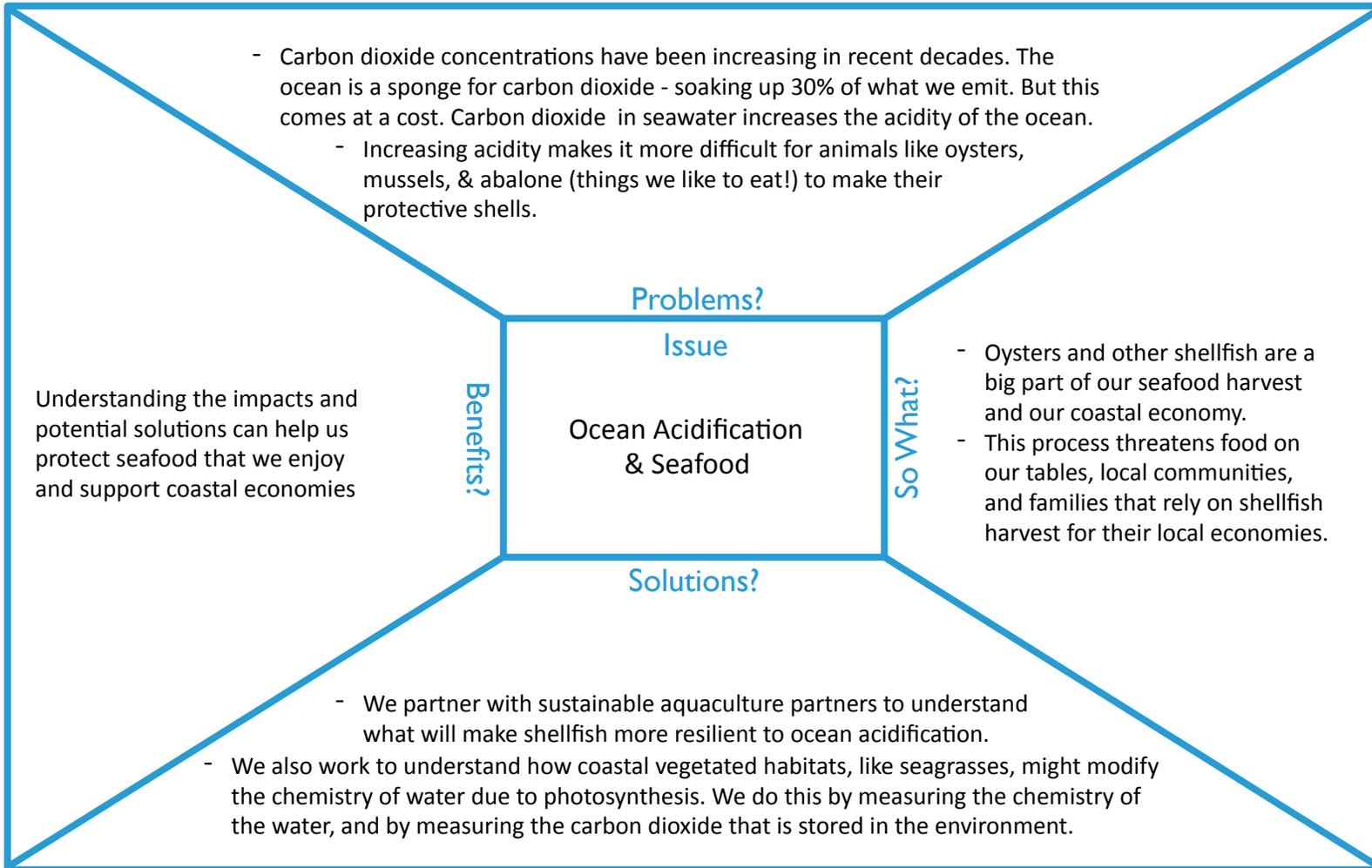


COMPASS most often works with environmental scientists interested in becoming more engaged in the public discourse. But we have helped scientists in a variety of disciplines, communicating with many audiences and working toward different types of goals, to distill and frame their messages with the Message Box.

The examples on the following pages provide a glimpse of that diversity of thought and approach. Note how each Message Box identifies its audience up front, and provides a framework for sorting and distilling complex issues down to their essence, answering some of the questions outlined above.

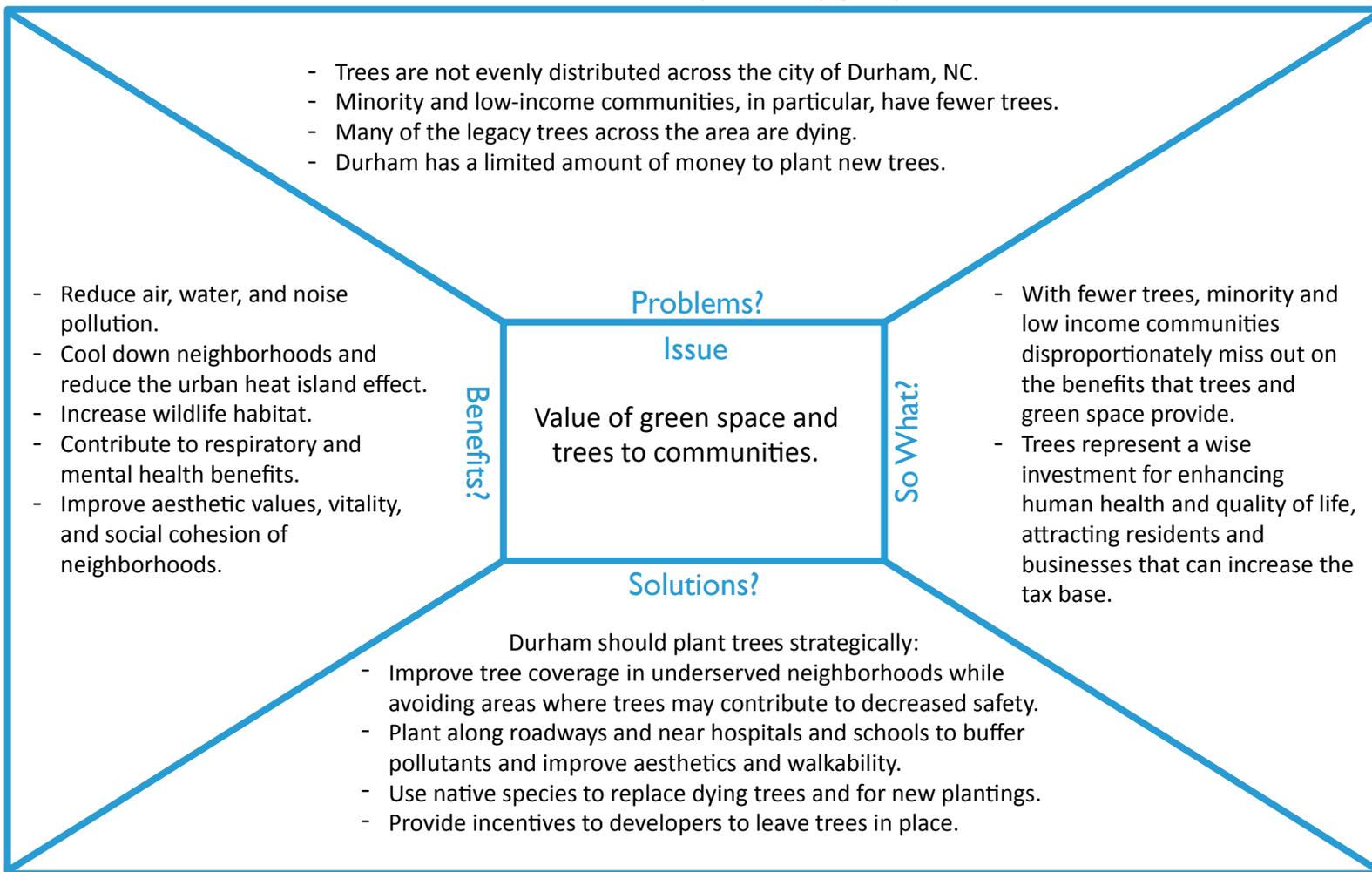


Marcos Dantus is a Distinguished Professor of Chemistry and Physics at Michigan State University. He requested coaching from COMPASS to prepare for his presentation at a conference of security professionals, including staff from government agencies and businesses, as well as academics. His audience all worked in the field of detecting explosives, but had differing levels of technical knowledge. His first Message Box succinctly conveyed some key ideas, but because Marcos was introducing an entirely new approach to detecting explosives, he wanted to be certain that his language was as persuasive as possible, without appearing to discredit those in his audience committed to existing approaches. His final Message Box reflects that nuance, with some key words in his **Benefits** section (such as “complementing existing strategies”). And it emphasizes the particular situations in which his new approach might be beneficial in the **So What** section. He acknowledges the differing levels of technical knowledge in his audience by providing examples in the **Problem** and **Solution** sections. Marcos reported that his talk went extremely well: “Many people that had never used lasers and that were very skeptical, came and told me that they liked the presentation and saw great potential.”



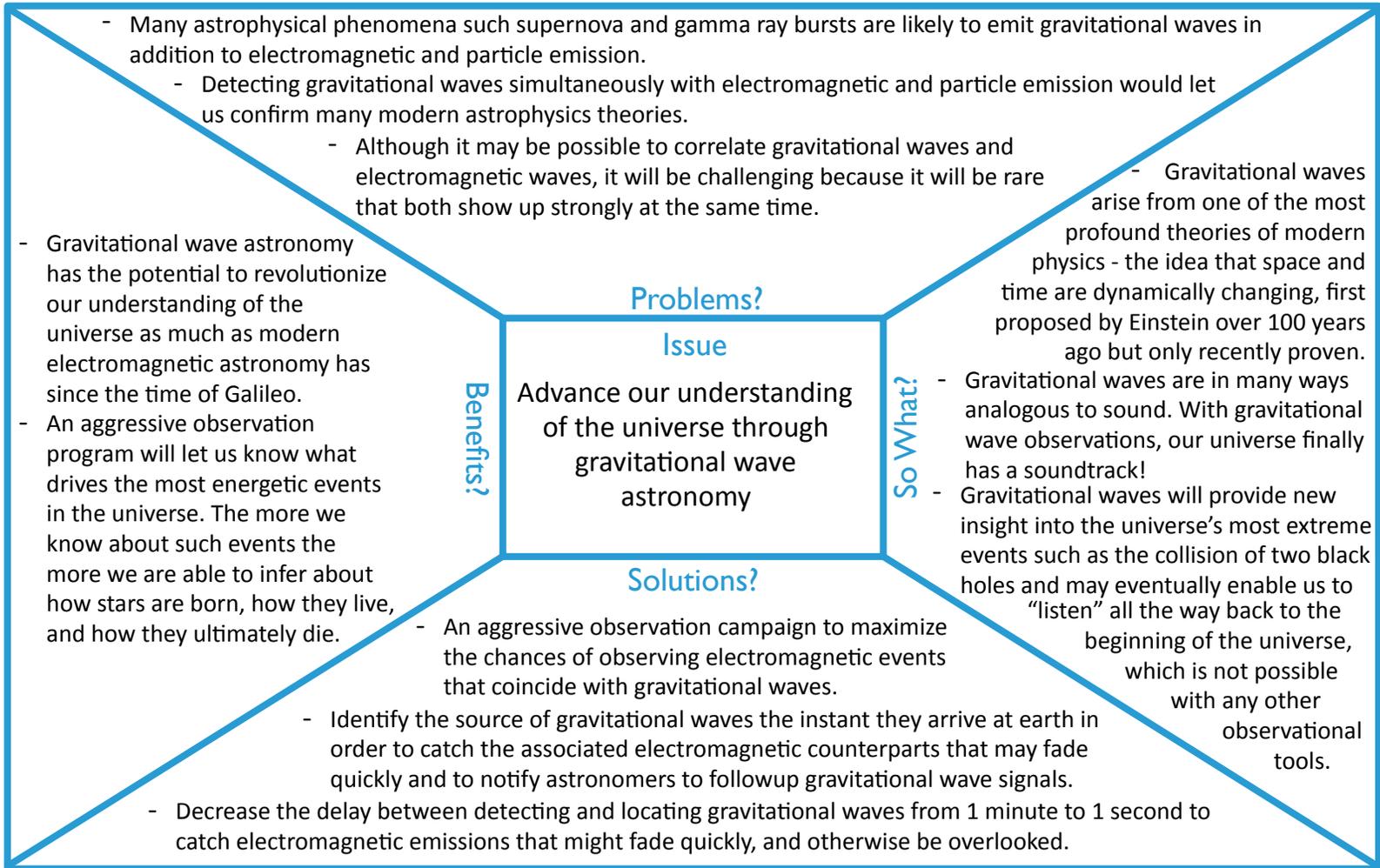
Tessa Hill is an Associate Professor in the Department of Earth and Planetary Sciences at Bodega Marine Laboratory, and Associate Director of Academic Programs at the Coastal and Marine Sciences Institute at the University of California at Davis. She worked on her Message Box at a COMPASS training in preparation for an interview on NPR's Science Friday later that week (you can [listen to it here](#)³). The box above is her fourth iteration, illustrating how many people find it valuable to work and rework their messages to make them clear and memorable. Listen for the points that she outlined in her Message Box, and note how she doesn't read from her Box, but uses her messages in her conversation with radio host Ira Flatow. She also uses metaphors to help the audience understand her points, and does a demonstration!

³www.sciencefriday.com/segments/for-oysters-challenges-and-hope-in-the-changing-ocean/



Anne Neale is a research scientist at the U.S. Environmental Protection Agency’s Office of Research and Development. She is the Project Lead for EnviroAtlas, an online, open access tool allowing users to view, analyze, and download a wealth of geospatial data and other resources related to the benefits humans receive from nature. These data provide a framework to inform decisions and policies at multiple spatial scales, educate a range of audiences, and supply data for research. Anne prepared this Message Box as part of a COMPASS workshop to illustrate how the information made available through EnviroAtlas (in this case, about the location of trees in communities) can be used to enhance tangible benefits to communities and the environment on the ground—including in her local community of Durham, North Carolina. She geared her Message Box to local planners to help guide decision-making about tree plantings in the city.

Audience: University faculty and administrators



Chad Hanna is an Assistant Professor of Physics at Penn State University who was preparing for his fourth-year review at the university. His audience included faculty in his department and associated departments, as well as university administrators. Therefore, his audience varied in its technical knowledge of astrophysics. Chad wanted the significance of his cutting-edge basic research to be apparent to all members of the review board, who will be considering him for promotion and tenure. He used his Message Box to help craft his narrative writeup to submit to the board for its evaluation of his contributions to the field of astrophysics. As this Workbook went to print, Chad hadn't yet received the review board's feedback.

▶ Section VI: Practice!

Sure, it looks good on paper, but how do you know if it will make sense to your audience? At COMPASS, we find that feedback from others is an invaluable tool for improving Message Boxes and we make that an integral part of our trainings. Test your Message Box on others who are unfamiliar with your work. Even better, try it out on friends or colleagues outside your area of expertise, or who aren't scientists.

Do they understand and remember your main points? What did they find confusing (did you inadvertently use jargon)? Did it resonate with them? Is there too much detail, confusing the main message? Conversely, is it so general that it doesn't convey anything useful or intriguing? Is the **So What** appropriate for your target audience?

A great way to get feedback on your Message Box is to form an on-site study group with other scientists. Groups of three to five people work well. Give each person two to three minutes to present their Message Box, and then have the group give concrete, constructive feedback for five minutes or so. If you are in the same field as others in your group, try to listen as if you were unfamiliar with the topics at hand. Then adjust your Message Box once again, incorporating useful feedback into your revision.



Additional Resources

If you'd like to read more about improving your communication skills and engaging with journalists, policymakers and others, check out additional resources on the COMPASS website at www.COMPASSscicomm.org. You can learn about our more in-depth book, *Escape from the Ivory Tower: A Guide to Making Your Science Matter*, by COMPASS' Director of Science Outreach Nancy Baron (available through Island Press and other outlets) and find links to primers and tips for engaging with policymakers or talking to the media. You can also check out the COMPASS blog at www.compassscicomm.org/compassblog, where we share tools, resources, practical tips, insight into our work, and stories of scientists engaging.

We hope that this introduction to the Message Box has helped you to share your important work with the wider world. If you want more help, COMPASS offers customized in-person trainings, grounded in the latest research in science communication and designed to empower scientists to identify and accomplish their public engagement goals. To learn more, visit our website at www.COMPASSscicomm.org or email us at info@COMPASSscicomm.org.

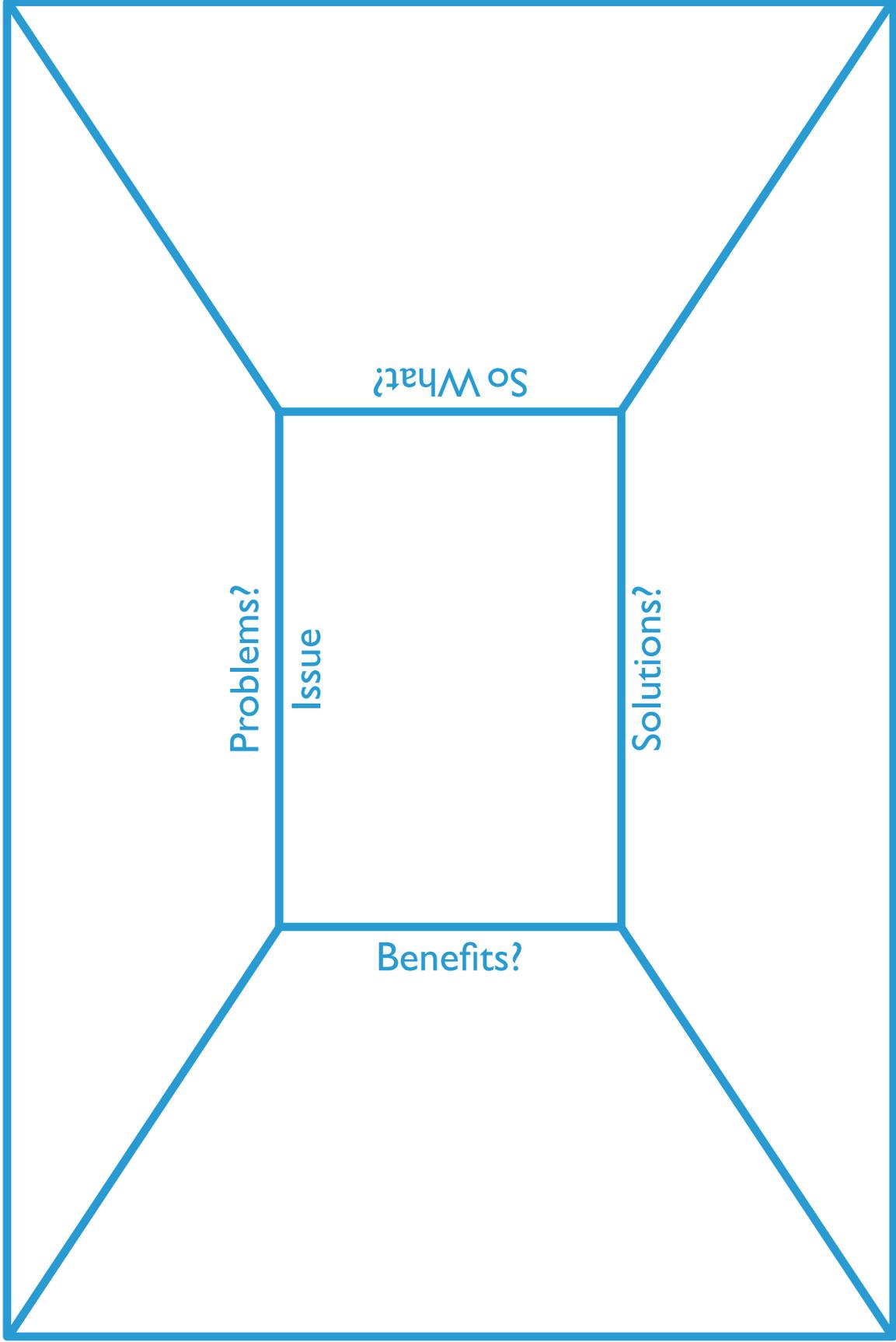
We look forward to hearing your stories of engagement and communication as you continue to refine your skills!



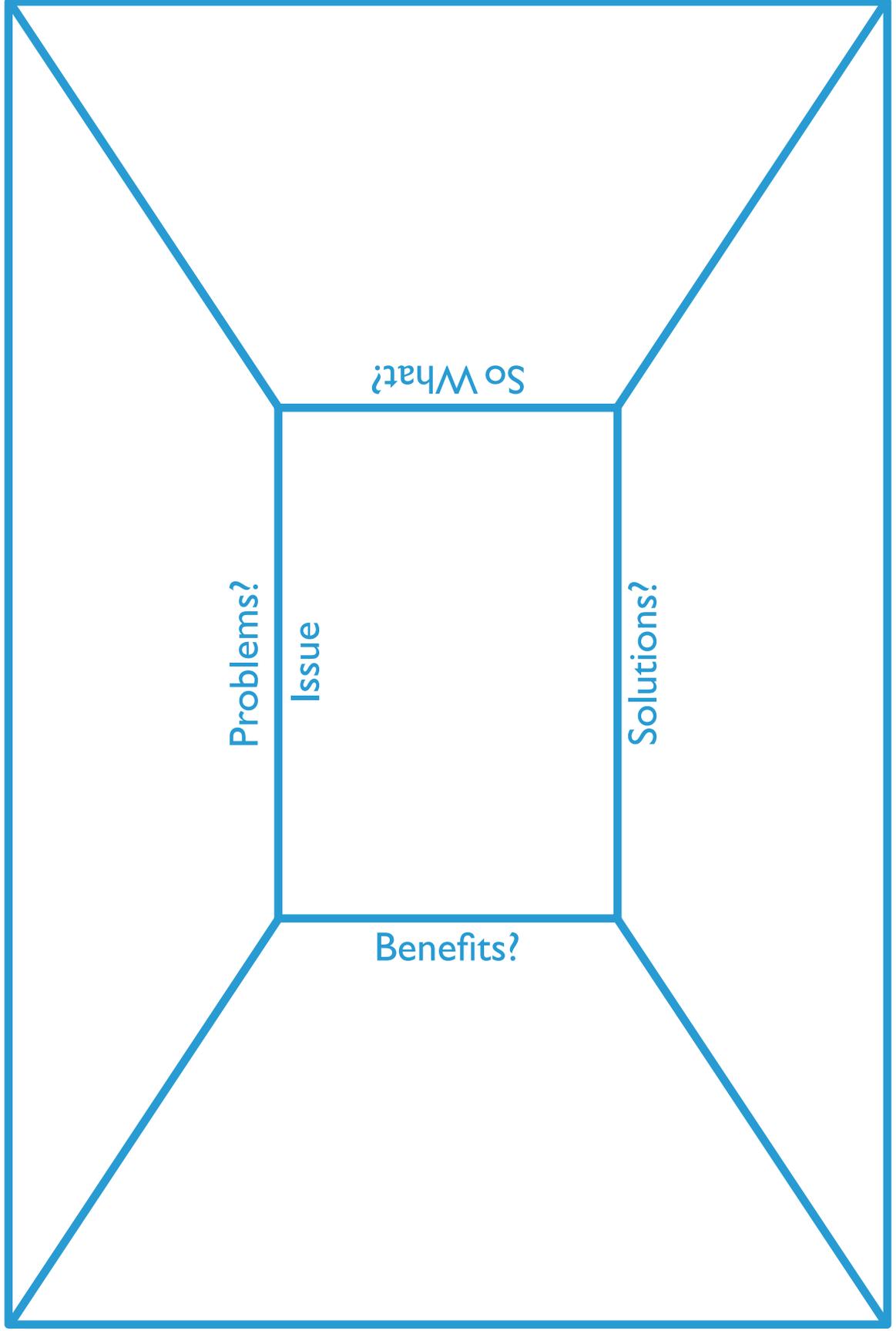
#Share on Social Media

To share your Message Box on Twitter, use the #COMPASSMessageBox tag (follow and tweet at @COMPASSscicomm to make sure we see it). You can also share your Message Box on Instagram using #COMPASSMessageBox. We love to see the Message Box in action, and this can be a great way to get feedback from your colleagues!

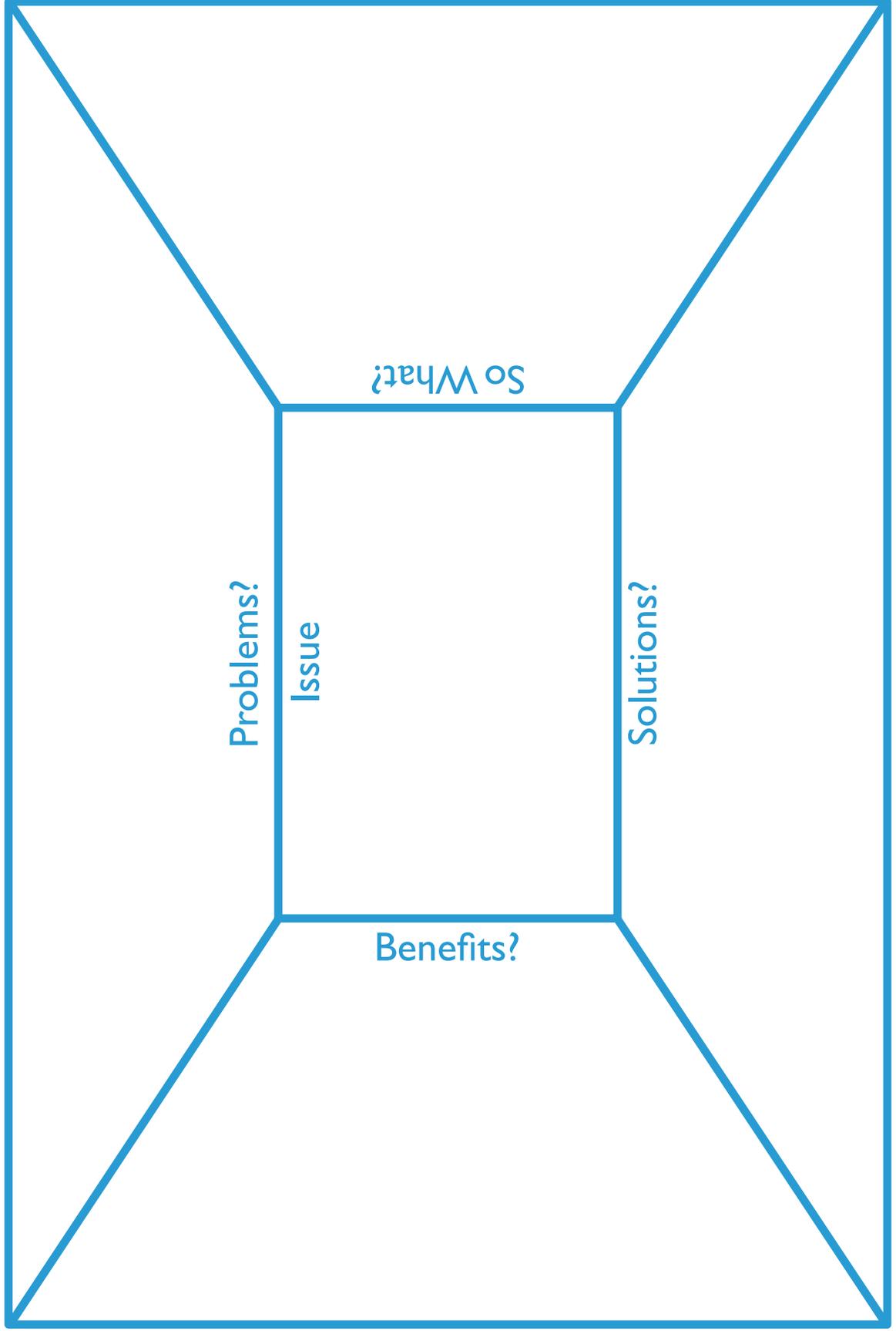
Audience:



Audience:



Audience:



About COMPASS and the Message Box

In 1999 COMPASS' founders set out to address the gaps between science, policy, and the public discourse. Scientists, they recognized, have a great deal to contribute to solving society's most pressing problems, but they often need help in learning how to engage effectively. COMPASS empowers scientists to engage meaningfully in the public discourse and decision-making. COMPASS' Director of Science Outreach Nancy Baron developed our version of the Message Box early on, building on others' work and adding key components such as identifying the "So what?" of your science—a core dimension of making your work relevant to your audience. Over the years, the Message Box has remained the foundation of our communication trainings.

The Message Box Workbook was developed through the generous support of the Rita Allen Foundation. We are excited to share this updated and expanded version, with examples of how the Message Box can be used beyond the environmental sciences.

This Workbook and its illustrations were inspired and informed by *Escape from the Ivory Tower: A Guide to Making Your Science Matter* by Nancy Baron, as well as our collective experience helping scientists to develop and refine their Message Boxes in our trainings and coaching. For additional useful information and context, we encourage you to read the book as well.

The Message Box Workbook is provided free of charge for personal and educational use only. COMPASS retains intellectual rights to all materials; please contact us at info@compassscicomm.org if you seek to use the Workbook commercially.

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The logo for COMPASS features the word "COMPASS" in a bold, blue, sans-serif font. A small blue triangle is positioned above the letter "O".

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