



FUTURE VISIONING REPORT

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PRESENTED TO

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and the ESA Governing Board



**SECONDARY &
PRIMARY DISCOVERY**

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Future Visioning Report

INTRODUCTION

In 2015, the Ecological Society of America (ESA) celebrated 100 years of successfully advancing the science and practice of ecology. Following a governance review and bylaws revision (effective January 2022), guided by the 2019 – 2022 strategic plan and with a new perspective following the pandemic, ESA committed in 2022 to an intentional look to the future.

With Brewer Pratt Solutions LLC as their consultant partner, ESA embarked upon a visioning initiative to continue its organizational evolution and ensure its relevance in both the medium- and long-range future. With an appreciation for previous research and recommendations, this report builds upon historical progress and a solid strategic foundation.

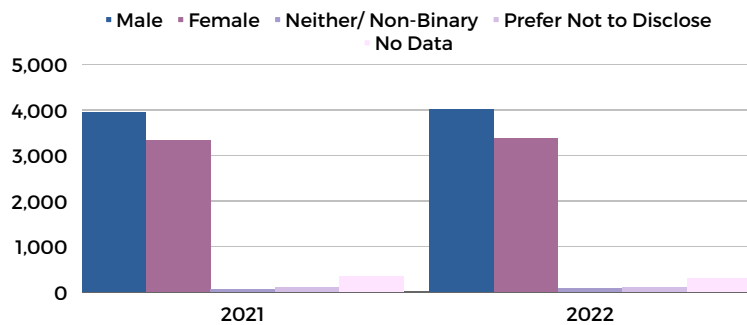
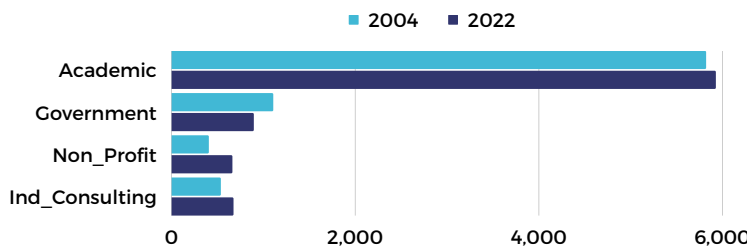
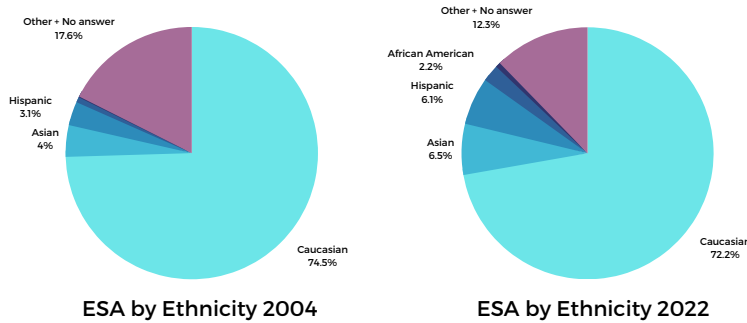
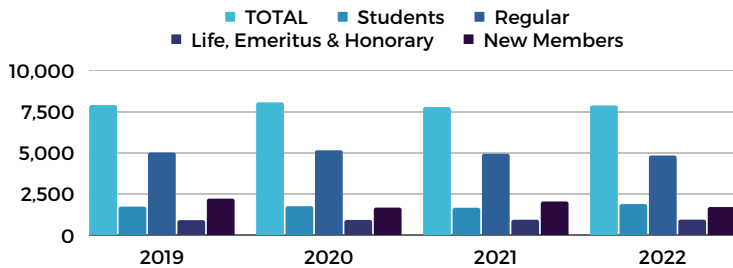
This initiative, supported by ESA staff and the volunteer leadership, spanned more than a year and engaged students, early career professionals, current members, international members, industry, government ecologists, and faculty in a dialogue about where ecology is today and what ESA needs to be tomorrow in response. We hope that, through anonymous surveying, individual interviews, and facilitated focus group sessions, everyone who wanted to participate had the opportunity to share their perspective and opinions.

In addition to engaging and listening to ESA stakeholders, this project aims to formulate a data-driven and realistic future vision that is phased, actionable, and measurable. The results of this project will feed ESA's work to advance a strategic framework and guide our work for the next decade and beyond.

It should be noted that this report is not scientific in nature. The majority of information was collected from a sampling of ESA members and was qualitative in nature. In addition, while presenting recommendations and scenarios for the next ten years, these conversations of organizational evolution, strategic foresight, and proactive engagement of the next generation of ecology should occur annually and be driven by strategic plan objectives.

WHO & WHAT IS ESA?

In an effort to develop a future vision, we must first understand what and who ESA is. The following come from the 2022 ESA Annual Report and represent a snap shot of the organizations current make up and position.



Coming out of the pandemic, ESA remains financially healthy with a strong reserve (more than \$6M) and stable expenses. The organization's primary source of revenue for the past four years has been in the publication services.

MISSION

The Ecological Society of America advances the science and practice of ecology and supports ecologists throughout their careers.

VISION

The Ecological Society of America envisions a future where people embrace science to understand and foster a thriving planet.

VALUES

Integrity: ESA is a trusted source of scientific knowledge that serves as a foundation for understanding and action.

Inclusion: ESA provides the community of ecologists of diverse backgrounds, heritage, and career paths with a supportive home that advances their aspirations.

Adaptability: ESA responds creatively to continuous change in our natural and social environments.



2019 - 2022

STRATEGIC PLAN

In 2019, a working group of ESA Governing Board members under the leadership of then President-elect Osvaldo Sala worked on developing strategic goals through 2022. The following goals were endorsed by the Governing Board in May 2019 and shared with the membership at that year's Annual Meeting in Louisville.

Advocate for ecological science

- Promote the value and importance of ecology
- Advance the visibility and quality of ecological education
- Give voice to the needs and aspirations of ecologists

Nurture the vibrant community of ecologists

- Expand the ecological community in number and in human diversity
- Encourage and support a variety of career paths for ecologists
- Work toward fully inclusive participation of diverse people in science

Foster the creation and dissemination of ecological knowledge

- Organize ecologists to identify emerging areas of inquiry
- Sustain and enhance the journals to attract the best work in the field and serve the information needs of the ecological community
- Host forums for the exchange of scientific research, discovery, and application

Promote the use of ecological science to address environmental challenges

- Convene thought leaders and subject matter experts to identify the most pressing environmental challenges and their solutions
- Engage with diverse stakeholders from all sectors on environmental topics
- Communicate ecological knowledge relevant for decision-making to policy-makers, resource managers, and the public

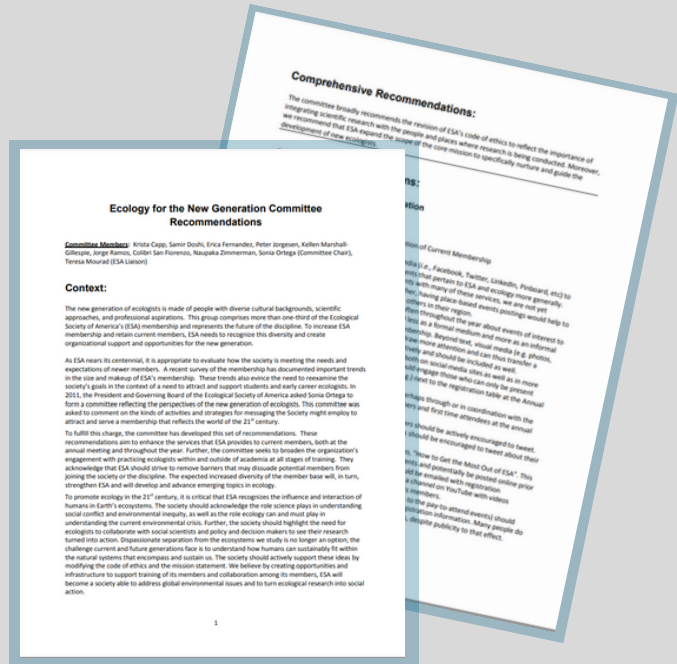
Build and maintain a dynamic professional scientific society

- Expand ESA's reach locally and globally
- Strengthen governance and management processes

SUMMARY OF PREVIOUS WORK

Conversations around the future evolution of ESA have been had many times over the years. That work and the conclusions drawn provided valuable context for this visioning project. Comprising our secondary research, we aggregated previous work products here to centralize analysis and leverage key take aways.

Ecology for the New Generation Committee Recommendations



ESA determined in 2011 that they needed to create a committee that fostered and developed diversity in the ecological study field. This recommendation sheet breaks out the working group's identified areas for improvement within ESA's strategic plan and code of ethics. These range from integrating researching and action to revenue stream diversification, and were highly directed at member growth and retention common practices.

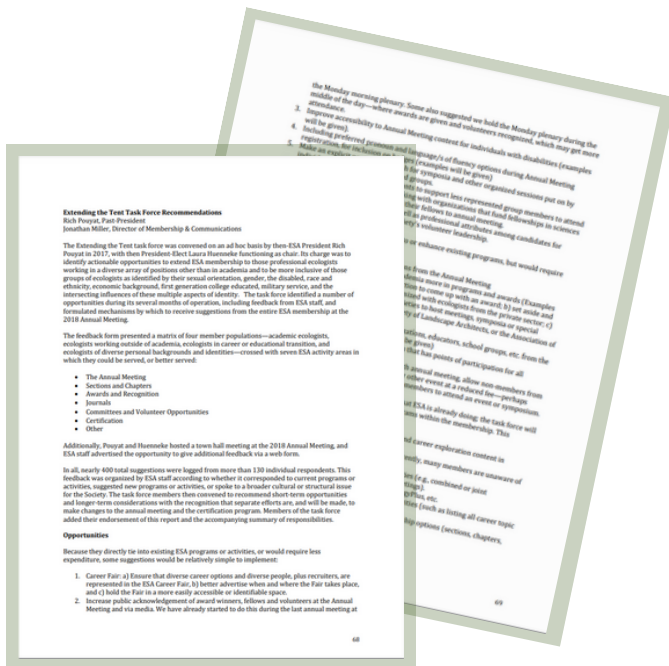


KEY TAKE AWAYS

o	ESA has identified the need for increased social media usage to generate member excitement and promote retention.
	Twitter was the primary platform mentioned; they hope to use it less formally with more visual posts to attract attention.
o	They have identified a gap in new member onboarding regarding in-person events and welcome packages.
	Highly recommend exploring their onboarding process for younger generation members.
o	They mention an initiative to provide childcare while members attend 'field trips.' The whole idea seemed oddly placed and not thought out very well. If this will be a priority, it needs more work.
o	ESA has a lackluster career fair offering during their annual event. This has come up in membership surveys and in their internal audit/recommendations.
	This could be an easy initiative to add in for increased member engagement and value for student members.
o	Certificate program for members only.
	I am always a fan of continuing education programs to generate secondary revenue sources.
	Considering this is a scientific field, a well built out program developed over the next strategic plan could increase prestige and organizational growth.
	A good add-on to this would also be post-doc programs; i.e. publication writing, tips & tricks, etc.
o	ESA mentions subsidizing travel expenses for minority members traveling from impacted communities.
	Good idea, but does cut into revenue and would need to be very clearly delineated on who qualifies.
	Recommendation would be to build this into a strategic plan initiative and develop a grant program from the ground up.
o	Mentoring program.
	Current program is labeled SEEDs, but seems to be largely vacant.
	Mentor programs usually become very popular and productive, or go ignored. Recommend a decision point on new program creation (Adopt-a-Scientist) and addition to strategic plan initiatives.



SUMMARY OF PREVIOUS WORK, cont.



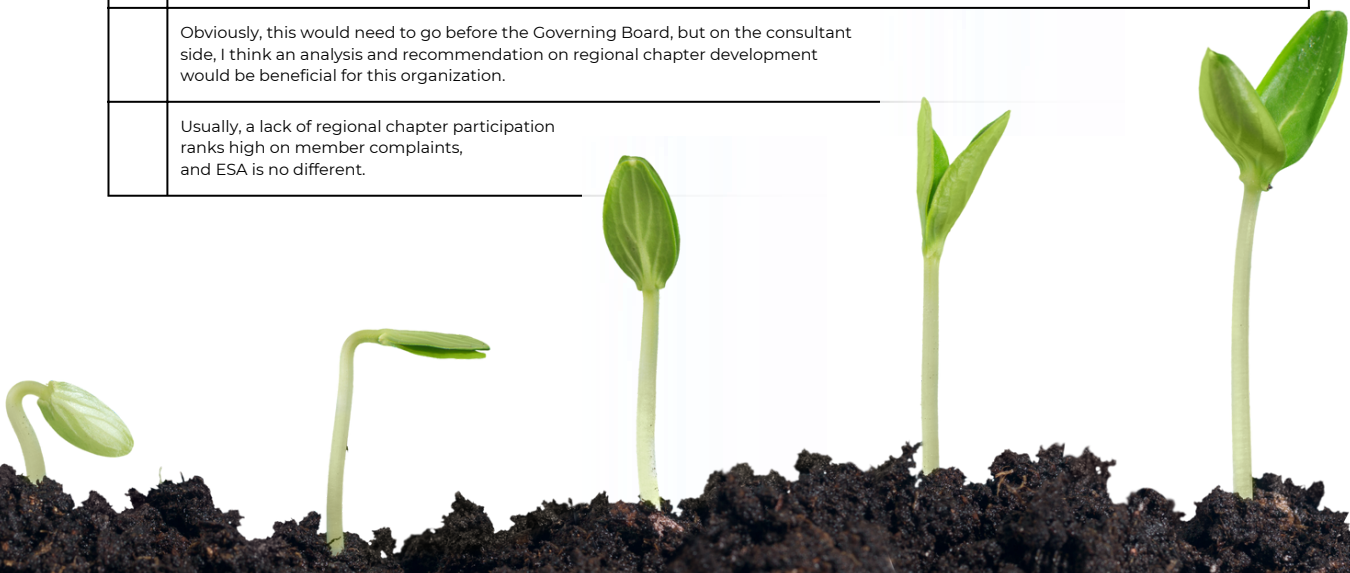
Extending the Tent Task Force Recommendations

In line with ESA's recent desire to grow membership, an ad-hoc task force was created to identify methods of increasing membership inclusivity outside of the typical academic members. Many of the methods of collection involved member feedback at the annual meeting. Multiple opportunities in this document repeat themselves from the New Gen committee document. On the whole, the suggestions gained are largely conceptual, and need significant work to actualize.



KEY TAKE AWAYS

o	Preferred pronouns usage on meeting ID cards; this was a top suggestion.
o	Celebrate award winners on all platforms publicly
	This would tie in very well with a developed continuing education program, and would certainly increase engagement for internal award winner enticement.
o	Seek out related field fellowship winners to extend invitations to annual event
	This is a good, short-term initiative that is fairly easy to identify and execute on.
o	Live streaming annual meeting select events
	The need for remote participation post-COVID is a consideration nowadays. If ESA has a gap in this area, we highly recommend leaning into this as resources allow.
o	Develop a guest category for ticket purchase
	Especially for local area potential participants, this could be a great incentive to draw in typically non-attendees.
o	Regional chapter development
	Obviously, this would need to go before the Governing Board, but on the consultant side, I think an analysis and recommendation on regional chapter development would be beneficial for this organization.
	Usually, a lack of regional chapter participation ranks high on member complaints, and ESA is no different.





Four Presidents' Visioning Summit: Next 10 years of ESA

- **ESA in 10?**
 - New revenue/business model
 - Diverse (capital D)
 - Leaders in translational ecology
 - Meeting needs beyond academia
- **NSF looking forward**
 - Lot up in air, but next FY may be best in long time
 - Current FY: put money where mouth is
 - Redirected \$ to supplements—long tail of COVID
 - External engagement with USGCRP
 - TIP: a place for coordinating x-cutting efforts and in translation
- **Open access/publishing ecosystem**
- **AGU President**
 - Solution science, diverse voices at the table, mentoring, leadership, how can we influence/change culture of science (tenure/promotion evaluation)

SUMMARY OF PREVIOUS WORK, cont.

ESA President's Summit – Visioning Exercise

A leadership team exercise in projecting the future needs of the organization. Common thread is large, umbrella recommendations and needs with little tactical level action recommended. As expected from a high level visioning exercise. Primary takeaway is the need for secondary revenue sources, and confirmed by their current financial standing and revenue sources.

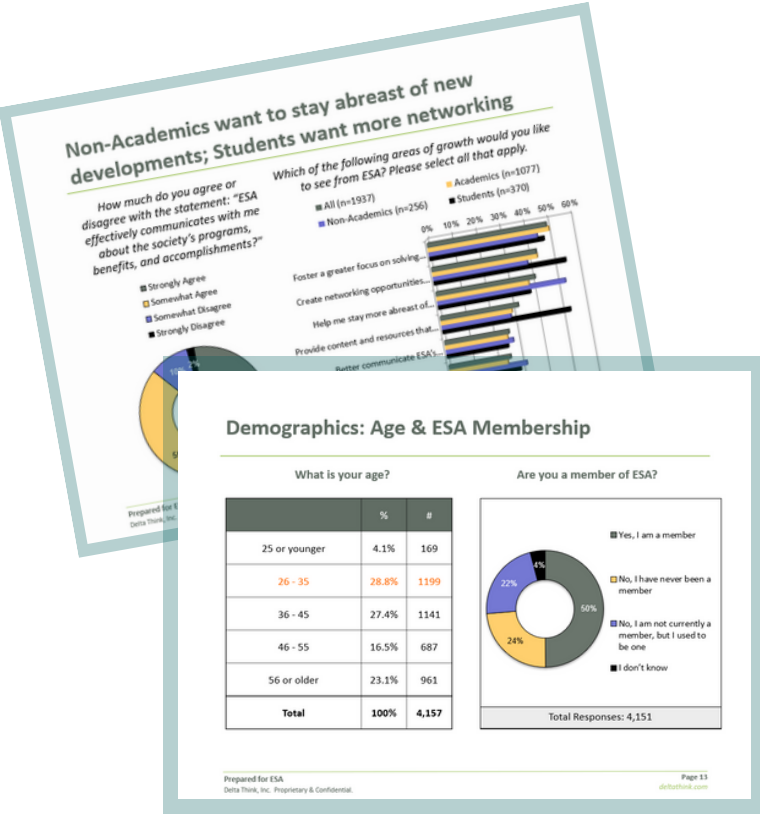
KEY TAKE AWAYS

o	Create secondary revenue sources
	Primary was adapting a new publishing model; tendency might be to lean towards open access to facilitate their member growth, but the financial benefit of that is suspect. This will require conversation.
	Continuing education is a recommendation for discussion to create a new stream.
	Member recruitment – this is a recurring theme, the leadership clearly feels diversity = member growth. I would argue that they should focus on age as opposed to ethnicity for growth.
o	Appeal to non-academics
	Good idea, how? We might be able to make some consulting impact in this area. My sense is they don't know much beyond their academic comfort zone demographics.
o	Private sector polling
	ESA does not have a grasp on the needs of, or how to serve, private sector ecology, it seems. Private sector ecologists seem to agree, and feel the organization is too academic-focused.
	I would recommend having a section of the annual event dedicated to informing their membership on the tenets of for-profit ecology, from a private ecologist. This could be the start they need into this demographic.

SUMMARY OF PREVIOUS WORK, cont.

Delta Think Membership Survey

ESA surveyed members to enable future planning and project development. At the time of the survey, they were in the process of compiling data to develop a communications strategy. This strategy is oriented on membership engagement and growth, a continuing source of focus for ESA. Accordingly, they attempted to derive three key insights: perceived membership value, benefits awareness level, and attributes that resonate most with current members.



KEY TAKE AWAYS

o	Nearly 80% of respondents do not volunteer for ESA
	Most of these members were not even aware of volunteering opportunities
	This could be an untapped population for a mentoring program
o	A resounding benefit that resonated with members is federal lobbying for increased grant awards
	ESA seems uniquely positioned to facilitate member submission for federal research grants. We have seen this in the past, and ESA stands to benefit from creating a federal submission pipeline for members.
o	42% of respondents/members interact with their chapter or section
	To reiterate their identified lack of local engagement, ESA should develop a regional chapter expansion initiative in their strategic planning sessions.
o	Lapsed members want more networking and more ecological content
	The argument for open access rears its head here again, and I still don't believe I agree with the model financially
	Publication revenue generation model should use some analysis to find a middle ground
	ESA should refine the earlier identified career fair idea to cater to the networking/student populations
o	ESA's website is confusing and members simply do not like it
	They have identified this, and should focus on the development plan for the website facelift
	Further, including a certificate program or education portal would eliminate the "I don't know what I would find on the website for me" response
o	There are 3 slides (50-52) on this presentation that lay out more detailed suggestions, they are worth a read outside of this summary document for clarification.



SUMMARY OF PREVIOUS WORK, cont.

Delta Think Communications Strategy

This was much continuation of prior discussed ideas, based on the related membership survey. This effort provided valuable audience analysis. It reiterated, with photos, how a revamped website should look and provided some detailed recommendations for design. These recommendations remain relevant. Overall the plan needs to be developed at a tactical and actionable level.



KEY TAKE AWAYS

The ESA branding project, website development, and communications plan development should be a priority focus for ESA as they execute their current strategic plan and when they undertake new strategic planning. Therefore, the directives detailed and approaches will be included in the recommendations of this report.

Key Attributes: Basis for Positioning

After reviewing prior research conducted with ESA members and nonmembers, and holding discussions with the stakeholders on this project, the following concepts emerged as key attributes applicable to the Ecological Society of America.

Mission Driven

- Mission is paramount
- Responsive to community needs
- Dedicated to understanding life on earth

Serves with Integrity

- Honorable and trusted source of knowledge
- Imparts legitimacy

Catalyst

- Advances the future of the profession
- Supports connections and collaboration within the community & across scientific organizations & other partners
- Facilitates conversations

Diverse and Inclusive

- Welcoming diverse perspectives and voices
- Embraces and enriches the profession
- Largest community in Ecology: "Big tent, small communities"

Adaptable

- Open-minded
- Open to change and willing to take risks
- Supports experimentation and initiative

Leads the Community

- "Science for Policy - Policy for Science"
- Promotes advocacy and innovation
- Bedrock; provides stability and reliability
- Fosters mentoring

Audience 4: Professionals in Public and Private Sectors – All Career Stages

Ecologists working in applied settings. As a group, they are likely involved in a variety of career paths, such as advocacy, government, consulting, etc. Are less likely to be members of ESA. Perceived value of membership and benefits that resonate with them will likely be somewhat different from their colleagues in academia.

What is the action we want them to take?

Join ESA if not a member. Understand the benefits available to them and the value of being a member. If a member, volunteer and represent their professional viewpoint. Help to inform and grow beneficial programs for their colleagues and influence others to participate as well. Become certified and advocate others to do so.

What must they believe in order to take action?

ESA is a leader in the field of ecology and represents their profession. Members benefit from professional development programs, keep abreast of new developments, support certification, have access to networking opportunities, and have a voice in science policy. Their membership directly supports the organization, which in turn supports all professions in the field.

What do they currently believe?

ESA focuses primarily on academic ecologists and education. There are not enough programs and services for this segment. They are unaware of some of the programs and services available to them and, if they are aware, may feel there are not enough of them. They believe that the most important benefit of the society should be professional development opportunities.

What are the potential hurdles to overcoming discrepancies in the current and desired beliefs?

Attitudinal

They may believe that ESA is for academics and/or its primary benefit is the journals, which may not be their main priority. They may not know that other ecologists in the same career are members of ESA.

Operational

They may believe ESA membership is too expensive. They may not have reimbursement for membership from their employer, or their employer may not allow certification.

Communication Strategy Path by Audience Segment

	Goals/ Call to Action	Messaging	Key Tactics
Undergrad and Grad Students	Join, Renew, Get Involved and Engaged	Relevant, Advocacy, Career Assistance, Network, Diversity	Prospect File, Email, Social Media, Text, Resource Page, Student Chapters, Advisors
Academics – Early Career	Join, Renew, Publish, Career Development, Volunteer	Connect, Professional Development & Advancement, Publish, Advocacy	Prospect File, Testimonials, Text, Regional Events, Mentor Program
Academics - Mid-Late Career	Increase Awareness & Engagement, Be an Influencer	Leader, Mission-Driven, Community, Supports the Profession, Diverse	Emails, Ambassador Program, Promoter, Posts, Listserv, Social Media
Public/Private Sector - Any Career Stage	Join, Volunteer, Build Awareness, Certification	Represents You, Networking, Voice, Stay Current, Certification	Prospect File, Email, Social Media (LinkedIn), Resource Page, Frontiers, AdWords, Certification

Cornerstones of the ESA Communication Strategy



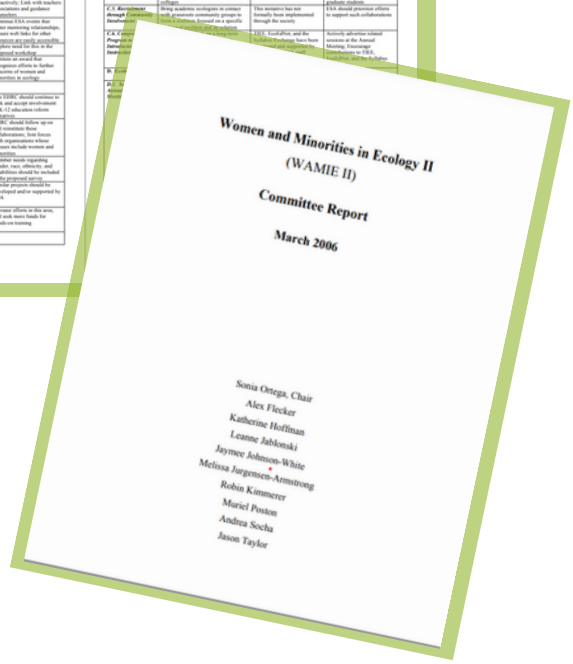
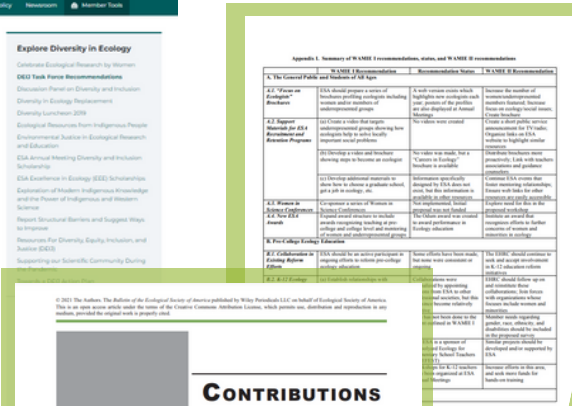
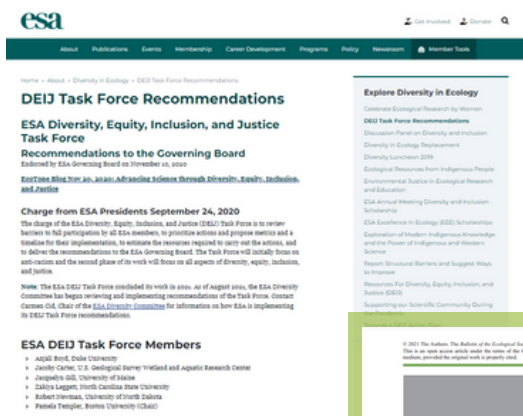
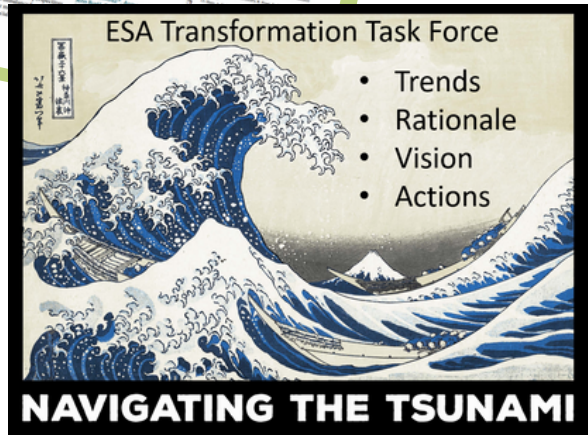
Fundamental to success: Test & track activities and engagement, such as email, social media engagement levels, link referrals, and the impact of all on membership



SUMMARY OF PREVIOUS WORK, cont.

Additional Material Reviewed

Thanks to ESA staff and the Governing Board, a multitude of information was available as a part of secondary research. Due to time and scope restraints, materials were prioritized based on relevance and applicability. All of the materials reviewed and sourced are detailed in Appendix A.



KEY VISIONING QUESTIONS

To solicit broad stakeholder input, ESA sought feedback on key visioning questions from the general membership and volunteer leaders during the annual meeting and via an online submission.

The goal was not to identify problems, something negative to move away from, but instead a vision, something positive to move toward. This was an opportunity for members to provide initial ideas and represented the first stage of primary qualitative research.



- 1 How might ESA better serve ecology and ecologists in the 21st Century?
- 2 How might ESA ensure its relevance to early career and future ecologists?
- 3 How might ESA engage to keep members informed and enhance collaborations with other communities?
- 4 What will be ESA's highest contribution to the future?



HOW TO BETTER SERVE ECOLOGY & ECOLOGISTS

How can the Ecological Society of America (ESA) can better serve ecology and ecologists in the 21st century?

The suggestions to improve the Ecological Society of America's (ESA) service to ecologists and ecology in the 21st century include having early-career ecologists and diverse individuals have an equal voice and full voting rights on the board, to better connect scientists to opportunities in an inclusive manner, to rebrand or reimagine ecology, to improve the website and social media content with more interactive features, and to remain up to date with technology. Additionally, the ESA should stop thinking of itself as a scientific society and start as a professional society for scientists, emphasize more academic and non-academic ecologists, support ecologists who take action, communicate advances in methods and thinking, and broaden understanding in other communities and the general public. Finally, the ESA needs to provide a career track outside of academia and accessible and affordable publications for ecologists. Some specific feedback included:

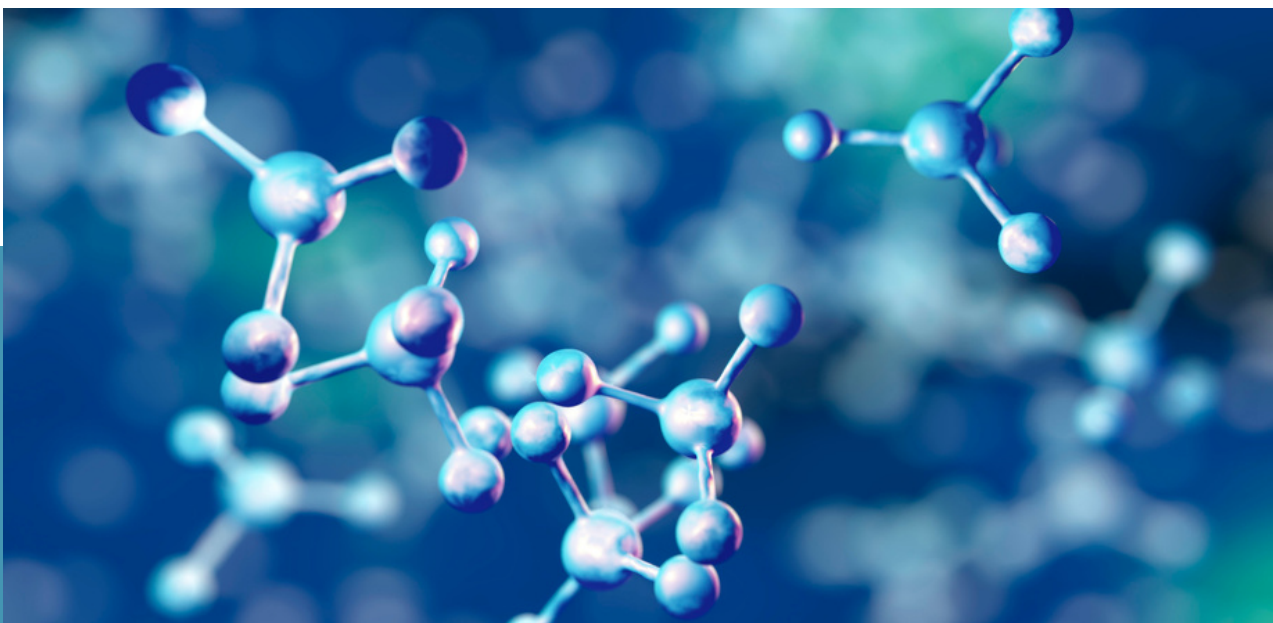
- Providing the future of ecology an equal voice at the table by having full voting rights for younger members, not just observer status.
- Connecting scientists to opportunities to learn and engage in an inclusive manner.
- Rebranding or reimagining the word "Ecology" so that Ecology equals excellence equals success.
- Improving the website and social media content with more interactive features and paying attention to diversity and inclusion.
- Developing additional events for specific audiences.
- Shifting the focus from the Annual Meeting to rotating regional events and providing deeper career-oriented content that helps young people interested in careers in or adjacent to ecology to navigate their way through education and job options.
- Broadening understanding in other communities and the general public and providing accessible and affordable publications for ecologists.
- Staying on top of the most current trends, including adding virtual components to the meeting budget.
- Ensuring that the organization serves under-represented scientists and early career ecologists.
- Developing a structure, program, and benefits suite that can serve the entirety of ecologists and facilitate knowledge exchange between sciences and their respective theoreticians and practitioners.

RELEVANCE TO FUTURE ECOLOGISTS

How might ESA ensure its relevance to early career and future ecologists?

The responses suggest various ways in which ESA can ensure its relevance to early career and future ecologists. Some of these include improving communication by using user-friendly platforms that encourage two-way communication, developing programs and services for practitioners, providing training and networking opportunities for emerging areas like big data science, genetics and ecology, and broadening certification requirements to allow those with environmental science backgrounds to be certified. The respondents also suggested mentoring and support of young scientists, job placement support, providing funding support for research and conference attendance, bringing in more industry partners, and emphasizing the importance and relevance of ecological knowledge for planetary management. Finally, ESA needs to show the breadth of roles, professions, and career tracks in addition to highlighting the breadth of research and work that ecologists do. Some specific feedback included:

- Increase availability of funding for student & early career research and conference attendance.
- Bring in more industry partners. If one thing has become clear during the pandemic it's the outpouring of potential academic-track researchers into industry yet advisors/Pis within academia are typically untrained and unqualified to make recommendations to students interested in industry.
- Practice interviews. Updates on demand. Realistic expectation setting for pay and job descriptions.
- Be the nexus of theory and practice in ecology and realistically appeal to all stakeholders with an interest in ecological science.
- Deliberately involve younger voices and/or those in career transitions.
- ESA is the best chance early career and future ecologists have to experience the breadth of what it can mean to be an ecologist, and we need to do a better job of showing the breadth of roles, professions, and career tracks in addition to highlighting the breadth of research and work (e.g., engagement, communication, etc.) that ecologists do.
- Facilitate mentor-mentee/collaborative relationships during ESA meetings and beyond





INFORMATION AND ENHANCED COLLABORATIONS

How might ESA engage to keep members informed and enhance collaborations with other communities?

The responses provide a range of suggestions for how the ESA can keep its members informed and enhance collaborations with other communities. These include expanding the active volunteer base, creating collaborative activities, leveraging social media, and investing more resources in education. Suggestions also included hosting joint conferences and workshops, training sessions, meetings, and engaging newsletters. Many responses highlight the need to communicate with members via various channels, including social media and town hall meetings. In addition, it was suggested that ESA should engage more directly with the public, the media, and decision-makers, and that ecologists need to be prepared to communicate more effectively with these groups. Some specific feedback included:

- Invite professionals from other disciplines and fields to attend and learn. Medical and business would likely benefit a lot and bring new issues to consider.
- Provide them with a useful website experience that outlines easy access to ESA groups and collaborators..
- Create an international affairs office to increase exchange with other ecological societies across the globe.
- I think our elected leaders should hold semi-regular town halls, even “office hours,” to talk about ongoing work. Sharing more with the section and chapter chairs hasn’t been very effective since even the most engaged among them are hit-or-miss when it comes to sharing with their membership.
- Hosting joint conferences seems like an efficient way to increase participation for people who may not attend ESA regularly (but may attend smaller conferences). For example, a joint conference with SACNAS could be used to engage the portion of SACNAS participants interested in ecology/environment (for which SACNAS really isn't a great venue/exposure for).
- More broadly, I believe that the ESA ought to engage more directly with the public, the media, and decisionmakers via short summary statements about where ecologists believe the planet is heading (including identifying supporting studies and/or the ecologists who best can present the information).

CONTRIBUTIONS TO THE FUTURE

What will be ESA's highest contribution to the future?

The opinions on what will be ESA's highest contribution to the future are diverse, but some common themes emerge. These include: being a hub for networking and professional development for ecologists, promoting education and understanding of ecological science, fostering a community of applied ecologists to tackle climate change and biodiversity loss, promoting fact-based knowledge and effective communication to policymakers and the public, and shaping the future of ecological research through open science and meaningful partnerships. It is emphasized that ESA should focus on people and problems, rather than just self-promotion. There is also a call for diversifying the membership and types of ecologists employed. Some specific feedback included:

- Fostering a vibrant and growing community of applied ecologists whose work will be essential to address the coming storm of climate change, biodiversity loss, and other challenges.
- Making ecology a discipline that the public feels is trustworthy and ready to help with the needs of people and the public. Ecological science should be seen as the discipline that connects nature with people, for the better of both.
- To be the most reliable source of information and validated standards for training ecologists, conducting ecological research, and guiding educators, students, early career ecologists and the general public on what the discipline of ecology is all about, what skills are expected, and what career paths are available or emerging as the discipline changes to meet the needs of the environmental workforce.
- I don't think the focus should be so much on ESA as an organization but rather amplifying the membership to allow them to make high contributions to the future of ecology.
- Support and advocacy for environmental protection, land and ecosystem protection; assistance to and collaboration with people trying to protect ecosystems. ESA has understood this more than most other science bodies, but these efforts need to be maintained and increased.
- Helping convince those with political and economic power to take serious effective action to reduce carbon emissions, conserve biodiversity, and promote more sustainable life styles.





future visioning report

FOCUS GROUPS OVERVIEW

During the qualitative research phase of this analysis, Brewer Pratt Solutions gathered data from four dedicated one-hour focus groups. They included discussions with ESA Governing Board members, ESA staff, students and early career professionals, and private sector ecologists (outside of academia). With the exception of our discussion with the Governing Board, each was conducted virtually using Zoom.

These discussions, each 90-minutes in length, focused on current and forthcoming trends facing ecology, the main issues facing ESA moving forward, and hopes and goals for ESA's future. Focus group protocol standardized following three questions, asked of each group:

- What trends or issues within ecology should we be aware of/explore as this visioning project progresses?
- Based on your background and experience, what do you see as the main issue(s) facing the organization moving forward?
- Based on your needs and perspective, what do you hope ESA's visioning project spotlights and/or prioritizes?

focus groups overview

GOVERNING BOARD PERSPECTIVE

The first focus group conducted was with the ESA Governing Board, held in November 2022 during an in-person meeting at the ESA offices in Washington, DC. Over the course of an hour, the group discussed a multitude of issues. It demonstrated moderate consensus but no resolution on several recurrent topics, including the balance between research and education, the tension between those in and outside of academia, and how to serve ecologists internationally. Here are some highlights of the concerns, insights, and requests they shared:

MULTITUDE OF TENSIONS

The Governing Board reflected on several dichotomies. First mentioned was the tension to expand. With a historically domestic focus, "America" in the name, and an uncertain global value proposition, it demonstrated the "yes, but how" struggle many boards face. Discussion over whether to participate in advocacy and the segmentation of members over societal challenges was short but relevant. The larger organizational tension between those in academia (a majority of the board) and those outside of academia was expressed in varying ways, demonstrating another tension around expansion.

DEFINING & EXPANDING THE VALUE PROPOSITION

Whether an ecologist outside of the United States or outside of academia, the question arose as to how ESA serves those currently underrepresented audiences. Questions of access, opportunity, and return on investment were raised without resolution. Concerns were also raised that ESA might be perceived as just a meeting or journal. The Governing Board expressed hope that ESA would redefine value and expand member engagement. Discussions of new and expanded value included ESA as a community-building platform for individuals and institutions, cultivating collaboration and open and organic information exchanges.

WALKING THE WALK ON DIVERSITY

With ongoing progress being made, a discussion was had around diversity and the need to "walk the walk." Beyond diversity, the Governing Board highlighted access, inclusion and equity, with a need for specifics to demonstrate the outcomes and impact being made.

MAKING ECOLOGY RELEVANT

During discussions of both those issues facing ESA and goals for the future visioning project, attention was given to the relevance of ecology. With calls to increase public awareness, ensure ecology's societal importance, and tell the story of ecology's power, the position, and power of ESA to be the voice of ecology was clear. Whether shining a light on the science or demonstrating career pathways, ESA has role to play in this vital undertaking.



focus groups overview

OUTSIDE OF ACADEMIA

The second focus group was hosted for a selection of ESA stakeholders outside of academia. The conversation echoed much of what had come from the April 2022 ESA Working Group for Private Sector Ecologists, including the sentiment that "being left out of most aspects of ESA, we conclude that academics think of us as second-class ecologists."

The discussion so touched on the challenges and opportunities of bringing ecological concerns into business and addressing the relevance of ecology. The group identified issues such as the siloing of ecology, the watering down of the term ecology, the lack of inclusion of indigenous knowledge, and the need for diversity, equity, and inclusion in the ecological sector. The group also discussed the need for more advocacy, legislative understanding, and integration with the public and private sectors. They recognized the importance of making ecology relevant to the next generation and the role of traditional knowledge in that.

The group agreed that change must come from within, and the organization needs to be culturally intelligent and recognize everyone. They also discussed expanding the tent and engaging more private sector and industry members to create more business opportunities for ESA. Here are some highlights of the concerns, insights, and requests they shared:

WELCOME & RESPECTED

Those participating in this focus group have historically felt "left out of the dialogue" and that the organization only "pays lip service to giving more attention to private sector and industry. Its not surprising that this segment of ecologist do not feel welcome or respected "considering the academic focus of ESA" and perceived "bias against consultants and industry ecologists"

VALUE & RELEVANCE

"The value to nonacademia is limited – hard to make a business case for participating in ESA. The knowledge being shared in the industry. Knowledge from the tower is staying in the tower. The topics aren't there for applied professional ecologists, and the networking is not there." With a more frequent representation of applied ecology, career pathways, and the business of ecology, "private sector" ecologists might find a greater return on investment when considering participation with ESA. It should also be noted that they believe they have a lot to offer especially to the next generation curious about non-academic career paths.

INTERNAL EFFORTS

Still looking for a "way in" the participants in this group discussed setting up a "Private and Public Sector Ecologists Section" and a desire to get more nonacademics involved in leadership.



focus groups overview

EARLY CAREER PERSPECTIVE

One of the four focus groups was dedicated to engaging students and early career professionals. For these participants, the main issues facing ecology moving forward included inadequate training for non-academic careers, insufficient emphasis on applied research, lack of diversity, limited resources for non-academic paths, and the need to redefine ecology beyond academia.

This group was vocal and seemingly discontent, seeing the main issues facing ESA as the cost of participation, the lack of power for section leaders, a disconnect between those in power and the experiences of others, and a lack of transparency in decision-making processes. Other concerns included the limited representation of youth and early-career individuals, inadequate mentorship, and insufficient risk-taking in providing opportunities for new and diverse voices. The respondents also raised issues with communication, accountability, and the need for greater DEI support.

OPPORTUNITY & INCLUSION

There was also discussion about the lack of diversity and equity in ESA leadership and funding inequity for chairs and leadership. There were concerns raised about people in power being disconnected from the realities of those who are not white, able-bodied, or in mid-high socio-economic status with tenured academic jobs. Some members suggested the need for training to unpack internalized racism and prejudice.

PARTICIPATION IN LEADERSHIP

There was also discussion about the structure of ESA, and how it has changed over time. Council members now attend meetings more frequently, and governing board meetings are open. Lastly, it was mentioned that there are early-career members who want to be on the governing board, but the board is mostly made up of older individuals, indicating that the lack of young ecologists is not due to a lack of interest. Three early-career ecologists were nominated for the upcoming GB election.



focus groups overview

ESA STAFF

According to ESA Staff, the main issues facing ecology and the Ecological Society of America (ESA) moving forward are diverse and multifaceted. This discussion highlighted the need for a comprehensive approach to addressing the challenges facing ecology and the ESA, including a focus on training and job opportunities, applied research, diversity and inclusion, communication and community building, and governance reform. Here are some highlights of the concerns, insights, and requests they shared:

- "Capacity is a real issue. If we want to grow, we have to take something off the table so we can put staff resources towards it. Our people work very hard, and I don't see them having the ability to add significant job duties to their existing jobs without adding staff."
- Insufficient training for non-academic careers hinders students' ability to find jobs after graduating. We need to engage employers.
- "We're an organization that focuses on basic research rather than Applied Ecology. And Applied Ecology is the growing segment. I know our board thinks they want to do that. But I don't see them putting real teeth behind that thought."
- The need for more emphasis on applied research and collaboration with the private sector, rather than just academic research and publishing.
- Retaining students in the field, reducing losses in the ESA pipeline, and supporting early career professionals.
- "We're actually seeing a demise in ecology programs at higher education, in favor of microbial genetics and the sub-specialties where all the funding is coming in. That tells me that we are not communicating the relevance of our science."
- Addressing the lack of diversity, equity, and inclusion (DEI) within the ESA, particularly in terms of supporting Indigenous communities and non-white experiences, and ensuring that the DEI committee is not the only avenue for progress. We must be open and accessible to all ecologist regardless of specialty, gender, employee, location, age, etc.
- Overall, ESA needs to find ways to better communicate the importance of ecology science and encourage more people to get involved.
- There is apathy and an anti volunteerism trend affecting peer reviews. There is pushback from authors and reviewers that don't want to give their volunteer time to Wiley for their profit.
- Overcoming resistance to change and using new science and technology to find answers.
- Discontent with ESA governance, including the lack of power given to section leaders, the disconnect between the leadership and the experiences of others, the high cost of participation, and the lack of transparency in decision-making.





Over the first four months of the year, Brewer Pratt Solutions, LLC conducted one-on-one virtual interviews with more than a half dozen ESA stakeholders. As a supplement to the focus groups conducted earlier, the interviewees were asked the same three questions.

Respondents were assured their feedback and opinions would be aggregated in order to get constructive candor from those involved. Interviews were 60 minutes each and held via Zoom.

Interviewees included section chairs, task force members, faculty, past presidents, early career and private sector ecologists.

ONE-ON-ONE INTERVIEWS

future visioning report

notable & quotable . . .

- "Science is about people. Science isn't about science. ESA's challenges aren't really about the science its about the people. It is hitting some of its scientific limits because we can't progress without embracing the fact that it is a human pursuit."
- "ESA should redefine ecology in a solutions-focused manner and become a trusted resource in the field. Finally, the author warns that if ESA does not take advantage of this opportunity, other organizations may take it instead."
- "We have to increase the visibility of the ESA and bring ecology forward as an interdisciplinary field that is nimble at dealing with emerging issues."
- "There is a need for ESA to redefine the scope of ecology and address its identity crisis. That is going to involve some soul searching and cultivating new connections."
- "I want to emphasize the importance of making the future of ecology more inclusive of underrepresented minorities, ESL, international, racial, ethnic, and gender groups."
- "ESA should be the intersection of ecology. The sub-disciplines are becoming more niche, and there is a need to talk across them."

ONE-ON-ONE INTERVIEWS

The recurrent themes across the one-on-one interviews includes the challenges and opportunities for early career professionals in ecology, the need for interdisciplinary collaboration and public engagement, the importance of applying research to real-world situations, the relevance of ecology in policy and society, and the need to address diversity, equity, and inclusion in the field.

The interviewees also discusses the need for ESA to redefine its scope and identity, expand its membership, and cultivate connections with NGOs and other organizations to address emerging issues related to climate change, conservation, and sustainability. The importance of funding and development, collaboration across sub-disciplines, and internationalization of the field were also highlighted.

Expanding the Tent

No one disagreed with need to expand the tent. However, it was acknowledged that previous efforts had not been as successful as hoped and that what draws in and retains early career members is different from what attracted previous generations.

Leadership

There are some who want the recognition and a status symbol, rite of passage. You want the servant leader. If you really want to affect change we don't need every great idea, we need quality and quantity of volunteer leaders. Start cultivating them now.

Progress is Being Made

The society has come a long way, and its focus has shifted towards real-world applications. The group of senior ecologists wrote a vision and guidance for the society, which emphasized applying research to real-world situations and expanding the experiences of students. The society has also expanded its certification program to certify professionals in ecology 101 at different levels. The governing board has been changed, and the annual meeting has been condensed to appeal to consultants and professional ecologists. The society is pushing for more regional meetings to attract more undergrads and students, and the sections are more involved.





deep dive

S.W.O.T. ANALYSIS

S

Strengths are defined as those internal attributes and resources that support a successful outcome. What's working? Expertise? Advantages? Uniqueness?

ESA has credibility in the field of ecological science, a strong focus on interdisciplinary collaboration and integration of different fields, well-established scientific journals and publishing programs, and strong advocacy efforts for environmental policies and legislation

O

Opportunities are defined as those factors that can be capitalized on or used to an advantage. New markets? New offerings? Partnerships? Systems?

ESA can take advantage of increasing demand for scientific expertise in addressing ecological challenges, growing interest in interdisciplinary research and collaboration, increasing awareness of the importance of environmental sustainability and protection, opportunities for international collaboration and partnerships, and expand outreach efforts to non-scientific audiences.

W

Weaknesses are defined as those internal factors and realities that are working against a successful outcome. Limitations? What isn't working? Disadvantages? Areas of need?

With the exception of gender, ESA has limited diversity within the organization, particularly in terms of race, ethnicity, limited funding for research and education programs, limited international presence and collaboration, and limited outreach to non-scientific audiences.

T

Threats are defined as those external factors and/or trends that could jeopardize short- and long-term success. Competition? Trends? Obstacles? Market demands?

ESA faces threats from political and social pressures that may undermine scientific research and advocacy, limited funding for scientific research and education, competition from other scientific organizations, changes in public policy that may negatively impact the environment and the work of ESA, and a rapidly changing technological landscape that may require new skills and expertise.



This comprehensive analysis of internal and external operating environments required the review of product offerings, membership structure, benefits, trends, and financial analysis. Applicable information was gathered from open-source intelligence, primarily ESA-provided documentation, organizational websites, GuideStar, and search engine-generated results. See Appendix A (page 22) for a list of all source materials.

STRENGTHS



REPUTATION AND CREDIBILITY

ESA has a strong reputation and credibility in the field of ecological science: ESA has been around since 1915, and its long history of promoting ecological science has given it a clear voice within the field.



FOCUS ON INTERDISCIPLINARY COLLABORATION

ESA recognizes the importance of interdisciplinary collaboration and actively encourages it, which helps to advance the field of ecological science. This commitment to the integration of different fields should allow ESA to be the "home" for all ecologists irrespective of sub-specialty.



ESTABLISHED SCIENTIFIC JOURNALS

Well-established scientific journals and publishing programs: ESA's journals, such as Ecology and Ecological Applications, are highly respected and provide a platform for researchers to publish their work.



STRONG ADVOCACY EFFORTS

ESA is active in advocating for policies and environmental policy and legislation, and has been successful in influencing public policy.



THE BIG TENT

ESA engages a broad membership that includes researchers, educators, policymakers, and practitioners. ESA's membership includes a diverse range of individuals with different backgrounds and expertise, which allows for a range of perspectives and insights.

WEAKNESSES



LIMITED DIVERSITY

ESA is working on expanding diversity within the organization, particularly in terms of race, ethnicity, and geographics. ESA has recognized the need for increased diversity within the organization, but progress has been slow with important strides recently.



NON-SCIENTIFIC AUDIENCES

Historically, and even after dedicated attempts, ESA has limited engagement of non-scientific audiences: ESA's outreach efforts have mainly targeted other scientists and policymakers and could benefit from more outreach to the general public. This has, however, been previously debated and been determined to be beyond capacity and revenue.



INTERNATIONAL PRESENCE

While ESA has some international members and partnerships, its international presence and collaborations are limited. ESA could benefit from more global outreach. Given the current state of global connectivity, inroads abroad would facilitate membership diversity, brand awareness and solutions thinking.



LIMITED FUNDING SOURCES

ESA relies on a very limited number of sources for a large swathe of funding, which can be unpredictable and limited. This can limit organizational expansion and operations. ESA's sustainability is at risk without a greater diversity of revenue.



CULTURE & CAPACITY

The ESA team is lean and at capacity. COVID concerns and changing expectations around work environments and flexibility are creating strife. Volunteer leadership can tend to second guess and undermine. Limited resources are impacting ESA's scope and ability to outreach to the general public and K-12, both area require a great deal of bandwidth and money.





OPPORTUNITIES



ENGAGE APPLIED ECOLOGY AUDIENCES

Given the declining number of academic and tenured positions, the growth in ecology will be on the professional side: consulting, corporate, NGO, etc. If it wants to be the voice and home of ecology, ESA must become a welcoming and representative community.



DEMAND FOR SCIENTIFIC EXPERTISE

ESA can leverage the increasing demand for scientific expertise in addressing environmental issues. As challenges become more urgent, there is a growing need for scientific expertise to help find answers. Spotlighting research, successful application and marketing ecology as a solution to high school and undergrad student audiences could drive interest in ecology at younger ages.



FOCUS ON INTERDISCIPLINARY COLLABORATION

Interdisciplinary research and collaboration are becoming more common, which presents opportunities for ESA to engage with other fields and expand its impact. This could be particularly effective at annual events and regional meetings.



INTERNATIONAL COLLABORATION

There are extensive opportunities for international collaboration and partnership. As the world becomes more connected, there are more opportunities for ESA to collaborate with international partners. Sponsoring global events or research topics would be within ESA's reach and scope to improve in this area.



ENGAGE NON-SCIENTIFIC AUDIENCES

ESA has opportunities to expand its outreach to non-scientific audiences to raise awareness of and appreciation for the importance of ecological science and its role in addressing environmental challenges. This will also help attract the next generation of ecologists.



AWARENESS OF ENVIRONMENTAL ISSUES

Public awareness of environmental issues is growing, which provides an opportunity for ESA to engage with a wider audience. This includes audiences outside the field of study, and the scientific community as a whole. Given the challenges faced, now is the time to raise the profile of ecology and present this interdisciplinary science as the solution.

THREATS



OPEN ACCESS PUBLISHING

ESA's journals have historically been responsible for more than 50% of annual revenue. Trends in funder mandates, diminished support for hybrid journals, and the evolution of open access publishing represent a serious threat to ESA financially. An open access business model threatens to undermine ESA's financial position in the near term.



POLITICAL PRESSURES & POLICY CHANGES

Political pressures may undermine scientific research and advocacy efforts. ESA's ability to maintain awareness and influence policymakers must be maintained. Changes in public policy may negatively impact the work of ESA. This impacts funding, research, and advocacy, all of which are pillars of ESA's organizational structure and offering.



OTHER ORGANIZATIONS

TNC, AGU, the other ESA, etc. There are many scientific organizations focused on sciences related to ecology, which can create competition for resources and attention. ESA member must be continually reminded of the organization's unique value proposition.



SPEED OF CHANGE

While ESA makes progress in many areas, the expected speed of change and demands of a cancel culture may be more than it can keep up with.



LIMITED FUNDING

Limited funding can constrain ESA as funding agencies, universities and for profits tighten their belts and are less will to spend or donate time. Currently, ESA is exploring new options, revenue generating partnerships, and hosting generative discussions.





PESTLE ANALYSIS

To best determine future potential it is fundamental to conduct a situational analysis that includes all aspects of PESTLE (political, economic, social, technological, legal and environmental) and evaluate changes in the macro-environment. A PESTLE analysis helps identify the external forces that could impact the science of ecology as well as the professions.



POLITICAL

Both ESA and its members are subject to political factors that affect science policy, funding and shape the landscape or societal and legal environments. Political factors that impact ESA include changes in government funding for research and development, regulations related to environmental policies and legislation, and political instability in countries where ESA conducts research or collaborates with partners. Local and regional instability might also effect ESA's selection of locations for it large meetings and events.



ECONOMIC

ESA operates in an economic environment where funding for scientific research can be limited, and funding priorities can shift. ESA's ability to secure funding for research and development is dependent on economic factors, such as government budgets, private funding sources, and the overall state of the global economy. Economic realities including inflation, interest rates, and potential recession impact every thing from student debt to members' ability to join, participate and travel for ESA meetings.



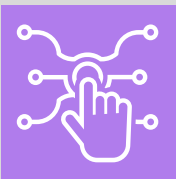
SOCIAL

ESA operates in a society where public opinion and social values play a significant role in shaping environmental policies and legislation. ESA's work is impacted by social factors such as public awareness and concern about environmental issues, changing attitudes towards science, and the increasing demand for interdisciplinary research. Like other sciences, ecology is being undermined by the anti-science movement. This can and will continue to negatively impact the study of science by promoting misinformation and conspiracy theories, reducing funding for research, stifling progress, and eroding public trust in scientific institutions.





PESTLE, cont.



TECHNOLOGICAL

ESA operates in a technological landscape that is constantly changing, with new tools and techniques emerging at a rapid pace. Technology has greatly enhanced the ability of ecologists to collect and analyze data, communicate their findings, and develop strategies for conservation and management of natural resources. ESA must keep up with technological advances in both the field and in general to stay relevant and effective, and to take advantage of opportunities offered by new innovations, such as data analytics, remote sensing, and computer modeling.



LEGAL

ESA operates in a legal environment where laws and regulations related to the environment and ecological science can impact its operations and the study and practice of ecology. The legal environment can significantly impact the science of ecology, particularly in the areas of conservation and environmental protection. Laws and regulations can affect research methods and funding, create legal liability, and the nonprofit practices of ESA the organization.



ENVIRONMENTAL

The environmental landscape, which includes the physical, biological, and social factors of the environment, can have a significant impact on the science of ecology. ESA is committed to the study and protection of the environment, and its operations are influenced by environmental factors such as biodiversity decline, ecosystem services, climate change, habitat loss, and human impacts. ESA's work is affected by changes in the natural environment, as well as efforts to protect and restore ecosystems.



future visioning report
SUMMARY

This future visioning project was intended to be about something other than open-access publishing or ESA's Diversity Committee or DEI efforts. Nevertheless, it is all intertwined. This project became about the past, the present, and the future.

ESA can prioritize and deliver on the recommendations of this report and those that have come before, to proactively engage private sector ecology, government, consulting, and international areas of practice. It can focus on outcomes and communicate progress and impact in diversity and inclusion.

Or ESA can lean into who it is and has been. Perception is reality, after all. Could ESA be successful if it focused only on academic ecology and research? According to previous research and those who contributed to the 2022 future visioning project, the answer is a resounding no. ESA cannot advance the science and practice of ecology and support ecologists throughout their careers as only the voice of academia.

For so many reasons, ESA is at an opportune inflection point. This staff and ESA's current members have a heightened organizational awareness unrivaled by many societies. The vision of what this organization could and should be has been there for years. This community has a passion and a foundation of hope and comradery upon which ESA can and should build. Ecologists are knocking on the door and asking (some demanding) to be heard, to be included, and given a seat at the table. A good problem for any membership organization, yet patience and interest are finite.

Given the world's environmental challenges, now is the time for ESA to champion ecology and broadly publicize impact and member success. The opportunity exists for ecologists to be the experts, superheroes, and bringers of the solutions and change the world needs. There has never been a better time to elevate the science of ecology and its potential to understand, address, and solve. The new next is now and must be different.



report summary

FUTURE VISION

To be a professional science society for the 21st century, ESA must deliver on historic promises and become the organization it has long said it wants to be.

Organizationally, ESA occupies a sturdy position financially for the near term and can maintain that by utilizing status quo income and expense. However, the society must be prepared to expand into diverse revenue streams to ensure organizational growth irrespective of publications. Financially, they maintain strategic reserves, providing ESA some freedom to undertake expanded offerings and engage a growing and diverse membership. Investments in engagement, marketing, and communications must be dedicated and deliberate.

By expanding outreach to, and representation, of industry, ESA can increase inclusion, diversity of debate, and student exposure to alternative career paths.

Expand through a genuine commitment to engage, invite, include, respect, and welcome those in currently underrepresented groups.

The question is, and always has been, how.

First, let's solidify the future vision of ESA. Thankfully, the aspirations for ESA were fairly consistent across previous research and stakeholder groups engaged for this report. The characteristics identified have been consolidated as follows:

As a relevant 21st century professional science society ESA should be, and be known as . . .

- **The Intersection of Ecology**
- **Representing the power and potential of ecology**
- **Inclusive**
- **Diverse**
- **Credible**
- **Valuable**
- **Future/Next Gen Focused**
- **Transparent**
- **The convener**
- **Accessible**
- **Career-Focused**
- **Global**



future visioning report

SUMMARY RECOMMENDATIONS

There is no fast track or silver bullet to organizational change. We have refined our recommendations to best ensure implementation and desired outcomes.

Focus

All of these recommendations have been made before, along with countless others that were presented and likely forgotten. Given capacity and the need to demonstrate real progress, ESA must implement with precision, focusing in one area at a time without spreading itself too thin. Thankfully ESA's most recent strategic plan outlines many of these same goals. The focus now must be on phased and tangible execution.

Revenue

Prioritize new and alternative revenue streams. Financial diversity will provide cushion for the impact of open access publishing and provide the investment for new vision-minded initiatives related to diversity and expansion. We recommend investing in building professional development offerings, to serve more members, and to generate new revenue in the future

Diversify

This is the conversation and call for change that has gone on the longest. While a shift in gender representation has occurred, other demographic statistics have been slower to shift. Yet, this cry for diversity means more than just demographics. This is again the recommendation to expand the tent, but it must be done sincerely, with respect, and from the inside out. This is about making ESA an open and welcoming home for *all* ecological specialties (aquatic, disease, paleoecology, microbial, etc.), *all* ecological professionals (private sector, consultants, government, academic, nonprofit, NGO, etc.), and *all* career phases (K-12, undergrad, grad, post grad, PhD, early career, mid career, tenured, senior, retired, etc). This provides many level for ESA to demonstrate progress. Be the intersection of *all* ecology for *all* ecologists.

Pathways

Considering the limited number of faculty and university research positions, students and early career professionals are looking for exposure to more pathways outside of academia. They want exposure to, connections with, and information about industry and the opportunities it may provide them professionally. They admit perceptions are often shaped by the industry biases of their faculty, lab, or mentor. ECPs asked for access and exposure to all options, with renewed focus on career development and placement.

QUESTIONS FOR THE SHORT TERM FUTURE



1

What appetite do academic members have to truly expand the tent, diluting their own influence and authority?

2

How large of a "tent" can ESA support in a sincere and valuable way?

3

What is the ESA value proposition and is it nuanced enough to compete with other orgs and increase engagement with those outside of academia?

4

"Never let a good crisis go to waste." How can ESA leverage ecological issues and the public's interest to spotlight ecology and raise awareness?

QUESTIONS FOR THE LONG TERM FUTURE



- 1

What impact will generative AI have on the science of ecology, scientific publishing, and the application of ecological research?
- 2

Will the growing cost, extreme debt, and shift away from higher education stunt the future pipeline of ecologists?
- 3

How will reduction in and threats to the academic tenure system affect the academic pathway and funding?
- 4

Will the for-profit push for ESG provide ESA and ecology a bridge to better collaborate with business and international partners?



NEXT STEPS



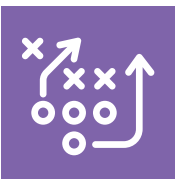
SINCERELY REFLECT

Knowing the goals and objectives identified in both this and previous research are on point, the Governing Board must focus on action, improvement and progress. Use the short and long term questions for the future as a starting point for both operational and leadership discussions.



SUNSET & DISCONTINUE

ESA is lean and at capacity. Considering the efforts already under way to identify new revenue sources and support current revenue generators, the most direct way to positive impact is through "strategic abandonment". Focus on what ESA can stop doing.



STRATEGIC PLANNING

The current strategic plan (2019 - 2022) is due for a review. This future visioning project was intended to serve as a precursor to that next strategic engagement. Don't put off strategic planning and use the opportunity to further focus efforts, engage new voices and implement changes necessary to achieve vision outlined.



NOMINATE FOR THE FUTURE

As the old saying goes, "if you want to be different, you need to do different." Following the slow and nominal expansion of private sector engagement and the calls of early career and under represented ecologist to be included in decision making, use nomination and leadership placements to shape ESA for the future. If you want to do different you will need look different.



Appendix A

All information used in this analysis was gathered from open-source intelligence, primarily ESA-provided documentation, organizational websites, GuideStar, and search engine-generated results.

Sources Utilized

- Beck et al 2014
- Bowser and Cid_2021
- Casper et al_2021
- Cid and Bowser_2015
- ESA_1993 WAMIE report
- ESA_2006 WAMIE report
- Morales 2020
- Sealey et al
- ESA Presidents' Summit – Visioning Exercise (July 2021)
- Ecology for the New Generation Committee Recommendations
- Extending the Tent Task Force Recommendations
- ESA Working Group for Private Sector Ecologists – Summary of issues and ideas (April 2022)
- Developing a Toolkit for Fostering Open Science Practices: Proceedings of a Workshop (2021)
- Leveraging the Anthropause (President's Preamble)
- Delta Think research