

What Makes a Translational Ecologist?: Part 2: Skills

Jun 28, 2016

Author:

Gabriele Bammer

Article published in [Integration and Implementation Insights](#) [1].

This is the second blog post considering competencies that underpin a new discipline of translational ecology, and which make ecologists more effective in informing and supporting policy and practice change (see the right sidebar for links to all four related blog posts on translational ecology). In each blog post we examine three major areas:

1. Socio-ecological systems
2. Communication across boundaries, with beneficiaries, stakeholders and other scientists
3. Engagement with beneficiaries, stakeholders and other scientists.

Here we engage with these three areas to examine the skills required for translational ecologists.

Skills needed to deal with socio-ecological systems

Translational ecologists need to be able to:

- Identify a problem's interconnections, scope ways of approaching the problem, and discover the best methods for doing so. Translational ecologists also need to select from and use a broad range of applicable methods and multi-modal methods of data collection for both humans and the environment.
- Use, and understand the limitations of, different types and sources of information; along with knowing about how information is gathered.
- Cultivate finely honed interpretation skills, from using and interpreting statistical methods to evaluating alternative justifications, claims and arguments being made about the problem. They must be able to formulate implications and inferences from evidence, and recognize the limitations of that evidence. They need to understand the areas of ignorance and uncertainty about a problem—in assumptions and biases, as well as collection and use of data.
- Develop and discuss models to understand the systems they are investigating and to generate and support claims based on those models. They should be able to develop and interpret visual representations of data sets.
- Identify cultural and group norms and local contexts, and their influence on analyses of wicked problems.

Skills needed to communicate across boundaries, with beneficiaries, stakeholders and other scientists

In communicating with beneficiaries, stakeholders, other scientists, translational ecologists should be able to:

- Adapt communication to information needs, decision-making constraints, and time scales of different knowledge users.
- Demonstrate proficiency in objective, technical, and persuasive writing, speaking, and multi-media.
- Analyze boundaries to determine what is included and excluded, central or peripheral, to different audiences,

and use different rhetorical strategies as appropriate.

- Employ techniques such as dialogue, modeling, visual communication, etc., to analyze and synthesize knowledge relevant to a local context.

Skills needed to engage with beneficiaries, stakeholders and other scientists

In engaging with beneficiaries, stakeholders, other scientists, translational ecologists should be able to:

- Identify the range of participants, perspectives and expertise necessary to include in order to address a problem (scoping).
- Collaboratively create alternative scenarios and define the costs/benefits/risks of each.
- Exhibit professional behavior appropriate to the community and setting.
- Collaboratively identify problems, produce research questions, data collections, analyses, and actions with diverse stakeholders, beneficiaries and scientists.
- Build and leverage social capital to engage stakeholders, beneficiaries and scientists.
- Demonstrate proficiency in negotiation, facilitation and conflict management in formal and/or informal interactions among diverse stakeholders, beneficiaries and scientists.
- Identify and manage diverse unknowns.

The skills needed by a translational ecologist are summarised in the following table.

THEME 1 Social-Ecological systems	THEME 2 Communication across boundaries (with beneficiaries, stakeholders, other scientists)	THEME 3 Engaging with beneficiaries, stakeholders, and other scientists
<ul style="list-style-type: none"> • Identify and scope translational ecology problems and research methods. • Use a multi-modal approach in communication and data collection (human and non-human data). • Identify the use and limitations of different types and sources of information. • Describe the methods by which the information is known. • Use and interpret statistical methods. • Evaluate alternative justifications, claims and arguments being made about the problem. • Evaluate the assumptions, biases, and sources of uncertainty and variability and other forms of ignorance inherent in the collection and use of data. • Develop, define, and discuss models to understand systems, and generate or support claims. • Formulate implications/inferences from evidence, and recognize the limitations of that evidence. • Develop and interpret visual representations of one or more data sets. • Identify cultural and group norms and local contexts, and their influence on analyses of wicked problems. 	<ul style="list-style-type: none"> • Adapt communication to information needs, decision-making constraints, and time scales of different knowledge users. • Demonstrate proficiency in objective, technical, and persuasive writing, speaking, and multi-media. • Analyze boundaries to determine what is included and excluded, central or peripheral, to different audiences, and use different rhetorical strategies as appropriate. • Employ techniques such as dialogue, modeling, visual communication, etc., to analyze and synthesize knowledge relevant to a local context. 	<ul style="list-style-type: none"> • Identify the range of participants, perspectives and expertise necessary to include in order to address a problem (scoping). • Collaboratively create alternative scenarios and define the costs/benefits/risks of each. • Exhibit professional behavior appropriate to the community and setting. • Collaboratively identify problems, produce research questions, data collections, analyses, and actions with diverse stakeholders, beneficiaries and scientists. • Build and leverage social capital to engage stakeholders, beneficiaries and scientists. • Demonstrate proficiency in negotiation, facilitation and conflict management in formal and/or informal interactions among diverse stakeholders, beneficiaries and scientists. • Identify and manage diverse unknowns.

Translational ecologists require a wide range of effective practical skills. They may not be equally proficient in all these skills, but should have a working knowledge of all of them and be able to recognize when deeper expertise is required and to identify appropriate collaborators with that expertise.

The challenge for graduate courses in translational ecology is to lay solid foundations for the life-long development and honing of these skills.

What do you think? Are there other essential skills that you would add? Do you teach courses that already cover some or all of these competencies? How applicable are competencies such as these to the environmental sciences more generally, and to other areas such as public health or international security?

Participants: *These ideas are a product of the [SESYNC Translation Ecology pursuit](#). [2] The principal investigators were Mark W. Brunson and Michelle A. Baker, both from Utah State University.*

Other participants were Gabriele Bammer (Australian National University), Carol Brandt (Temple University), Alexis Erwin (USAID), David Feldon (Utah State University), Rebecca Jordan (Rutgers University), Sunshine Menezes (Metcalf Institute for Marine & Environmental Reporting, University of Rhode Island), Mark Neff (Western Washington University), Colibrí Sanfioenzo-Barnhard (Grupos Ambientales Interdisciplinarios Aliados), Julia Svoboda Gouvea (Tufts University) and Eric Toman (Ohio State University.) This blog post was written by Gabriele Bammer on behalf of the group.



Photo (L-R): Front row – Carol Brandt, Eric Toman, David Feldon, Mark Brunson. Back row – Sunshine Menezes, Gabriele Bammer, Colibri Sanfioenzo-Barnhard, Mark Neff, Alexis Erwin, Michelle Baker and David Hawthorne from SESYNC.

<https://i2insights.org/2016/06/28/skills-for-translational-ecology/>

Associated Project:

[Translational Ecology: A Pedagogical Framework to Integrate Natural & Social Sciences](#) [3]

Associated SESYNC Researcher(s):

[gbammer](#) [4]

Source URL: <https://www.sesync.org/what-makes-a-translational-ecologist-part-2-skills>

Links

[1] <https://www.sesync.org/Article%2520published%2520in%2520Integration%2520and%2520Implementation%2520Insights>.

[2] <http://www.sesync.org/project/pursuit/translational-ecology>

[3] <https://www.sesync.org/project/pursuit/translational-ecology>

[4] <https://www.sesync.org/users/gbammer>