



Evaluation Data Report

Investigative Workshop:

Free-roaming Cats and Rabies

November 9-11, 2011

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Free-roaming Cats and Rabies Workshop

Evaluation Data Report

Background

Introduction

This report contains evaluation data for a NIMBioS Investigative Workshop entitled “*Free-roaming Cats and Rabies*” (Cats workshop), which took place at NIMBioS November 9-11, 2011. NIMBioS Investigative Workshops are relatively large (30-40 participants), focus on a broader topic or a set of related topics than Working Groups, attempt to summarize/synthesize the state of the art and identify future directions, and have potential for leading to one or more future Working Groups. Participants may include post-docs and graduate students with less experience in the particular topic than those participating in Working Groups.

The Cats workshop comprised 37 participants, including co-organizers Margaret R. Slater, American Society for the Prevention of Cruelty to Animals, Shelter Research and Development, Urbana IL (Biology), and Yang Kuang, Arizona State University, School of Mathematical and Statistical Sciences, Tempe, AZ (Mathematics).

Workshop Description

Cats are the most popular companion animal in the U.S. with more than 81 million living in our homes. Between 32 to 53 million cats are estimated to roam freely in the U.S. The population dynamics of free-roaming cats (FRC) and the ways in which they transmit infectious disease are not fully understood. Concerns about the health of FRCs themselves, zoonotic disease transmission, transmission of diseases to other non-human species, predation on native wildlife species and nuisance complaints are common. Our first step is to identify existing data sources and critical data gaps relating to FRC population dynamics and rabies transmission. Our second step is to review and consider the strengths and weaknesses of the different types of modeling approaches (mathematical, systems, statistical, simulation) using the expertise of our participants.

Better data to inform policy makers, particularly relative to public health issues, would be invaluable. Expanding our understanding of modeling FRC populations would allow for a much more efficient and practical approach to decreasing the size of potentially problematic FRC populations, thus reducing issues relating to too many cats as well as the risk of rabies transmission. This problem requires a multidisciplinary tactic as well as the need for creative, synergistic thinking to identify preferred approaches. The workshop will bring together a unique group of experts across a number of biological and mathematical disciplines with varying experiences and contacts to develop priorities and future plans.

The Workshop included presentations about existing modeling efforts and data for FRC, different model types that could be applied to FRC populations and rabies control and issues specific to modeling FRC. Breakout discussion sessions focused on identifying additional sources of data that may be useful as well as critical data gaps, models that show promise for use in FRC basic population dynamics and those that can be used for rabies. Finally, discussion sessions to prioritize future directions including consensus on model approaches and formalize collaborations were held.

Organizer Summary

The meeting began with presentations to bring all participants to a better understanding of free-roaming cat (FRC) lifestyles, vital rates and quirks as well as rabies transmission factors and mechanisms, and modeling. SEIR models and several variations, simulation models, network analysis were all presented and discussed. These activities provided everyone with a chance to reach a common level of general understanding of the issues from the mathematics and biology perspectives and for the group to begin to work together. A general consensus was reached that there are many difference modeling approaches that might prove useful but that a good FRC population dynamics model was needed before adding the complexity of any disease. For rabies in cats, spill over from the wildlife population is the source and our concerns are for the possible exposure and/or transmission from cats to humans. The workshop identified the following series of topics of interest to more than one person for continued conversations and possible collaborations:

1. The FRC population dynamics modeling piece to get a better handle on what we already can do
2. A comprehensive literature review with collaboration between the University of Nottingham and the Alliance for Contraception in Cats and Dogs
3. The CDC dog immunocontraception project possibly in combination with rabies vaccine, possibly oral
4. Cat field work as needed to answer questions relating to the population modeling. Also the development of methods to use existing data to help evaluate success of sterilization or change in FRC populations
5. Contraception and infection susceptibility
6. Finding better ways to work with cat caretakers and get data from them
7. Finding out what work on rabies typing is currently happening at the CDC for better insight regarding what species are infecting cats
8. Adding modeling to the Flagstaff, AZ rabies studies
9. Identifying and analyzing existing sources of field data on cats, primarily as “accidental” trapping in wildlife surveillance studies
10. Looking more theoretically at modeling the population density of FRC and related issues

Evaluation Design

Evaluation Questions

The evaluation of the workshop was both formative and summative in nature, in that the data collected from respondents was intended to both gain feedback from respondents about the quality of the current workshop and also to inform future similar meetings. Several questions constituted the foundation for the evaluation:

1. Were participants satisfied with the workshop overall?
2. Did the meeting meet participant expectations?
3. Do participants feel the workshop made adequate progress toward its stated goals?
4. Do participants feel they gained knowledge about the main issues related to the research problem?
5. Do participants feel they gained a better understanding of the research across disciplines related to the workshop's research problem?
6. What impact do participants feel the workshop will have on their future research?
7. What changes in accommodations, group format, and/or content would participants like to see at future similar meetings?

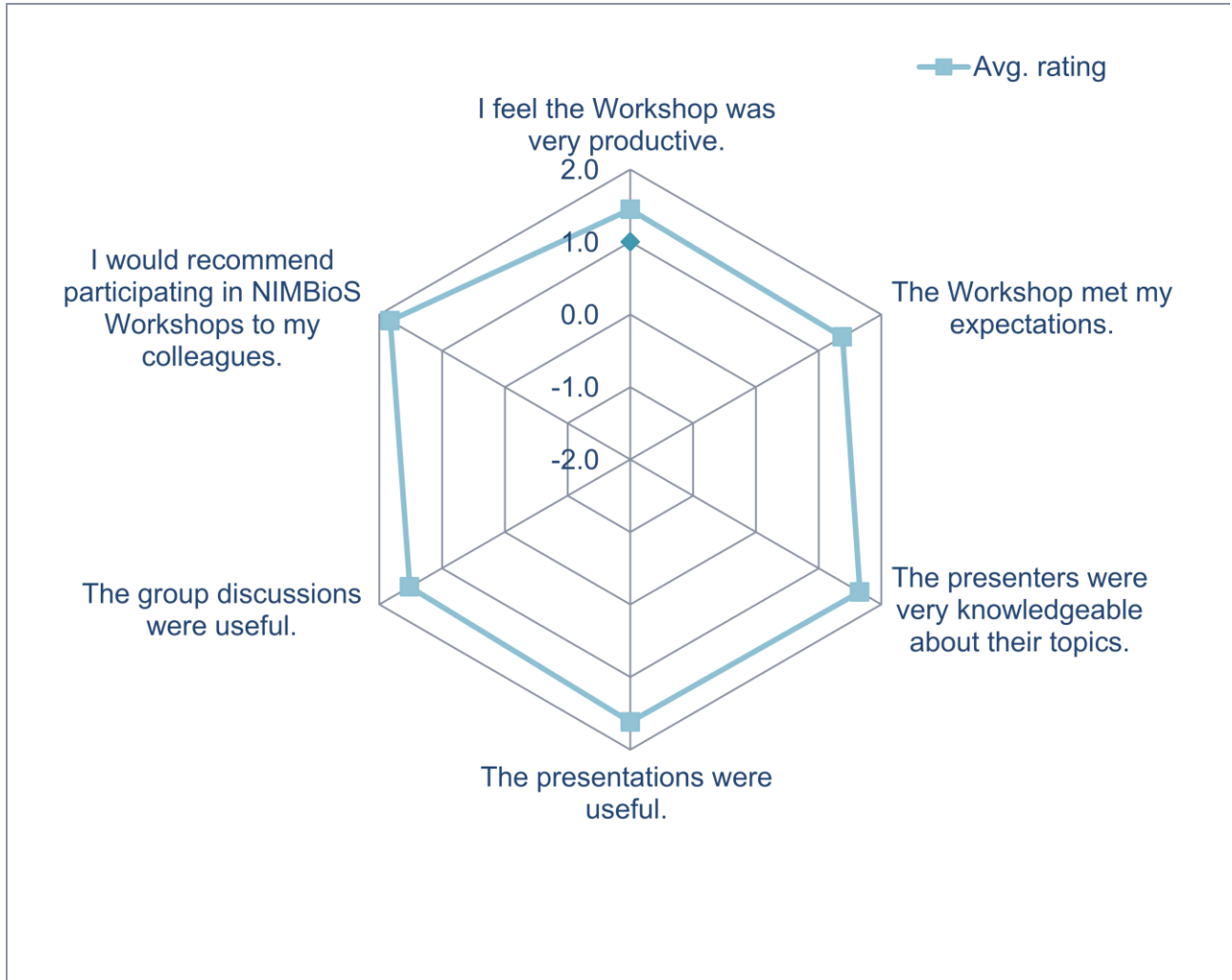
Evaluation Procedures

An electronic survey aligned to the evaluation questions was designed by the NIMBioS Evaluation Coordinator with input from the NIMBioS Director and Deputy Director. The final instrument was hosted online via the University of Tennessee's online survey host mrlInterview. Links to the survey were sent to the 37 registered workshop participants on November 15, 2011. Reminder emails were sent to non-responding participants on November 21 and 23, 2011. By November 28, 2011, 30 of the participants had given their feedback, for a response rate of 81%.

Evaluation Findings

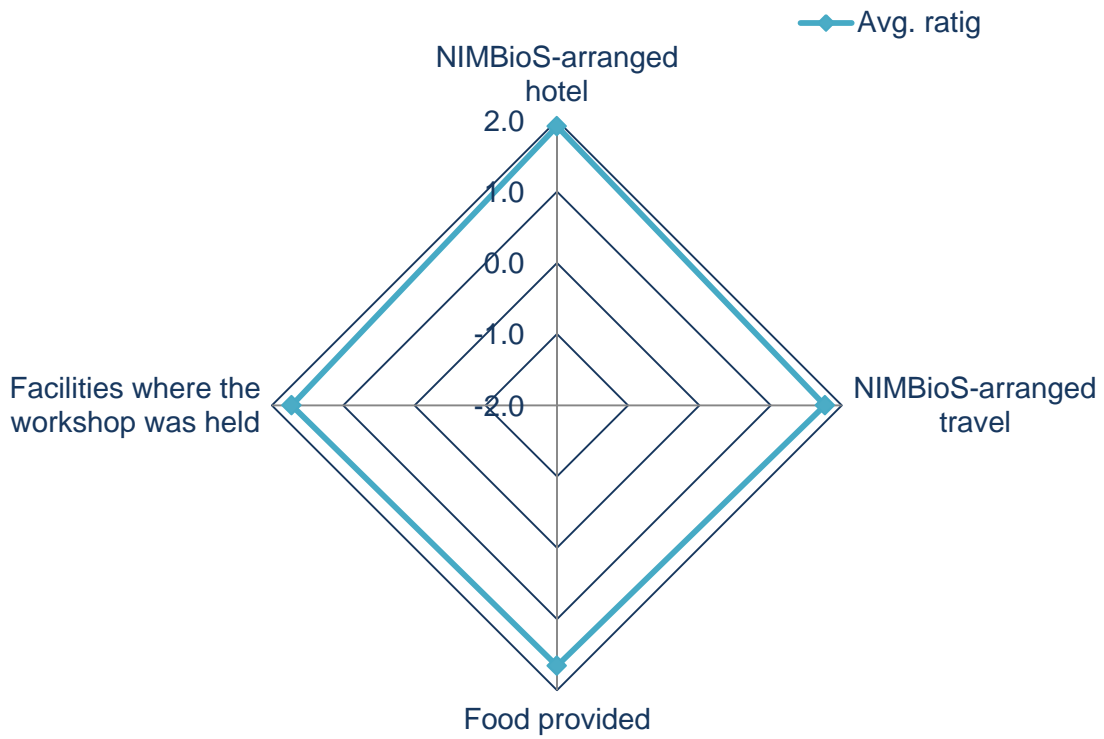
Overall Satisfaction

Figure 1. Satisfaction with various aspects of the workshop



Scored on a 5-point Likert scale from -2 to 2 for “strongly disagree” to “strongly agree”

Figure 2. Satisfaction with accommodations



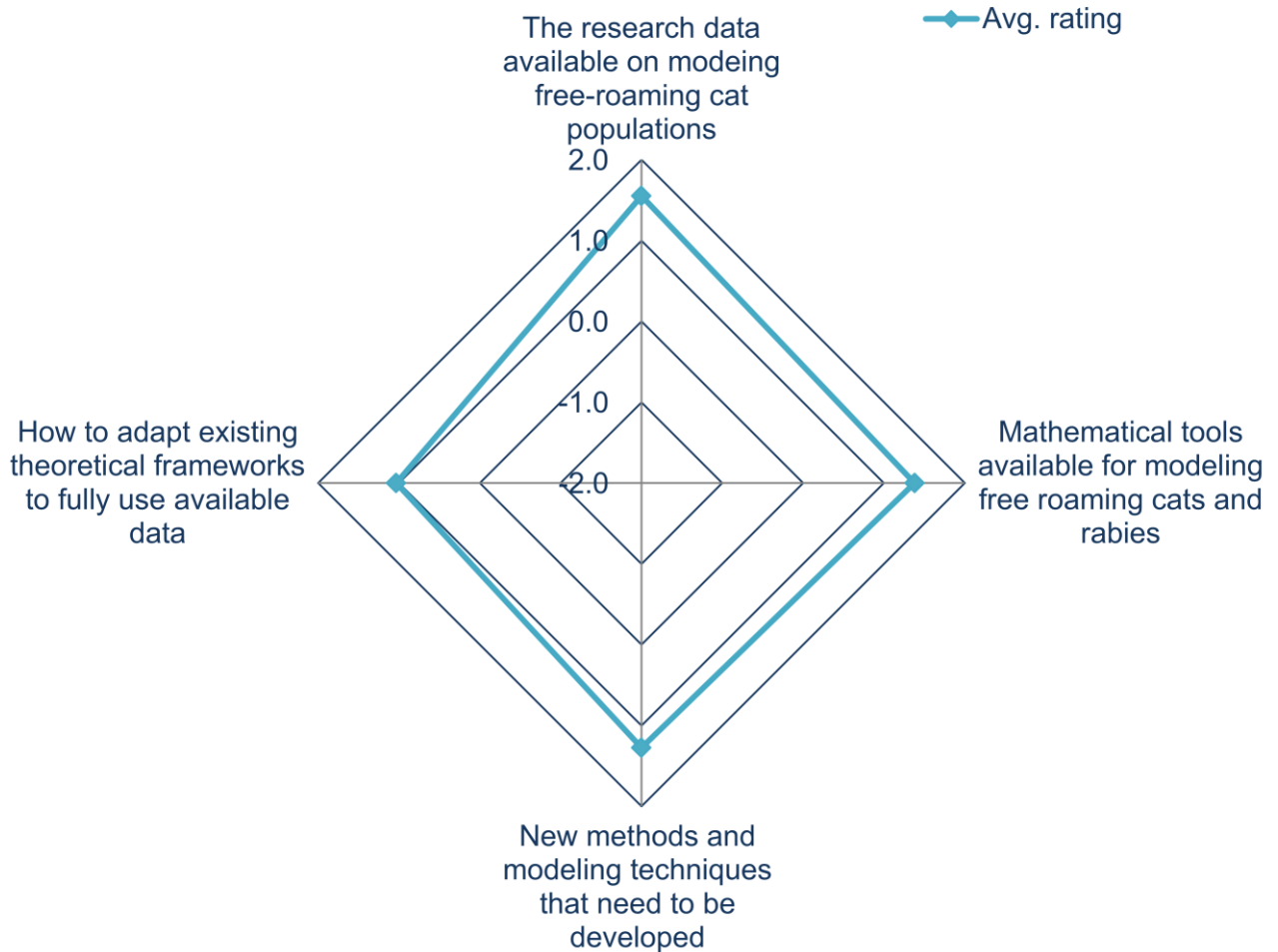
Scored on a 5-point Likert scale from -2 to 2 for “very dissatisfied” to “very satisfied”

Workshop Content and Format

Participant Learning

Figure 3. Participant learning

As a result of attending this workshop, I have a better understanding of:



Scored on a 5-point Likert scale from -2 to 2 for “strongly disagree” to “strongly agree”

Figure 4. Do you feel that participating in the workshop helped you better understand the research going on in disciplines other than your own regarding modeling free-roaming cat population dynamics through the lens of a rabies model?



Comments

Actually the material covered in the workshop is not new from fields that I have learned. Precisely the material covered in this workshop adds to my knowledge in stochastic models.

I found the workshop to be a fantastic way to share ideas and communicate with other researchers. I was pleased to see how people from so many different fields could collaborate towards common goals. The workshop was very well organized. NIMBioS did a wonderful job with organization and logistics.

I have done some work with modeling cat populations and am fairly familiar with the rabies literature. However, I gained insight into both from the different experiences and viewpoints represented by the participants.

The best aspect of this meeting was the opportunity to interact with skilled people working in disciplines that can contribute to working on the rabies and feral cats issues. I learned a great deal about how to think about applying mathematical ideas to biological problems, and look forward to hopefully being involved in some follow-up work sessions.

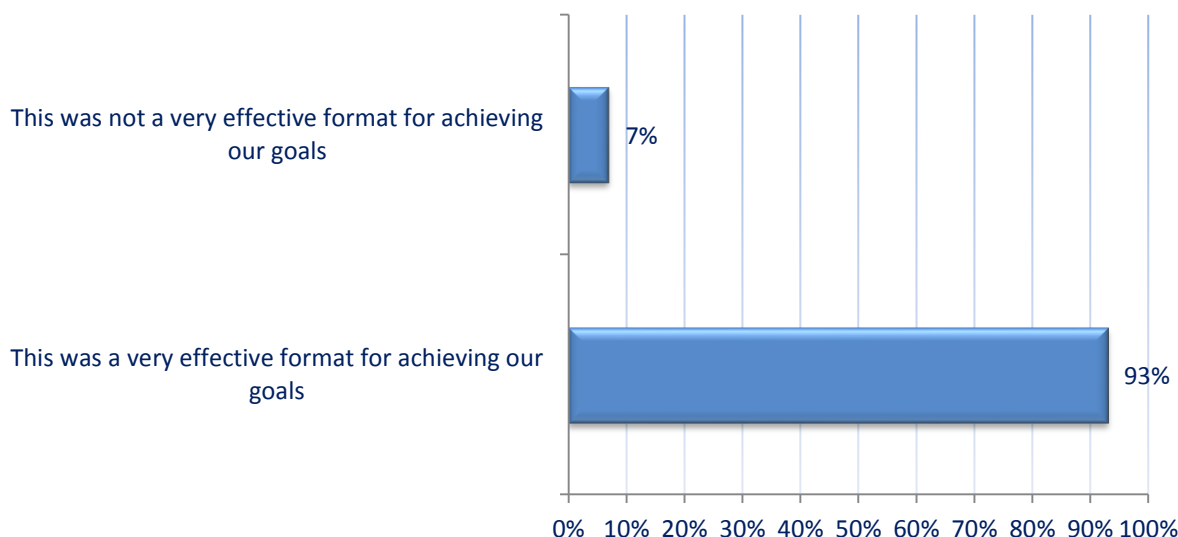
The study of companion animals as a biological model has been largely ignored for the past century (Darwin did pay attention to breeding of dogs and pigeons in developing his concepts related to natural selection). It is marvelous to now see serious researchers turning their attention to a very interesting critter in its own right, and also one of great social interest.

The workshop was very well organized and the talks and discussions were very interesting. I would have liked to spend more time discussing disease spread in FRC but I think I got a very good understanding of population dynamics and data gaps.

Unlike many workshop participants, I had spent considerable time before the workshop investigating and discussing approaches to this particular problem in a collaborative environment. Therefore, my function at the conference was more one of a disseminator rather than an absorber. Still, I gained some awareness of other perspectives and approaches that I did not have before.

Workshop Format

Figure 5. Effectiveness of workshop format



Format could be improved if:

Rabies was really pushed to the wayside and more attention was placed on how to deal with population dynamics, which is fine, but was not the stated purpose of the workshop.

Most Useful Aspects of Workshop

Being able to exchange ideas - I wished we had had more time!

Bringing all parties together that have an interest in the central question.

Discussing ideas from all points of view, in particular from both the mathematical perspective as well from the biological perspective.

Diverse participant body.

Everything worked well - I liked the first day of presentations, and after everyone was well informed the small group discussions worked well.

Having a good opportunity to meet and have idea exchange

Having input from researchers with a wide range of expertise (e.g. modelers, behavioral geneticists, epidemiologists).

Learning about previous research that has been done on the topic

Meeting people from disparate backgrounds/ specialties, and discussing common/similar research plans/goals.

Meeting researchers from fields different than mine - that helped me extremely to gain a better understanding of the related biology (I'm a mathematician).

Networking among this diverse group of scientists and learning about areas of research I am not familiar with.

Opportunity for free exchange with specialists in mathematical disciplines.

Talks and full-group discussions.

The ability to network with people in similar and different areas of my research.

The collegiality and sharing of ideas and viewpoints. It really expanded my appreciation and perspective.

The exchange of ideas between modelers and ecologists.

The group discussions and the immediately following group presentations. This got us together to share ideas and develop solutions. Presenting our results to the all the participants forces us to not only have the discussions but also organism the outcomes of them.

The group sessions where we proposed modeling approaches and provided justification for the approaches.

The initial presentations on modeling types were very helpful for someone from outside that field.

The most fascinating part of the workshop was organization and orderliness through which topics were deliberated. I much enjoyed the grouping pattern and the liberty given for all the participants to expressed their understanding of each subject matter

The most important aspect is the 'can cooperate and collaborate with other workshop participants.'

The networking and gathering of data and ideas.

The opportunity to interact with researchers from different backgrounds that were all interested in a common research topic.

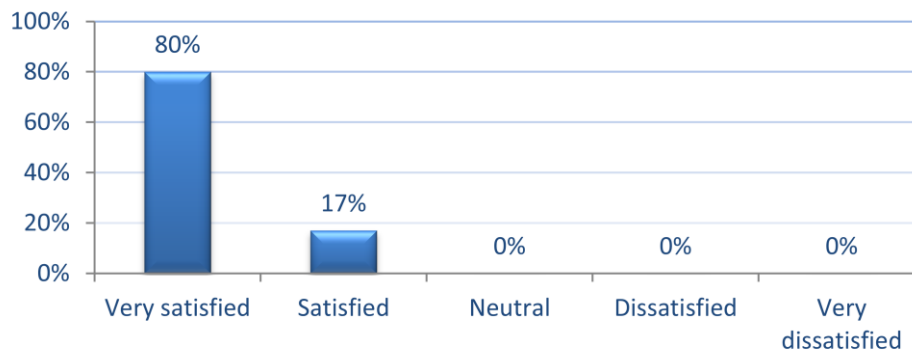
The presentations from various modelers.

The presentations on statistical modeling and simulation modeling were very informative.

There were many outstanding aspects of the workshop, and it is difficult to pick out a single one. I particularly liked the small group work that led to the development of ideas for modeling and data gathering.

Communication

Figure 6. How satisfied were you with the opportunities provided during workshop presentations and discussions to ask questions and/or make comments?



Comments

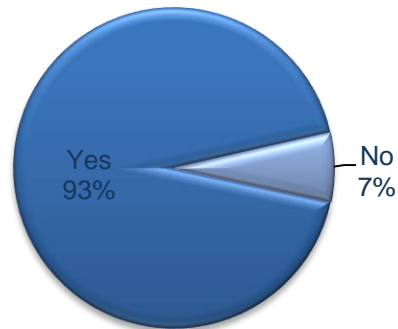
Just to try to draw out the quiet people more.

The sound system as well as visual aids needs to be improved.

There were some technical glitches with projection and audio. They were mostly corrected after the first morning.

Progress Toward Goals

Figure 7. Do you feel the workshop made adequate progress toward finding a common language across disciplines for research on the workshop's topic?



Comments

Discussion among participants with a variety of research field can be run well and produce a great idea on the future plan. So it was good progress.

From a couple of discussions after the session, I believe that some participants felt that one type of modeling might be "preferred" to others. However, my own feeling is that I would like to be able to compare outcomes of multiple models that would be constructed using similar input data.

Good introductory info to get everyone on same page.

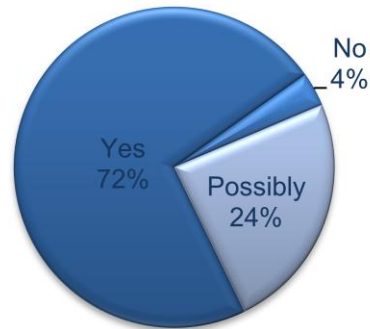
I think that the workshop was a good first step toward building research relationships between different participants.

I thought the specific task of trying to better understand different modeling techniques available, and how they are best used to address the workshop topic's focal issues, was not addressed very well. Integration of available information on modeling options was poor.

There were some exciting ideas proposed as possible collaborative efforts after the workshop.

Impact on Future Research Plans

Figure 8. Do you feel that the exchange of ideas that took place during the workshop will influence your future research?



Comments

Excellent idea exchange to look for data.

Good summary of available data on FRC population dynamics will facilitate my own modeling projects.

I hope so!

I plan to focus more of my limited research time to this area.

I will be involved with field studies to develop data to support the models and to test the dynamics predicted by the models.

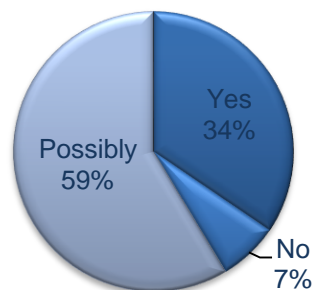
If some of the ideas see development I can dedicate some research time to investigate potential public-health threats due to free-roaming cats.

Through exchanging thoughts I can increase my knowledge and broaden my skill.

When I returned home, I contacted an additional skilled analyst of biological (genetic) data to confirm some of my thinking. The new education I received on methods I had less familiarity with gives me a more broad sense of perspective for future work. Also, I was able to confirm my feeling that, for this problem, more complex models will be needed. Some of these were suggested and discussed at the session.

Impact on Future Collaborations

Figure 9. Did you develop plans for collaborative research with other Workshop participants?



Comments

A core pre-existing collaboration was reinforced, and broadened with the inclusion of new parties.

I had a specific idea near the end of the sessions, and, as I had done the note-taking for Dr. Slater's summary work, I added it to the end of my notes. I also placed my name as an interested participant in several other ideas for follow-up workshops.

I have developed plans and suggested important topics of general focus. We have started discussion on how to get a better insight of cat rabies through the use of molecular and computational tools. Our group has assign a representative who will get in touch with CDS to identify current and existing related works to avoid research conflict and overlap.

I volunteered to lead one area of continued inquiry and am very interested in two others. I look forward to the interaction.

I will be in touch with other participants and it may be that collaborative research develops.

I will be working on a subcommittee addressing rabies in cats.

Possibly some systematic review collaborations

Potential exists for some integration of the work ACC-D is currently doing on population-level analysis of FRC reproductive management with the ongoing work among selected Workshop participants.

Several of us have been working in collaboration before the NIMBioS meeting and we intend to continue and develop our ideas further. The workshop provided an opportunity to identify others who may be interested and willing to join this effort.

Some interesting ideas were shared and can see realization in future research proposals.

We identified the need to gain a better understanding of density-dependence and social as well as spatial organization of cat population dynamics. A group of individuals (mainly mathematicians but also one empiricist) was formed with the aim to develop corresponding models.

Workshops on free roaming cats are very interesting for me; I would like to continue the discussion and collaboration with other workshop participants.

Suggestions for Future workshops

*1. Remove disease focus -- very little productive work done at the Workshop on this aspect of the problem, with little emphasis recognized by Workshop organizers
2. More focused facilitation targeted on achieving objectives laid out at the beginning of the Workshop.*

Discussions in small groups were not very helpful, at least within my group. It was hard to keep conversations on task, in particular for people without a modeling background.

I study diseases, so I would have liked to discuss more about modeling of diseases in the FRC population.

I think it functioned well and had about the right balance of presentation vs. discussion vs. group work.

I think the period should be extended or the meeting should take place twice.

I thought it was fine as is.

I would have liked more small group interaction and fewer presentations. However, I cannot readily identify any presentation that I would have skipped.

I would like for the final day to have resulted in more organized next steps. I felt that at the end of the workshop, we didn't have a structured plan for the future.

It was perfectly organised - although I would have liked an extra day to kick-start some collaborative effort, using the opportunity that we were all together.

It was very well organized. I would try to make the working groups more productive by assigning different problems to each group.

Maybe a more focused topic.

More focused research plan.

More time to exchange ideas as a larger group.

Nothing - I thought it was excellent.

Nothing.

Place more emphasis on infectious disease epidemiology.

The infectious disease aspect (rabies) was essentially lost and that was one of the main reasons I was interested in the workshop.

The proposed aim of the workshop (modeling of cats and rabies) should have been analyzed a bit more carefully beforehand. Early in the workshop, we realized that rabies in free roaming cats was not a significant enough problem to lend itself to mathematical analysis. Instead, the group focused on modeling free roaming cat populations. Rabies and free-roaming cats seemed to be two topics without much overlap that were glued together in an unnatural way. Nonetheless, the workshop was very productive. It allowed for people from the veterinary, wildlife, and epidemiological communities to communicate and share ideas.

There are always some participants who one would like to hear more from, but they are quiet. I would like to draw everyone out more.

Additional Comments

Excellent conference and good discussions. All participants were very professional.

Great job by organizers, participants, and NIMBioS.

Great workshop!

Satisfactory

Thanks for organizing this great workshop!

The NIMBioS staff was extremely helpful, efficient and organised - particularly in relation to overseas travel. Thank you.

This workshop was very productive. It shows the unique position of NIMBioS as one of the few providers of such opportunities which foster a lot of new collaborations.

Wiggio was a challenge to use. It was not an intuitive system to post or follow comments, or information.

Appendix

Free-roaming Cats and Rabies Workshop Evaluation Survey

Free-roaming Cats and Rabies Workshop Survey

Thank you for taking a moment to complete this survey. Your responses will be used to improve the workshops hosted by the National Institute for Mathematical and Biological Synthesis. Information supplied on the survey will be confidential, and results will be reported only in the aggregate.

Please check the appropriate box to indicate your level of agreement with the following statements about this workshop: (Very satisfied, Satisfied, Neutral, Dissatisfied, Very dissatisfied)

- I feel the workshop was very productive.
- The workshop met my expectations.
- The presenters were very knowledgeable about their topics.
- The presentations were useful.
- The group discussions were useful
- I would recommend participating in NIMBioS workshops to my colleagues.

Please check the appropriate box to indicate your level of agreement with the following statements. As a result of participating in this workshop, I have a better understanding of: (Strongly agree, Agree, Neutral, Disagree, Strongly disagree)

- The research data available on the workshop's topic
- Mathematical tools available for modeling free-roaming cats and rabies
- New methods and modeling techniques that needs to be developed
- How to adapt existing theoretical frameworks to fully use available data

Do you feel participating in the workshop helped you better understand the research going on in disciplines other than your own regarding modeling of free-roaming cat population dynamics through the lens of a rabies model?

- Yes
- No
- Comments:

Do you feel the workshop made adequate progress toward finding a common language across disciplines for research on the workshop's topic?

- Yes
- No
- Comments:

Do you feel that the exchange of ideas that took place during the workshop will influence your future research?

- Yes
- No
- Possibly
- Comments:

Did you develop unanticipated plans for collaborative research with other workshop participants?

- Yes
- No
- Possibly
- Comments:

What do you feel was the most useful aspect of the workshop?

What would you have changed about the workshop?

How do you feel about the format of the workshop?

- This was a very effective format for achieving our goals
- This was not a very effective format for achieving our goals ->
- The workshop format would have been more effective if:

How satisfied were you with the opportunities provided during workshop presentations and discussions to ask questions and/or make comments?

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very Dissatisfied

Please indicate any suggestions you have for facilitating communication among participants during the workshop:

Please use this space for additional comments: