

The University of Maine

DigitalCommons@UMaine

---

Annual Maine Aquaculture R&D and Education  
Summits

Conferences and Summits

---

3-6-2017

## Bioassays with Sea Lice, a Tool in Integrated Pest Management

Deborah Bouchard

Follow this and additional works at: [https://digitalcommons.library.umaine.edu/ari\\_rd-ed](https://digitalcommons.library.umaine.edu/ari_rd-ed)



Part of the [Aquaculture and Fisheries Commons](#)

---

This Presentation is brought to you for free and open access by DigitalCommons@UMaine. It has been accepted for inclusion in Annual Maine Aquaculture R&D and Education Summits by an authorized administrator of DigitalCommons@UMaine. For more information, please contact [um.library.technical.services@maine.edu](mailto:um.library.technical.services@maine.edu).

# Bioassays with Sea Lice, a Tool in Integrated Pest Management

University of Maine Animal Health Laboratory

Deborah Bouchard

Barker, Beane, Thomas, Tudor, Turner

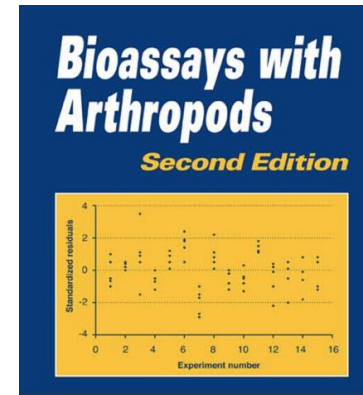


# Integrated Pest Management (IPM)

- IPM is a broad-based approach that integrates various practices to reduce pests and the damage they cause
- **An important aspect of an IPM is long term monitoring of the sensitivity to available treatments to track changes in sensitivity**
- This can help to inform treatment practices

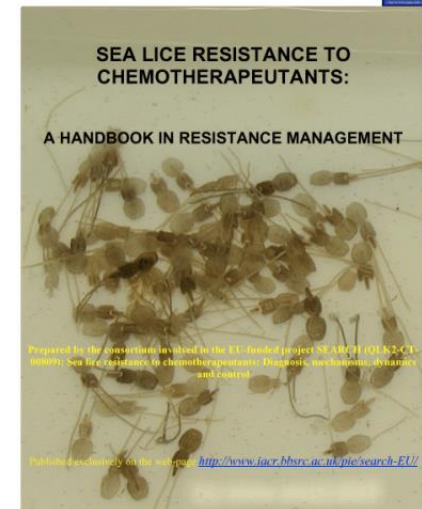
# Bioassays as Monitoring Technique

- Limited number of treatment options can result in decreased sensitivity in sea lice
- Monitoring any changes in this sensitivity is critical to inform treatment plans
- Standardized assays such as bioassays can provide information about changes in sensitivity over time and geographical location

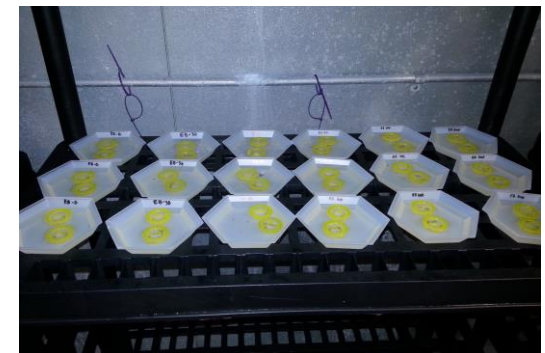


**Jacqueline L. Robertson**  
**Robert M. Russell**  
**Haiganoush K. Preisler**  
**N.E. Savin**

 CRC Press  
Taylor & Francis Group

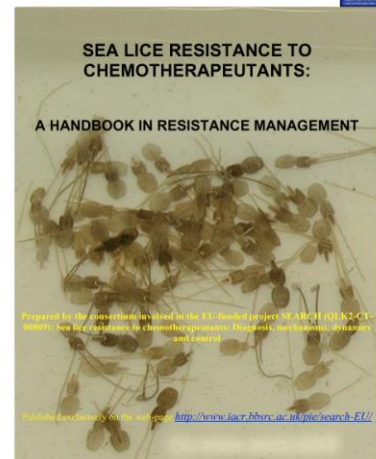
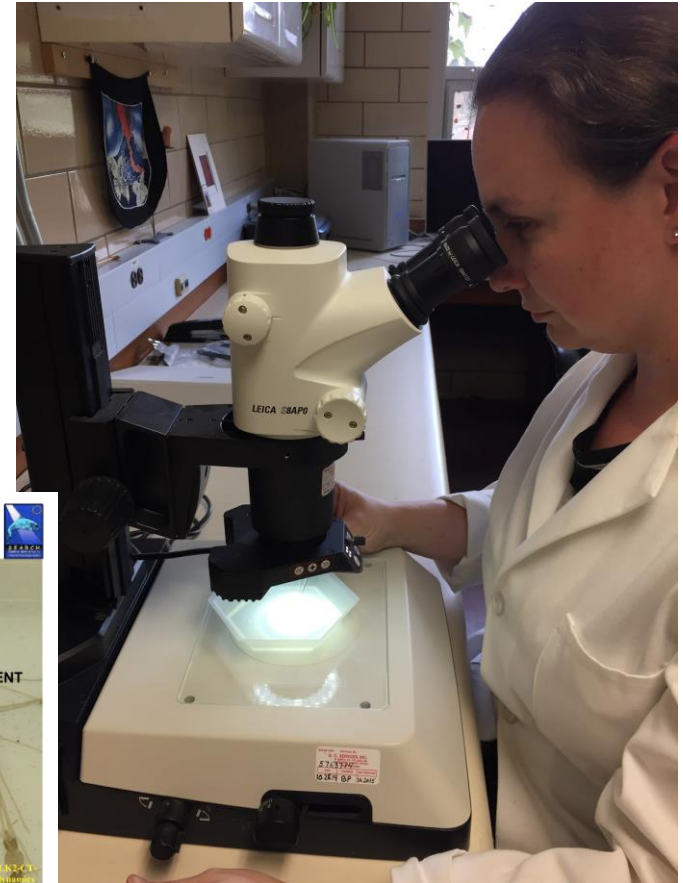


# Conducting the Bioassay



# Sea Lice Assessment

- Sea lice are assessed at 30 minutes and 24 hours post treatment using a dissecting microscope (ie. Dead, Moribund, or Alive)
- Assessments are done by one person blind to treatment to eliminate observer bias

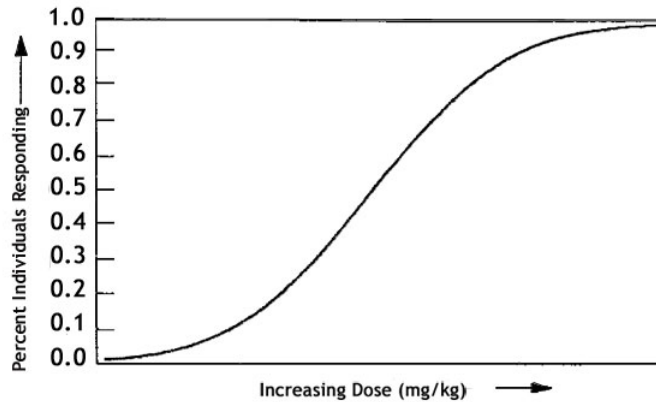


Prepared by the consortium involved in the EU-funded project SEARCH (04-K2-G1-0007), Sea lice resistance to chemotherapeutics: Pathways, mechanisms, dynamics and control

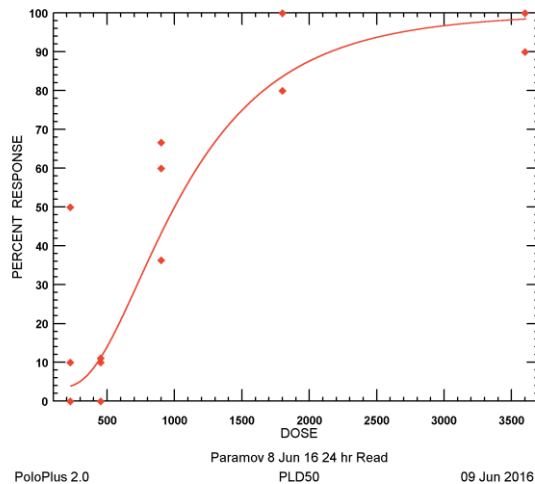
Published exclusively on the website <http://www.iacr.bhrc.ac.uk/file/search-EU/>

# Calculation of Lethal and Effective Dosages

Diagram of Dose Response Relationship



- Dose response curves are generated to estimate lethal and effective dosages
- These curves and the LC50 and EC50 can be compared over time and geographical location to assess changes in sea lice population sensitivity



# Take Home Message

Having a standardized method of monitoring the sensitivity of sea lice over time and geographical location is critical to inform treatment plans as part of an integrative pest management plan



# Acknowledgements

- Thank you to the Cooke Aquaculture
- Thank you to the UMAHL/ ARI team
  - Dawna Beane
  - Emily Thomas
  - Sarah Turner
  - Scarlett Tudor