

Susanne Lindegarth

Curriculum Vitae

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PERSONAL SUMMARY

Current position

I hold a permanent position as a project coordinator at the Centre for Sea and Society, University of Gothenburg (UGOT) where I have a special assignment for the Centre's international engagements. I am coordinating the Swedish Mariculture Research Centre at UGOT (SWEMARC) and the National Competence Centre for Aquaculture. I also coordinate the Maritime Cluster in West Sweden (see below). I have my working place at Tjärnö marine research station outside Strömstad.

Goal and vision

My professional mission is to use my academic knowledge to promote the development of sustainable use of biomarine resources in the society. I see collaboration between researchers, industry and authorities in creative projects as an effective way to transform knowledge into useful services or products. I see myself as a bridge between research and business and society.

Research focus area

My own research area is within marine aquaculture and in particular the cultivation of mussels and oysters. I have a strong interest in development of the aquaculture industry, which I believe has huge potential to grow. During my time as a PhD student, I felt a great need that my research on algal toxins in blue mussels would become useful for mussel farmers. After my dissertation in 2003, I have initiated and worked in several projects to develop detoxification methods with the mussel industry. In recent years, I have been one of the initiators of a research centre for aquaculture at UGOT - Aquaculture Centre West, which now is part of the larger platform SWEMARC. I was also one of the initiators of the National Competence Centre for Aquaculture, which is a collaboration between the University of Gothenburg and the Swedish University of Agricultural Sciences; SLU.

Project Experience - Innovation and Development

I have worked at various levels and in various projects where applied research and collaboration with industry has been the focus. Between 2008-2011, I worked as an innovation advisor and later as a project manager for Mare Novum, a centre for marine innovation in West Sweden. As manager of Mare Novum, I met many small business owners and entrepreneurs, which had ideas about how they wanted to develop their businesses. Mare Novum functioned as a link into the academies and were able to match business needs with research expertise and know-how. Mare Novum organized meetings and conferences to increase contact between companies and researchers and helped with business advice where it was needed.

As project manager for NORD-OSTRON (Northern Oysters), a Scandinavian innovation project, which ran from 2009-2012, I worked to develop oyster farming as a new business in our region. The project focused on applied research, involving the industry in the development of farming technology. We arranged workshops and conferences in order to disseminate information to stakeholders. We produced several printed matters in the project, including two strategy documents; "Building blocks for the development of oyster farming" and "Strategic approaches for aquaculture industry development: flat oyster cultivation in Scandinavia" as well as a "Handbook for oyster farming", aimed for prospective oyster farmers.

I was the Swedish coordinator in a European cluster cooperation project ("EMSAC") funded by the EU, which ended in December 2012. I have also been the coordinator for the advocacy platform Blue Growth Sweden, which aims to join the marine research community, industry and public sector to visualize and position Swedish interests vis-à-vis the EU, Horizon 2020 and related programmes. This platform was financed by VINNOVA, the Swedish Agency for Innovation systems.

One of my professional assets is my broad network of scientists, entrepreneurs and government officials etc. within the marine sectors. In 2011 I was offered a project position as an evaluator of the maritime cluster in western Sweden. The project is summarized in a report (Maritime clusters in Västra Götaland 2012). The work to implement the recommendations in this report is continuing and I have been entrusted to work as coordinator for the maritime cluster on behalf of UGOT.

Education and diplomas

- PhD (2003) in Zoophysiology at the University of Gothenburg– "*Effects, dynamics and management of okadaic acid (diarrhetic shellfish toxins) in blue mussels *Mytilus edulis**".
- Coordinator for EU projects (2010). The Vocational College, Mölndal
- Mentor 4 Research programme, 2012

Main project experience and qualifications

- Coordinator for SWEMARC (Aquaculture Centre West (www.swemarc.gu.se))
- Coordinator of the National Competence Centre for Aquaculture (www.nkfv.se)
- Project manager for the advocacy platform Blue Growth Sweden
- Advisor for Maritime clusters in Västra Götaland. 2011-2012
- Project leader for NORD-OSTRON. Interreg IV A (EU) project. 2009-2012
- Innovation Advisor and project manager for Mare Novum. 2008-2011.
- Swedish project coordinator for EMSAC, a marine cluster collaboration project. (7th Framework Programme, Regions of Knowledge) 2010-2012.
- Project Manager for several projects funded by the European Fisheries Fund, Environmental Protection Agency etc

Organizer of major meetings and conferences

- Swedish Aquaculture Conference: 2009, 2010, 2012, 2014 and 2016
- Almedalen 2012, seminar on Blue Growth and Aquaculture
- Swedish Maritime Day; 2013, 2014 and 2015

International experience and research collaborations

- Institute of Marine Research in Bergen, Norway
- Veterinary Institute in Oslo, Norway
- Danish Shellfish Centre, Denmark

- Norwegian University of Life Science, Norway
- Visiting researcher at the University of Sydney, Australia. 1998-2000. Collaboration with Professor Brian Bayne on physiological and ecotoxicological issues in oysters and mussels.

Awards

- I have been awarded the Swedish Natural Science Association's Prize (Naturvetarförbundet) of 30 000 SEK in 2010, with the motivation: "Susanne Lindegarth has in her professional act managed to merge basic biological research with industrial needs, and she has a strong driving force to visualize the social benefits of science. She is one of the main people behind the project Northern Oysters. She has worked systematically for a long time for a scientific platform for development of the Swedish aquaculture".
- I was appointed Honorary Research Associate at the University of Sydney during my guest research period 1998-2000.

Research innovations

Together with colleagues I have developed a method to measure the recruitment of blue mussels and fouling organisms in time and space, "Musselcatcher". The project was conducted and implemented in cooperation with several mussel farming companies.

Assignments in committees and steering boards

- Centre for Tourism at UGOT - Member of the steering board (ongoing)
- Samförvaltning Norra Bohuslän (co-management of fisheries in Northern Bohuslän) - Member of the steering board (ongoing)
- Leader Bohuskust och gränsbygd (EU local development program) - Member of the steering board (ongoing)

Entrusted assignments outside the academy

- President of the Oyster Academy (Ostronakademien) since 2010, a non-profit organization aiming to increase interest in and disseminate knowledge about the native flat oysters *Ostrea edulis* (www.ostronakademien.se)
- Elected to the Board for Strömstads Handball Club since 2011.

Publication list for Susanne Lindegarth (f.d. Svensson)

I. Peer reviewed articles in international journals

1. L. Thorngren, T. Dunér Holthuis, **S. Lindegarth**, M. Lindegarth. 2017. Developing methods for assessing abundance and distribution of European oysters (*Ostrea edulis*) using towed video. PLoS One 12(11): e0187870.
2. T. Dunér Holthuis, P. Bergström, M. Lindegarth, **S. Lindegarth**. 2015. Monitoring recruitment patterns of mussels and fouling tunicates in mariculture. J. Shellfish Res. 34 (3), 1007–1018.
3. Bergström, P., **Lindegarth, S.**, Lindegarth M. 2015. Modeling and predicting the growth of the mussel, *Mytilus edulis*: implications for planning of aquaculture and eutrophication mitigation. Ecology and evolution 5(24): 5920–5933
4. P. Bergström, M. S. Carlsson, M. Lindegarth, J. K Petersen, **S. Lindegarth**, M. Holmer. 2015. Testing the potential for improving quality of sediments impacted by mussel farms using bioturbating polychaete worms. Aquaculture research, 1-16.
5. P. Norling, M. Lindegarth, **S. Lindegarth**, Å. Strand. 2015. Effects of live and post-mortem shell structures of invasive Pacific oysters and native blue mussels on macrofauna and fish. Marine Ecology Progress Series, 518, s. 123-138
6. P. Dolmer, M. W. Holm, Å. Strand, **S. Lindegarth**, T. Bodvin, P. Norling, S. Mortensen. 2014. The invasive Pacific oyster, *Crassostrea gigas*, in Scandinavian coastal waters: A risk assessment on the impact in different habitats and climate conditions. Fisken og havet. 2., 70 s.
7. Bergström, P., **Lindegarth, S.**, Lindegarth M. 2013. Temporal consistency of spatial pattern in growth of the mussel, *Mytilus edulis*: Implications for predictive modelling. Euarine, Coastal and Shelf Science. 131, 93-102
8. Joyce, A., Holthuis, T., Charrier, G., and **Lindegarth, S.** 2013. Experimental effects of temperature and photoperiod on synchrony of gametogenesis and sex ratio in the European oyster, *Ostrea edulis* (*Linnaeus*). J. Shellfish Res. 32 (1), 1-12
9. Strand, Åsa; Blanda, E.; Bodvin, T.; Davids, J. K.; Jensen, L. F.; Holm-Hansen, T. H.; Jelmert, A.; **Lindegarth, S.**; Mortensen, S.; Moy, F. E.; Nielsen, P.; Norling, P.; Nyberg, Carlo; Christensen, H. T.; Vismann, B.; Holm, M. W.; Hansen, B. W.; Dolmer, P. 2012. Impact of an icy winter on the Pacific oyster (*Crassostrea gigas* Thunberg, 1793) populations in Scandinavia. 2012. Aquatic Invasions, 7 (3), 433-440
10. Strand, Å.; Waenerlund, A; **Lindegarth, S.** 2011. High tolerance of the Pacific oyster (*Crassostrea gigas*, Thunberg) to low temperatures. J. Shellfish Res. 30 (3), 733-735
11. Wrange, A-L., Valero, J. Harkestad, L.S., Stene, R.O., Strand, Ö., **Lindegarth, S.**, Torp Christensen, H., Dolmer, P., Mortensen, S. 2009. Massive settlements of the Pacific oyster, *Crassostrea gigas*, in Scandinavia. Biological Invasions. doi:10.1007/s10530-009-9535
12. **Lindegarth, S.**, Torgersen, T., Lundve, B., Sandvik, M. Differential retention of okadaic acid (OA) group toxins and pectenotoxins (PTX) in the blue mussel, *Mytilus edulis* (L.), and European flat oyster, *Ostrea edulis* (L.). 2009. J. Shellfish Res. 28(2), 1-11
13. Torgersen, T., **Lindegarth, S.**, Ungfors, A., Sandvik, M. 2008. Profiles and levels of okadaic acid group toxins and pectenotoxins during toxin depuration. Part I: brown crab (*Cancer pagurus*). Toxicon 52(3), 407-417
14. Torgersen, T., Sandvik, M, Lundve, B., **Lindegarth, S.** 2008. Profiles and levels of okadaic acid group toxins and pectenotoxins during toxin depuration. Part II: blue mussels (*Mytilus edulis*) and flat oysters (*Ostrea edulis*). Toxicon 52(3), 418-427
15. Bayne B.L., **Svensson, S.** 2006. Seasonal variability in feeding behaviour, metabolic rates and carbon and nitrogen balances in the Sydney oyster, *Saccostrea glomerata* (Gould). J. Exp. Mar. Biol. Ecol. 332:12-26

16. Lindahl, O., Hart, R., Hernroth, B., Kollberg, S., Loo, L-O-, Olrog, L., Rehnstam-Holm, A-S., Svensson, J., **Svensson, S.**, Syversen, U. 2005. Improving marine water quality by mussel farming: A profitable solution for Swedish society. *AMBIO* 34(2), 131-138
17. **Svensson, S.**, Förlin, L. 2004. Analysis of the importance of lipid breakdown for elimination of okadaic acid (diarrhoeic shellfish toxin) in mussels, *Mytilus edulis*: results from a field study and a laboratory experiment. *Aquat. Toxicol.* 66, 405-418
18. **Svensson, S.**, Särngren, A., Förlin, L. 2003. Mussel blood cells resistant against the cytotoxic effects of okadaic acid do not express cell membrane p-glycoprotein activity (multixenobiotic resistance). *Aquat. Toxicol.* 65(1), 27-37
19. **Svensson, S.** 2003. Depuration of Okadaic acid (Diarrhetic Shellfish Toxin) in mussels, *Mytilus edulis*, feeding on different quantities of non-toxic algae. *Aquaculture.* 218, 277-291
20. Honkoop, P.J.C., Bayne, B.L., Underwood, A.J., **Svensson, S.** 2003. Appropriate experimental design for transplanting mussels (*Mytilus* sp.) in analyses of environmental stress: an example in Sydney Harbour (Australia). *J. Exp. Mar. Biol. Ecol.* 297, 253-268
21. Godhe, A., **Svensson, S.**, Rhenstam-Holm, A-S. 2002. Oceanographic settings explain fluctuations in concentrations of diarrhetic shellfish toxin in the plankton community within a mussel farm area on the Swedish west coast. *Mar. Ecol. Prog. Ser.* 240, 71-83
22. **Svensson, S.**, André, C., Rehnstam-Holm, A-S., Hansson, J. 2000. A case of consistent spatial differences in content of diarrhetic shellfish toxins (DST) among three bivalve species, *Mytilus edulis*, *Ostrea edulis* and *Cerastoderma edule*. *J. Shellfish Res.* 19(2), 1017-1020

II. Articles and reports in Swedish

1. Marin fiskodling på den svenska västkusten: Tekniska lösningar. 2015. A. Ungfors, B. T. Björnsson, S. **Lindegarh**, S. P. Eriksson, T Wik, K. Sundell. Rapport nr. 3. Vattenbrukscentrum Väst. 97 s. (www.vbcv.science.gu.se)
2. M. Lindegarh, T. Dunér Holthuis, L. Mattsson-Thorngren, P. Bergström, **S. Lindegarh**. 2014. Ostron (*Ostrea edulis*) i Kosterhavets nationalpark: kvantitativa skattningar och modellering av förekomst och totalt antal. Rapport Länsstyrelsen i Västra Götaland. 29 s.
3. Å. Strand, **S. Lindegarh**. 2014. Japanska ostron i svenska vatten - Främmande art som är här för att stanna. Rapport nr. 2. Vattenbrukscentrum Väst. 62 s. (http://vbcv.science.gu.se/digitalAssets/1492/1492246_japanska-ostron-i-svenska-vatten.pdf)
4. T. Dunér Holthuis, L. Thorngren Matsson, M. Lindegarh, **S. Lindegarh**. 2014. Utveckling av metodik för insamling av ostronyngel – ett småskaligt system för ostronproduktion i Bohuslän. Rapport nr. 3. Vattenbrukscentrum Väst. 20 s. (http://vbcv.science.gu.se/digitalAssets/1504/1504577_insamling-av-ostronyngel---rapport-.pdf)
5. A. Ungfors, **S. Lindegarh**. 2014. Småskalig marin fiskodling och levandelagring. Beskrivning av teknik och ekonomi. Rapport Samförvaltning N Bohuslän. 78 s. (<http://samforvaltningnorrabohuslan.se/onewebmedia/Smaskalig%20marin%20fiskodling-mindre.pdf>)
6. P. Bergström, M. Lindegarh, **S. Lindegarh**. 2013. Restaurering av övergödda havsvikar med hjälp av musselodlingar. Rapport nr 21, Länsstyrelsen I Västra Götaland ISSN: 1403-168X . 32 s.

- (<http://projektwebbar.lansstyrelsen.se/havmoterland/SiteCollectionDocuments/Publikationer/2013-46.pdf>).
7. T. Dunér Holthuis, M. Lindegarth, **S. Lindegarth**. 2013. Musselcatcher. En metod att mäta rekrytering av musslor och konkurrerande påväxtorganismer inom vattenbruket. Rapport Vattenbrukscentrum Väst. 24 s.
(http://vbcv.science.gu.se/digitalAssets/1447/1447102_musselcatcher_130415.pdf).
 8. E. Albertsson, Å. Strand, **S. Lindegarth**, K. Sundell, S. P. Eriksson, B. T. Björnsson. 2013. Marin fiskodling på den svenska västkusten: Biologiska förutsättningar. Rapport nr. 1. Vattenbrukscentrum Väst. 98 s.
(http://www.vbcv.science.gu.se/digitalAssets/1426/1426227_vbcv-biologiska-f-ruts--tning-130114.pdf)
 9. Wenblad, A.; **Lindegarth, S.**; Hanning, A. 2012. Maritima kluster i Västra Götaland 2012. 25 sidor. (www.maritimaklustret.se)
 10. Wränge, A-L., **Lindegarth, S.** 2008. Japanska jätteostron – främmande nykomling i västsvenska vatten. Havsmiljön.
 11. **Lindegarth, S.** 2008. Diarrétoxiner-ett problem för svensk ostronnäring? Final report, Fiskeriverket, Februari 2008. 18 sidor.
 12. **Lindegarth, S.** 2007. Avgiftning av diarrétoxiner i blåmusslor. Final report, Fiskeriverket. Juni 2007. 21 sidor.
 13. **Lindegarth, S.** 2007. Paralytiska algtoxiner i plankton och musslor. Final report, Fiskeriverket. Juli 2007. 28 sidor.
 14. **Lindegarth, S.** 2007. Analys av fettlösliga algtoxiner i plankton och musslor med LC-MS/MS metodik. Final report, Fiskeriverket. November 2007. 23 sidor.
 15. **Svensson, S.** 2004. Kvalitetssäkring och avgiftning av diarrétoxiner i blåmusslor. Carpe Mare Final Report, Lysekils Kommun. 33 sidor.

III. Publications in symposia proceedings (peer reviewed)

1. **Lindegarth, S.**, Torgersen, T., Lundve, B., Sandvik, M. 2009 Distinct differences in accumulation of diarrhetic shellfish poisoning toxins between the blue mussel, *Mytilus edulis* (L.) and the European flat oyster, *Ostrea edulis* (L.). In: Busby, P., Burrow, R., Greening, G., McBride, G., Miles, C., Seamer, C., Simmons, G., Van de Riet, J. (Eds). Proc. 6th International Conference on Molluscan Shellfish Safety. Royal Society of New Zealand, pp. 89-94.
2. **Svensson, S.**, Särngren, A., Förlin, L. 2001. Cellmembrane P-glycoprotein activity (multidrug resistance) does not contribute to the resistance against okadaic acid in blue mussels, *Mytilus edulis*. In: Hallegraeff, G.M., Blackburn, S.I., Bolch, C.J., Lewis, R.J. (Eds). Proceed. Ninth Int. Conf. on Harmful Algal Blooms. Intergovernmental Oceanographic Commission of UNESCO. p. 391-394
3. Hernroth, B., **Svensson, S.**, Larsson, A. 2001. An advanced, *in vivo* method to investigate the distribution of particles in the blue mussel, *Mytilus edulis*, using gamma camera technique. In: Hallegraeff, G.M., Blackburn, S.I., Bolch, C.J., Lewis, R.J. (Eds). Proceed. Ninth Int. Conf. on Harmful Algal Blooms. Intergovernmental Oceanographic Commission of UNESCO. p. 415-417