

## PROMOTION AND TENURE VITAE

### Dr. M. Francisca Belart Lengerich

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#### A. EDUCATION AND EMPLOYMENT INFORMATION

##### 1. Education

PhD, Oregon State University 2016  
Major: Sustainable Forest Management  
Dissertation Title: Forest Harvest Residue Moisture Management in the Pacific Northwest, USA

MS, Oregon State University 2008  
Major: Forest Engineering  
Dissertation Title: Evaluation of a Prototype NIR System for Douglas-fir Wood Density Estimation

BS, Universidad Austral de Chile 2005  
Major: Forest Engineering  
Dissertation Title: Análisis de diferentes tipos de materia prima (madera aserrada) de *Pinus radiata* (*D. Don*) para producir largueros de puerta

##### 2. Employment history

Assistant Professor and Timber Harvesting Specialist 2016-Present  
Oregon State University, College of Forestry, Department of Forest Engineering, Resources and Management

Research Assistant, Oregon State University 2012-2016  
Department of Forest Engineering, Resources and Management

Instructor and Teaching Assistant, Oregon State University 2012-2013  
Department of Forest Engineering, Resources and Management

Planning Engineer, Forestal Mininco S.A. 2008-2012  
CMPC Chile

Research Fellow, Oregon State University 2006-2008  
Department of Forest Engineering, Resources and Management

## B. TEACHING, ADVISING AND OTHER ASSIGNMENTS

### 1. Instructional Summary

#### a) *Credit Courses*

**OSU FE540/440 – Forest Operations Analysis.** Identification and measurement of production components in harvesting systems. Methods analysis, productivity improvement, and engineering economics. Winter, 2021. 23 enrolled. 4 cr.

#### *Guest Lectures for credit courses*

**OSU H100H Honors Introduction to Public Health:** Sustainable forest management taught at the College Forest. Instructor of Record Dr. Viktor Bovbjerg (College of Health and Human Sciences).

Spring, 2018 (undergraduate)

Spring, 2019 (undergraduate)

**OSU FOR550 Sustainable Forest Management:** Guest lecture about forest planning and forest operations in Oregon. Instructor of Record Dr. Temesgen Hailemariam (College of Forestry).

Fall, 2019 (graduate)

Fall, 2020 (graduate)

**OSU FOR111 Introduction to Forestry:** Guest lecture about timber harvesting in Oregon. Instructor of Record Dr. Matt Powers (College of Forestry).

Fall, 2020 (undergraduate)

**OSU FOR111 Introduction to Forestry:** Guest lecture about forest roads in Oregon. Instructor of Record Dr. Matt Powers (College of Forestry).

Fall, 2020 (undergraduate)

#### b) *Non-Credit Courses and Workshops*

#### *Conference/workshop organization*

**Selling logs from your property Symposium- 2017:** Member of the Planning committee led by Ms. Lauren Grand. We had regular meetings leading to the conference to discuss an agenda and contact speakers. In addition, I helped with set up, flyer design, speaker invitations.

**USFS-BLM field tour 03/12/18:** Organized and led field trip to visit tether-assist harvest operation contractor, courtesy of Mr. Terry Mann.

**USFS-BLM field tour 04/19/18:** Organized and led field trip to visit tether-assist harvest operation contractor, courtesy of Miller Timber.

**Pacific Logging Congress-2018:** Lead for the two-day seminars offered at the PLC. Reached out to speakers, organized the seminars and was a moderator for two congress days.

**Cable Anchoring Workshop: failure mechanisms, safe design and new technologies- November 16, 2018.** Organized, taught, and lead the workshop in Eugene, OR.

**Cable Anchoring Workshop: failure mechanisms, safe design and new technologies- March 6, 2019.** Organized, taught, and lead the workshop in Springfield, OR.

*Trainings and workshops*

*OSU Extension classes (Summarized in Table 1)*

**Table 1.** Summary table of courses taught at OSU Extension

Class name	Role	Location/Event	Duration (hrs)	Date	Attendance
Logs to lumber to living	Co-taught	Roseburg, OR	2	10/26/2016	68
Logs to lumber to living	Co-taught	Eugene, OR	2	10/27/2016	26
Value of trees	Taught	Silver Falls, OR WOWNet retreat	1	11/6/2016	19
Logs to lumber to living	Co-taught	Baker City, OR	2	11/9/2016	23
Logs to lumber to living	Co-taught	St Helens, OR	2	3/2/2017	20
Logs to lumber to living	Co-taught	Clackamas Tree School	1.5	3/25/2017	64
Logs to lumber to living	Taught	Umpqua Tree School, Roseburg OR	1.5	3/29/2017	18
Logging Contracts	Taught	Forest Roads Workshop Myrtle Point, OR	0.25	4/1/2017	22

Logging Contracts	Taught	Forest Roads Workshop Waldport, OR	0.25	6/2/2017	18
Cruise Buck, Fall, Scale	Co-taught	Glide, OR	3	7/24/2018	24
Logging, marketing and roads	Taught	MWM-NE Baker City, OR	6	10/7/2017	7
Woodland Roads Fundamentals	Taught	Selling logs from your property Symposium Crow, OR	0.5	10/27/2017	71
Timber Sale Fundamentals	Taught	Selling logs from your property Symposium Crow, OR	0.5	10/27/2017	71
Woodland roads fundamentals	Taught	Effective Forest Roads St Helens, OR	0.5	12/7/2017	15
Contracts, selecting contractors	Taught	Effective Forest Roads St Helens, OR	0.25	12/7/2017	15
Small Scale Harvesting	Taught	Tree School Clackamas, Oregon City OR	1.5	3/24/2018	30
Woodland roads fundamentals	Taught	Effective Forest Roads, Klamath Falls, OR	0.5	04/11/2018	8
Contracts, selecting contractors	Taught	Effective Forest Roads, Klamath Falls, OR	0.25	04/11/2018	8
Small Scale Harvesting	Taught	Tree School Lane, Pleasant Hill, OR	1.5	06/02/2018	35
Forest Measurement Tools	Taught	Tree School Lane, Pleasant Hill, OR	1.5	06/02/2018	10
Selling logs from your property	Taught	Myrtle Point, OR	3	10/25/2018	25
Timber Sale Fundamentals	Taught	Selling logs from your property	0.5	11/2/2018	172

		Symposium Oregon City, OR			
Logging, marketing and roads	Taught	MWM-Lane Eugene, OR	6	11/29/2018	25
Woodland roads fundamentals	Taught	Effective Forest Roads, Umpqua OR	1	12/01/2018	18
Timber Sale Fundamentals	Taught	Selling logs from your property Symposium Roseburg, OR	0.5	01/26/2019	133
Woodland roads fundamentals	Taught	Effective Forest Roads. Lebanon, OR	1	03/16/2019	15
Small scale harvesting	Co- taught	Tree School Clackamas	1.5	03/23/2019	30
Effective forest roads	Co- taught	Tree School Clackamas	1.5	03/23/2019	25
Timber Sale Fundamentals	Taught	Selling logs from your property Symposium La Grande, OR	0.5	04/23/2019	82
Logging, marketing and roads	Taught	MWM-Benton Corvallis, OR	6	06/01/2019	22
Woodland roads fundamentals	Taught	Effective Forest Roads Mapleton, OR	1	11/02/2019	22
Logging, marketing and roads	Taught	MWM-Douglas Roseburg, OR	6	11/07/2019	25
Logging, marketing and roads	Taught	MWM-Coos Bandon, OR	6	02/07/2020	15
Deadman anchoring design for cable logging	Taught virtually	MWM Mini- college	1	02/05/2021	144
<b>Total</b>			<b>64</b>		<b>1,325</b>

*Workshop/field teaching*

**Summer LaCuKnoS teacher workshop August 2-4, 2021.** Professional Development Series. Introduction to LaCuKnoS project and first smart forestry lesson for 3-12 grade teachers. Collaborative teaching with LaCuKnoS team, workshop lead by Dr. Cory Buxton from the College of Education. 35 participants.

**Winter term SMILE teacher workshop January 30, 2021.** Winter 2021 Virtual Professional Development Series. Introduction to LaCuKnoS project and smart forestry for 3-12 grade teachers. Collaborative teaching with LaCuKnoS team, workshop lead by Dr. Cory Buxton from the College of Education. 25 participants.

**Skyline analysis and unit layout workshop Oct 21-25 2019:** Taught and prepared field section (one and a half days) of training aimed to *Forest Service* personnel. This training was co-taught by Dr. Loren Kellogg and Mr. Jeff Wimer of OSU. 40 participants.

**Cable Anchoring Workshop: failure mechanisms, safe design and new technologies-March 6, 2019.** Taught and developed three modules for the workshop. Dr. Ben Leshchinsky and Mr. Jeff Wimer also taught in this workshop. 36 participants.

**Cable Anchoring Workshop: failure mechanisms, safe design and new technologies-November 16, 2018.** Taught and developed three modules for the workshop. Dr. Ben Leshchinsky and Mr. Jeff Wimer also taught in this workshop. 27 participants.

**Tether assist field trip for USFS.** Demonstration of tether assist equipment with Miller Timber Services (Lee Miller). Philomath, OR. April 19, 2018. 12 participants.

**Tether assist field trip for BLM and USFS.** Demonstration of tether assist equipment. Lowell, OR. March 12, 2018. 25 participants.

**WFI fellow Eastern Oregon Tour June 2015, 2016, 2017, 2018:** taught and facilitate multi-day tour at MC Ranch located next to La Grande, Oregon. Tour topics include biomass, timber harvesting, role of OSU Extension towards forest landowners.

**Skyline analysis and unit layout Workshop Nov 13-17 2017:** Taught and prepared field and Skyline XL sections (two days) of training aimed to *Forest Service* personnel. This training was co-taught by Loren Kellogg and Jeff Wimer of OSU. 41 participants.

c) *Curriculum development*

*Credit Courses*

None

## *Non Credit Courses and Workshops*

### *Classes*

**Value of Trees:** this class is after a field session in which students learn how to measure tree heights and DBH and set up plots. The class starts with explaining how to calculate stand volume based on the tariff system, then goes through steps on how to sell logs, harvesting and transportation costs, and finally, some Forest Practices Act considerations.

**Small Scale Harvesting:** This class was adapted and modified from the previous version created by Steve Bowers. Currently, the class has more details on timber harvesting systems (at students' requests), logging cost breakdown, and includes a new section of fuel reduction treatments such as thinning and using a mulcher. I have also added an estimate of minimum volume to be harvested to perform road durable surfacing improvements.

**Timber Sale Fundamentals:** This class was adapted and modified from the previous version created by Steve Bowers. I have added results of a logger survey that includes their availability, the type of work they do, and updated timber market prices and trends. I have also highlighted the importance of having realistic expectations with the logging operation and cost and revenue depending on the quality, volume, and quantity of their timber.

**Woodland Roads Fundamentals:** this class was developed as part of the "Effective Forest Roads" workshop. Topics covered include road standards (geometric design), surfacing, drainage, stream crossings, and maintenance. The field part includes exercises on how to measure slope, culvert spacing, and curve radius.

**Forest Measurement tools:** developed a class that is accompanied by a field portion. The class includes the different forest measurement tools, how they work and what they are for, how to set up plots, and finally, obtain a volume per acre using the tariff system. The field portion of the class includes demonstrations of height, DBH and increment core measurements, and instruments for students to practice independently.

**Hiring Forestry Professionals:** developed a class aimed for forest landowners that mentions the importance of the landowner's objectives for their property, talks about contractors, when and how to hire them, where to find them, their capacities, and cost-share programs for forest improvement projects.

### *Workshops*

**Effective Forest Roads:** I share a leading role of this workshop with Dr. Jon Souder; this is a one-day workshop in which one-half is spent in the classroom and the other in the field. The day starts with a class addressing water quality and aquatic habitat impacts followed by a broader class connecting watersheds, streams, and roads, this class includes a culver sizing exercise. We continue into roads with the woodland roads fundamentals class and a short overview of contracts for road building and maintenance activity, which are taught by myself. We usually contact ODF foresters and seek input from the local agent to tailor our workshop to local issues, soil and rock types. At the end, we depart to a landowner property where we have a critical look at their roads and do the field exercises. I do hands-on exercises on my section, including determining road gradient; determine curve radius, ditch relief culvert placement (angles), and drainage structure spacing.

**Logging Symposium:** This is a two-day landowner symposium led by Lauren Grand and Alicia Christiansen in which I taught the timber harvesting and roads fundamentals classes, followed by timber marketing and forest practices act (FPA) presentations. The symposium also includes an experienced landowner panel, a log buyer panel, and a logger panel. The class portion finished with a harvest taxes and contracts class. Next, the field session includes presentations and demonstrations on log scaling (by a log scaler) and portable sawmilling (by a mobile sawmill contractor). Finally, I teach a few stages of forest management involving logging at the field site aided by the landowners who give background on each demonstration stop. I also developed a written chapter of the roads and timber harvesting parts as this effort was made into a curriculum, so any extension faculty can teach it.

**Cable Anchoring Workshop: failure mechanisms, safe design, and new technologies:** I am the lead in developing this workshop meant for active forest workers in cable logging operations to prevent accidents and, specifically, tower tip-overs. This workshop is one day in the classroom. I teach the basics of cable logging, focusing on the effects of not rigging towers correctly (in terms of forces and consequences), deadman anchoring design and current literature, and best management practices regarding tether assist logging equipment. Additionally, Ben Leshchinsky covers soil properties and their influence on anchor capacity, and Jeff Wimer covers multi-stump anchoring design as well as the concept of safety factors. After a lunch break, Jeff Wimer goes over a demonstration with synthetic rope multi-stump anchors. Finally, I will go over an exercise for deadman anchor capacity using a newly developed chart.

#### *Development of Teaching Resources*

**Smart Forestry Lessons for 3-12 teachers:** in collaboration with Dr Cory Buxton (OSU College of Education) and the LaCuKnoS team, I am developing teacher lessons in



smart forestry that include topics in forest engineering, wood science, and fire, so teachers can use them in their classrooms. The LaCuKnoS project addresses the Teaching Strand of the DRK-12 program, working with teachers across grades 3-12 with a science focus on Smart Forestry and a research focus on testing an instructional and professional development model for integrating language learning, cultural sustenance, and knowledge building with multilingual learners. We will also explore how the model influences students' communication of science meaning making, students' aspirations to pursue and succeed in forestry-related STEM academic and occupational pathways, and families' engagement in science co-learning, with particular attention given to multilingual learners and their families. We note that we use the term multilingual learners rather than English learners or ELs to highlight our belief that students must be supported and challenged to use all linguistic resources at their disposal to make meaning in science.

**Woodland stick:** I have been updating and re-developing the woodland stick in collaboration with Lauren Grand and Alicia Christiansen. This tool is used for teaching forestry extension programs and valuable for small woodland owners to make forest management decisions. The stick is a convenient tool to estimate DBH, tree height and log volume, and a short management guide, including crown classification, plot dimensions, D+ spacing, etc.

**Selling Logs from your Property: A Curriculum package for facilitators and educators in the Western United States.** This curriculum has been developed as a resource for Extension foresters, educators, natural resource professionals, and forestry volunteers to teach participants how to successfully and confidently administer a harvesting operation on their forested property in the Western United States. Participants of this training program will understand the following: steps to selling trees, how to correctly identify the people involved, and the expected outcomes with the operation is complete

d) *Graduate Students, Undergraduate Students and Post Doctoral Trainees*

*Post Doctorate Scholar Supervised*

None

*Chair of PhD committee*

None

*Chair or Co-Chair of MSc committee*

**2018** Anthony Clay Mancuso (MF defended 2018, FERM OSU). A co-Major advisor with Ben Leshchinsky. Thesis Title: Behavior and Assessment of Mobile Anchors in Cable Yarding Systems.

**2021** Mandira Pokharel (MS defense July 2021, FERM OSU). Major advisor. Thesis Title: Terrain assessment of manual felling in mixed tether-assist timber harvesting operations.

*Member of PhD committee*

**2017** Elisabeth King (Graduate Council Representative, PhD August 2017-CEOAS, OSU)

**2018** Ahmed Ahmed (Graduate Council Representative, PhD September 2018-CCE, OSU)

**2018** Brendan Reilly (Graduate Council Representative, PhD June 2018-CEOAS, OSU)

**2021** Alisa Kotash (Graduate Council Representative, PhD graduated 2021-CEOAS, OSU)

**Present** Anna Glueder (Graduate Council Representative, PhD anticipated 2021-CEOAS, OSU)

**Present** Alexandra Simpson (Graduate Council Representative, PhD anticipated 2022-CCE, OSU)

**Present** Paul Oyier (Committee member, PhD anticipated 2022-FERM)

**Present** Nicolas Mathews (Graduate Council Representative, PhD anticipated 2022-CCE, OSU)

*Member of MSc committee*

**2017** Luca Montanari (GCR, MSc June 2017-CCE, OSU)

**2017** Jaime Osorio (GCR, MSc August 2017-CEOAS, OSU)

**2018** Ezra Stockton (GCR, MSc June 2018-CCE, OSU)

**2019** Hunter Anderson (GCR, MSc June 2019-WSE/CE, OSU)

**2020** Ola Assafar (GCR, MSc March 2020-CE, OSU)

**2021** Patteera Puengpatarakit (GCR, MSc anticipated 2021-IE, OSU)

*Undergraduate Research advisor*

**2018** Carrie Clendaniel (OSU, Certificate of Sustainable Natural Resources FES)

*Faculty Research Assistants Supervised*

**2020** Brett Morrissette. Brett helped graduate student Mandira Pokharel collect field data during summer 2020, spring 2021.

*Undergraduate Students, Trainees and Employees*

**2019** David Meldrum (OSU, Forest Engineering). David was part of the undergraduate student mentoring program in which he collected literature to update the forest roads extension publication and attend our Effective Forest Roads workshop.

*e) Team or Collaborative efforts*

**2017 Woodland Stick**, a collaborative FNR Extension project. Team members: Lauren Grand, Alicia Christiansen, and Francisca Belart

**2017-2019 Logging Symposium**: a collaborative FNR Extension project. Team members: Lauren Grand, Alicia Christiansen, and Francisca Belart

**2020 Selling Logs from your Property: A Curriculum package for facilitators and educators in the Western United States**. Team members: Lauren Grand, Alicia Christiansen, Francisca Belart, Tamara L. Cushing, Chris C. Schnepf, and Kelsey Ketcheson.

**2017-present Effective Forest Roads Workshop and Curriculum**, a collaborative FNR Extension project. Team members: Francisca Belart, Jon Souder, Norma Kline, Lauren Grand, Alicia Christiansen, Stephen Fitzgerald, Amy Grotta, Brad Withrow-Robinson, Chal Landgren.

*f) International teaching*

Universidad de Misiones, Argentina (virtual). Planificacion Forestal en Oregon: Guest lecture about timber ownership and forest planning in Oregon. Instructor of Record Dr Diego Broz (Universidad de Misiones).  
Fall, 2020 (graduate)

## C. RESEARCH AND SCHOLARLY ACTIVITIES

### 1. Publications

*Refereed Publications (Published)*

*\* Graduate student*

1. White, R., L. Schimleck, F. Antony, F. Belart and R. Daniels. 2021. Monitoring seasonal transpiration drying of loblolly and slash pine with time-domain reflectometry. *European Journal of Wood and Wood Products* 79 (1297-1304) doi: 10.1007/s00107-021-01688-0. [2019 Impact Factor 1.542 Journal Ranking 31/50 (Forestry)]. *Candidate's Role: co-wrote manuscript, revised manuscript.*
2. Belart, F., B. Leshchinsky and J. Wimer. 2020. Deadman anchoring design for cable logging: a new approach. *Canadian Journal of Forest Research* 50 (342-357) doi: 10.1139/cjfr-2019-0338. [2021 Impact Factor 1.812 Journal Ranking 29/50 (Forestry)]. *Candidate's Role: Co-developed analytical approach, coded analytical approach in Matlab, produced plots, co-wrote the manuscript, managed submission.*
3. Green, P.,W. Chung, B. Leshchinsky, F. Belart, J. Sessions, S. Fitzgerald, J. Wimer, T. Cushing and J. Garland. 2020. Insight into productivity, cost, and soil impacts of cable-assisted harvester-forwarder thinning in Western Oregon. *Forest Science* 66(1) 82-96 doi: 10.1093/forsci/fxz049 [2021 Impact Factor 1.693 Journal Ranking 38/50 (Forestry)]. *Candidate's Role: co-wrote manuscript, revised manuscript.*
4. Grand, L., A. Christiansen and F. Belart. 2019. How the woodland stick benefits Oregon family forestland owners and extension volunteers. *Journal of Extension* 57 (6) doi: 6RIB7. [2019 Impact Factor 0.347]. *Candidate's Role: co-wrote manuscript, revised manuscript.*
5. Belart, F., B. Leshchinsky, J. Sessions, W. Chung, P. Green, J. Wimer and B. Morrisette. 2019. Sliding Stability of Cable-Assisted Tracked Equipment on Steep Slopes. *Forest Science* 65(3):304-311 doi: 10.1093/forsci/fxy064 [2021 Impact Factor 1.693 Journal Ranking 38/50 (Forestry)]. *Candidate's Role: Co-developed analytical approach, coded analytical approach in Matlab, produced plots, co-wrote the manuscript, managed submission.*

6. Garland, J., F. Belart, R. Crawford, W. Chung, T. Cushing, S. Fitzgerald, P. Green, L. Kincl, B. Leshchinsky, B. Morrissette, J. Sessions and J. Wimer. 2019. Safety in steep slope logging operations. *Journal of Agromedicine* 24(2):138-145 doi: 10.1080/1059924X.2019.1581115. [2019 Impact Factor 1.221]. *Candidate's Role: co-wrote manuscript, revised manuscript.*
7. Belart, F., J. Sessions, and G. Murphy. 2019. Seasonal changes in live tree branch moisture in Oregon, USA: Four Case Studies. *Forest Science* 65(1):100-107 doi: 10.1093/forsci/fxy038 [2021 Impact Factor 1.693 Journal Ranking 38/50 (Forestry)]. *Candidate's Role: Performed field experiments, performed planning and data analysis, wrote and revised the manuscript.*
8. \*Mancuso, A., F. Belart, and B. Leshchinsky. 2018. Operative loading in cable yarding systems: field observations of static and dynamic tensions in mobile anchor systems. *Canadian Journal of Forest Research* 48(11):1406-1410 doi: 10.1139/cjfr-2018-0219. [2021 Impact Factor 1.812 Journal Ranking 29/50 (Forestry)]. *Candidate's Role: Advised graduate student about statistical analysis and cable logging background, coded and produced plots in Matlab, assisted in writing manuscript, revised manuscript, managed submission.*
9. \*Mancuso, A., F. Belart, B. Leshchinsky, M.L. Russell, and J. Kiser. 2018. Behavior and assessment of mobile anchors in cable yarding systems. *Canadian Journal of Forest Research* 48(11):1382-1387 doi: 10.1139/cjfr-2018-0269. [2021 Impact Factor 1.812 Journal Ranking 29/50 (Forestry)]. *Candidate's Role: Advised graduate student about statistical analysis and cable logging background, coded and produced plots in Matlab, assisted in writing manuscript, revised manuscript, managed submission.*
10. Cushing, T., F. Belart, and S. Bowers. 2018. A Survey of logger concerns when working with small woodland owners. *Small-Scale Forestry* 17:523-534 doi: 10.1007/s11842-018-9401-x. [2019 Impact Factor 1.453 Journal Ranking 32/50 (Forestry)]. *Candidate's Role: typed, validated, and organized all survey data, developed plots, assisted in writing and revising the manuscript.*
11. Belart, F., B. Leshchinsky, and J. Sessions. 2017. Finite element analysis to predict in-forest stored harvest residue moisture content. *Forest Science* 63(4):362-376 doi: 10.5849/FS-2016-064R1. [2021 Impact Factor 1.693 Journal Ranking 38/50 (Forestry)]. *Candidate's Role: Performed field experiments, performed planning and data analysis, wrote and revised the manuscript.*
12. Belart, F., J. Sessions, B. Leshchinsky, and G. Murphy. 2017. Economic implications of moisture content and logging system in forest harvest residue delivery for energy production: a case study. *Canadian Journal of Forest Research* 47(4):458-466 doi: 10.1139/cjfr-2016-0428. [2021 Impact Factor 1.812 Journal Ranking 29/50 (Forestry)].

*Candidate's Role: Performed field experiments, performed planning and data analysis, wrote and revised the manuscript.*

*Refereed Publications (submitted)*

None

*OSU Extension Publications: Book*

1. Bowers S. and F. Belart. 2018. EM9197: Harvesting and Selling Timber. A field guide for Woodland Owners. Oregon State University Extension Service. 103p. <https://catalog.extension.oregonstate.edu/em9197>

*OSU Extension Publications: Extension circulars and Extension Manuals*

1. Belart F. and S. Bowers. 2021. EM 9129: Small-scale Harvesting for Woodland Owners. Oregon State University Extension. 14p. <https://catalog.extension.oregonstate.edu/em9129>
2. Grand, L., A. Christiansen, F. Belart, T. Cushing, C. Schnepf, K. Ketcheson. 2020. PNW739: Selling Logs from your Property: A Curriculum package for facilitators and educators in the Western United States. Oregon State University Extension. 98p. <https://catalog.extension.oregonstate.edu/pnw739>
3. Belart, F. and L. Grand. 2019. EC 1129: Tools for measuring your forest. Oregon State University Extension. 9p. <https://catalog.extension.oregonstate.edu/ec1129>

*OSU Extension Publications (contributor)*

1. Belart, F and L. Grand. 2019. Timber harvesting: a process of many decisions. Woodland Notes Newsletter Fall 2019. Clackamas County Extension. <https://extension.oregonstate.edu/newsletter/woodland-notes-newsletter>
2. Strong, N., C. Berger, A. Murphy, A. Grotta, F. Belart, J. Johnson, and V. Elder. 2018. FNR Program Brochure. 2p.
3. Belart, F. 2017. Logging checklist. Life on the Dry Side Forestry Newsletter. OSU Forestry and Natural Resources Extension.

*Book Chapters*

None

*Proceedings (abstracts)*

*Presenter is underlined*

1. Belart, F., K. Lyons, J. Garland and V. Bovjerg. 2019. Timber Faller Safety on Integrated Mechanized Operations in Steep Terrain. Western ANREP mobile study tour and professional development meeting. Association of Natural Resources Extension Professionals. Tucson, AZ. November 15, 2019.
2. Belart, F., B. Leshchinsky, J Sessions, W Chung, P. Green, J. Wimer and B. Morrisette. 2018. Tether assist equipment stability and soil-machine interaction in steep slope logging. Proceedings of 41<sup>st</sup> Annual Council on Forest Engineering Meeting, Williamsburg, Virginia, July 15-18, 2018.
3. Green, P., W. Chung, B. Morrisette, F. Belart, K. Bladon, J. Hatten, B. Leshchinsky, and J. Sessions. 2018. Environmental and economic comparison of cable-assisted harvesting systems in the Pacific Northwest. Proceedings of 41<sup>st</sup> Annual Council on Forest Engineering Meeting, Williamsburg, Virginia, July 15-18, 2018.
4. Garland, J., F. Belart, R. Crawford, W. Chung, T. Cushing, L. Kincl, B. Leshchinsky, J. Sessions and J Wimer. 2017. Operators in Steep Slope Logging and Safety Measurement. Proceedings of FORMEC 2017. Brasov, Romania 25-29th September 2017.
5. Belart, F., B. Leshchinsky, and J. Sessions. 2017. Finite element analysis to predict in-forest stored harvest residue moisture content. Proceedings of IUFRO 125<sup>th</sup> Anniversary Congress 2017. 18-22 September 2017. Freiburg, Germany.

*Technical reports*

1. Belart, F., J. Wimer and B. Leshchinsky. 2019. Guidelines for safe multi-stump and deadman anchors. Oregon OSHA Educational Grant product. 39p. <https://osha.oregon.gov/edu/grants/train/Documents/OSU-Guidelines-for-safe-anchoring.pdf>

*USFS General Technical reports*

None

*Non-Refereed Scientific Society Bulletin Reports*

None

*Other Publications*

1. Grand, L. and F. Belart. 2020. Common challenges to marketing timber on the Westside. *Northwest Woodlands Magazine* 36(2)14-17. Oregon Small Woodlands Association. Web: <https://www.oswa.org/Publications/nw-woodlands-magazine.html>
2. Belart, F and L. Grand. 2018. Logging: Part of Active Forest Management. *Northwest Woodlands Magazine* 34(2)8-11. Oregon Small Woodlands Association. Web: <https://www.oswa.org/Publications/nw-woodlands-magazine.html>

## 2. Professional meetings, symposia, and conferences (2016-2021)

### *Invited Conference Presentations/Panels*

1. Belart, F., B. Leshchinsky and J. Wimer. 2021. Deadman anchoring design for cable logging: a new approach. Western Regional Council on Forest Engineering. *Virtual Conference*. January 14, 2021.
2. Belart, F. 2020. Modern forest operations: a forest and human health perspective. State of the State 2020 Forest Health Conference. Corvallis OR, February 27, 2020.
3. Chung, W., F. Belart, P. Green and B. Morrisette. 2019. OSU research on tether assist harvesting. BLM Aquatic Habitat Management Working Group Annual Spring Meeting. Rickreall, OR. April 17, 2019.
4. Leshchinsky, B. and F. Belart. 2018. Reducing the Impacts of Logging Using New Technologies and Approaches. Dry forest restoration in Steep Terrain. Redmond, OR. November 11, 2018.
5. Belart, F. 2018. Deadman and multi-stump anchoring safety. Pacific Logging Conference. Corvallis OR. September 13, 2018.
6. Chung, W., B. Leshchinsky, F. Belart, J. Garland, P. Green, B. Morrisette, J. Sessions, and J. Wimer. 2018. Ongoing Research on Cable-Assisted Steep Slope Harvesting Systems in North America. Special Seminar at Korea National Institute of Forest Science. Seoul, South Korea. June 20, 2018.
7. Belart, F. 2018. OSU Research Update. Associated Oregon Loggers 48<sup>th</sup> Annual Convention. Eugene OR. January 19, 2018.
8. Belart, F. 2017. Forest harvest residue moisture management in the Pacific Northwest. OSAF Annual Meeting. Tigard, OR. April 27, 2017.



*Conference Presentations (oral)*

1. Pokharel, M. and F. Belart. 2021. Timber Faller Safety on Integrated Mechanized Operations in Steep Terrain. Western Forestry Graduate Research Symposium. *Virtual Conference*. April 16, 2021.
2. Pokharel, M. and F. Belart. 2020. Timber Faller Safety on Integrated Mechanized Operations in Steep Terrain (proposal). Western Forestry Graduate Research Symposium. *Virtual Conference*. May 1, 2020.
3. Chung, W., B. Leshchinsky, B. Morrisette, P. Green, K. Bladon, J. Hatten, F. Belart, J. Sessions, and J. Wimer. 2019. Soil Impacts of Tethered Logging Systems: Theory, Field Experiments and GIS Tool for Assessment. USDA Forest Service Northern Region Soil, Water, and Fish Annual Meeting. Missoula, MT. December 4, 2019.
4. Chung, W., B. Morrisette, P. Green, B. Leshchinsky, K. Bladon, J. Hatten, F. Belart, J. Sessions, and J. Wimer. 2019. Tethered Logging Systems: Cost, Productivity and Environmental Impacts. USDA Forest Service Northern Region Soil, Water, and Fish Annual Meeting. Missoula, MT. December 4, 2019.
5. Belart, F and M. Pokharel. 2019. Timber Faller Safety on Integrated Mechanized Operations in Steep Terrain. Western ANREP mobile study tour and professional development meeting. Tucson, AZ. November 15, 2019.
6. Belart, F., K. Lyons, J. Garland, and V. Bovbjerg. 2019. Timber Faller Safety on Integrated Mechanized Operations in Steep Terrain. Western AG Safety and Health Conference. Seattle, WA., August 7, 2019.
7. Chung, W., B. Leshchinsky, B. Morrisette, P. Green, F. Belart, K. Bladon, J. Hatten, J. Sessions, K. Lyons, J. Garland, and J. Wimer. 2019. Soil Impacts of Tethered Logging Systems in Oregon. Confederated Tribes of Warm Springs Forest Management Interdisciplinary Team meeting. Corvallis, OR. April 8, 2019.
8. Green, P., W. Chung, F. Belart, S. Fitzgerald, B. Leshchinsky, B. Morrisette, J. Sessions, J. Wimer, and J. Garland. 2019. Soil Impacts of a Cable-assisted Harvester-forwarder Thinning in Western Oregon. The Northwest Forest Soils Council 2019 Winter Meeting. Lincoln City, OR. March 22, 2019.
9. Belart, F., B. Leshchinsky and J. Wimer. 2019. Deadman anchor design charts. Forest Activity Advisory Committee Quarterly Meeting (AOL and OSHA). Salem, OR. March 14, 2019.

10. Belart, F. 2019. Cable logging anchoring safety. 1<sup>st</sup> Northwest Logging Safety Summit. Springfield, OR. February 20, 2019.
11. Chung, W., B. Garrelts, B. Morrissette, P. Green, B. Leshchinsky, F. Belart, K. Bladon, J. Hatten, J. Sessions, and J. Garland. 2019. Tethered Logging in Southwest Oregon: A Research Perspective. Western Regional Council on Forest Engineering Conference. Eugene, OR. January 17, 2019.
12. Green, P., W. Chung, F. Belart, S. Fitzgerald, B. Leshchinsky, B. Morrissette, J. Sessions, J. Wimer, and J. Garland. 2019. Tethered CTL in Western Oregon. Western Regional Council on Forest Engineering Conference. Eugene, OR. January 17, 2019.
13. Chung, W., B. Morrissette, P. Green, B. Leshchinsky, F. Belart, K. Bladon, J. Hatten, and J. Sessions. 2018. Cable-Assisted Steep Slope Harvesting – Research on Soil Impacts. 41<sup>st</sup> Annual Council on Forest Engineering Conference. Williamsburg, VA. July 15-18, 2018.
14. Belart, F., B. Leshchinsky, W. Chung, P. Green, B. Morrissette, J. Garland, and J. Sessions. 2018. Mobility of Tethered Equipment on Steep Slopes: Soil-Machine Interactions. 41<sup>st</sup> Annual Council on Forest Engineering Conference. Williamsburg, VA. July 15-18, 2018.
15. Leshchinsky B., F. Belart, W. Chung, P. Green, B. Morrissette, J. Garland, J. Sessions, and J. Wimer. 2018. Tether assist equipment stability and soil-machine interaction in steep slope logging. 41<sup>st</sup> Western Regional Council on Forest Engineering Meeting. January 18, 2018. Eugene, Oregon.
16. Green, P., F. Belart, R. Crawford, W. Chung, S. Fitzgerald, B. Leshchinsky, B. Morrissette, J. Sessions, J. Wimer, and J. Garland. 2018. Steep Slope Research at Oregon State University. 2018 Steep Slope Initiative Meeting, FPInnovations. Vancouver, BC Canada. January 16, 2018.
17. Garland, J., F. Belart, R. Crawford, W. Chung, T. Cushing, L. Kincl, B. Leshchinsky, J. Sessions, and J. Wimer. 2017. Operators in Steep Slope Logging and Safety Measurement. 50<sup>th</sup> International Symposium on Forestry Mechanization. Brasov, Romania. September 27, 2017.
18. Belart, F., B. Leshchinsky and J. Sessions. 2017. Finite element analysis to predict in-forest stored harvest residue moisture content. IUFRO 125<sup>th</sup> Anniversary Congress 2017. 18-22 September 2017. Freiburg, Germany.

19. Wimer, J., B. Leshchinsky, W. Chung, J. Sessions, F. Belart, and J. Garland. 2017. Who Will Log the Forest. Who will own the forest Conference, World Forestry Center. September 14, 2017. Portland, Oregon.
20. Green, P., F. Belart, R. Crawford, W. Chung, T. Cushing, J. Garland, L. Kincl, B. Leshchinsky, J. Sessions, and J. Wimer. 2017. Steep Slope Logging Research at OSU – Eye movement tracking to grapple yarding, collaboration for a safer work environment. 2017 Council on Forest Engineering Annual Meeting. Bangor, ME. August 2, 2017.
21. Sessions, J., J. Garland, F. Belart, R. Crawford, W. Chung, T. Cushing, L. Kincl, B. Leshchinsky, and J. Wimer. 2016. Protecting the Logging Workforce: Development of Innovative Logging Techniques for a Safer Working Environment. 2016 Pacific Logging Congress. San Diego, CA. November 7, 2016.

#### *Poster Presentations*

1. Grand, L., A. Christiansen and F. Belart. 2018. Impacts of the OSU Woodland Stick. OSU Extension Conference. Corvallis, OR. December 5, 2018.
2. Grand, L., A. Christiansen and F. Belart. 2018. Measuring impacts of the OSU Woodland Stick. Society of American Foresters National Convention. Portland, OR. October 3-7, 2018.
3. Grand, L., A. Christiansen and F. Belart. 2018. Impacts of the OSU Woodland Stick. ANREP Blues, Bayous, and Beyond: The Nexus of Natural Resources and Stewardship. Biloxi, MS. April 30, 2018.

#### *Invited Academic Seminars*

1. Belart, F. 2017. Timber harvesting in Oregon. OSU College of Forestry International Programs, guest lecture. Corvallis, OR. October 18, 2017.
2. Belart, F. 2017. Industrial Forestry in Chile. OSU College of Forestry International Programs, guest lecture. Corvallis, OR. March 16, 2017.
3. Belart, F. 2016. Forest harvest residue in the Pacific Northwest. OSU College of Forestry Graduate Student Orientation, guest lecture. Corvallis, OR. September 21, 2016.

### **3. Grant and contract support (2017-2021)**

**Table 3. Summary of all grant and contract support**

	N	Award totals	Award totals (candidate share)
<b>Competitive total</b>	<b>7</b>	<b>\$2,574,004</b>	<b>\$137,721</b>
Competitive external	2	\$2,560,559	\$129,576
Competitive internal	5	\$13,445	\$8,145
<b>Non –competitive total</b>	<b>2</b>	<b>\$10,035</b>	<b>\$5,017</b>
<b>Totals</b>	<b>9</b>	<b>\$2,584,039</b>	<b>\$142,738</b>

**Table 4. Externally funded competitive grants and contracts**

Title	Role	Agency	Award amount	Date (duration)
Language, Culture, and Knowledge-building through Science (LaCuKnoS)	Co-PI	NSF	\$2,521,941 (\$90,958 share)	2020 (4 years)
Educational program for safe design of cable yarding and winch-integrated harvester anchors in younger forests	PI	OR-OSHA	\$38,618	2018 (1 year)

**Table 5. Internally funded competitive grants and contracts**

Title	Role	Agency	Award amount	Date (duration)
Effective Forest Roads	Co-PI	OSU FNR Extension	\$4,000 (\$2,000 share)	2019 -20 (1 year)
Mentored employment Program	PI	OSU College of Forestry	\$1,800	2018 (6 months)
Effective Forest Roads	Co-PI	OSU FNR Extension	\$6,600 (\$3,300 share)	2017-18 (1 year)
Extension Professional Development Funds		OSU Extension	\$45	2018
Professional Faculty Development Funds		OSU	\$1,000	2017

**Table 6. Noncompetitive grants and contracts**

Title	Role	Agency	Award amount	Date (duration)
Selling Logs From Your Property: An Educational Symposium for Landowners	Co-PI	AOL	\$500 (\$250 share)	2018 (1 month)
Printing for Harvesting and Selling Timber: A Field Guide for Woodland Owners		OFRI	\$9,535 (\$4,767 share)	2018

**Table 7. Not funded competitive grants and contracts**

Title	Role	Agency	Amount requested	Date (duration)
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Smart Forestry – Transforming Forestry and the Future Forest Workforce	Co-PI	USDA Agriculture and Food Research Initiative (AFRI)	\$10,000,000	2020 -25 (5 years)
Impacts of Cable-Assisted Steep Slope Harvesting on Soil and Water Resources	Co-PI	Oregon State University - Fish and Wildlife Habitat in Managed Forests	\$105,385	2018-21 (3 years)
Terrain assessment of manual felling in mixed tether-assist timber harvesting operations	PI	Pacific Northwest Agricultural safety and health Center (PNASH)	\$27,477	2019 (1 year)
Selling Logs From Your Property: An Educational Symposium for Landowners	Co-PI	Weyerhaeuser Giving Fund	\$22,672	2017 (1 year)
Effects of Harvest Interval, Residual Retention Practices, and Climate Change on Forest Carbon and Productivity	Co-PI	NW Climate Hub	\$65,000	2017
Selling Logs From Your Property: An Educational Symposium for Landowners	Co-PI	Weyerhaeuser Giving Fund	\$28,749	2016 (1 year)

#### 4. Patents and inventions

None

#### 5. Other information

##### *Professional Development*

2021 Summer Planning Meeting FNR Extension, Virtual 8/10-8/12

2021 Enhancing Diversity and Equity in course content Part 2. Virtual 2/26

2021 Enhancing Diversity and Equity in course content Part 1. Virtual 1/29

2021 Promotion and tenure. Virtual 1/7

2020 Summer Planning Meeting FNR. Virtual 8/25-26

2020 State of the State 2020 Forest Health Conference. Corvallis 2/27

2019 Seguridad, salud y sus derechos en el trabajo, Salem 11/19

2019 ANREP professional development and study tour. Tucson, AZ 11/14-15

2019 Forestry Activities Advisory Committee Meeting, Salem 9/12  
2019 Western AG safety and health conference, Seattle WA 8/7-9  
2019 Forestry Workforce 2020, Part 4. Virtual 5/21  
2019 Forestry Workforce 2020, Part 3. Virtual 4/10  
2019 Advising for advisors, Corvallis 4/2  
2019 Faculty orientation for GCRs, Corvallis 3/1  
2019 Forestry Workforce 2020, Part 2. Virtual 2/13  
2019 Forestry Workforce 2020, Part 1. Virtual 1/24  
2019 AOL 49th annual convention, Eugene 1/18  
2019 WR COFE, Eugene 1/17  
2018 Forestry Activities Advisory Committee Meeting, Salem 12/7  
2018 Swiss needle cast Annual Meeting, Corvallis 12/6  
2018 Forest Road Surfacing: Basic Design Principles and Applied Practices (Oregon) offered by WFCA, Springfield 10/10-10/11  
2018 SAF Convention, Portland 10/5  
2018 Working Hours, Sleep and Fatigue: Fatigue and Automation: Black Swans and Lumberjacks Redux, NIOSH webinar 9/26  
2018 Pacific Logging Congress, Corvallis 9/13-9/15  
2018 Summer Planning Meeting FNR Extension, Florence 8/7-8/9  
2018 COFE Meeting, Williamsburg, VA 7/17-7/19  
2018 Forestry Activities Advisory Committee Meeting, Salem 6/14  
2018 Matlab Educational Seminar, Corvallis 3/20  
2018 Oregon Logging Conference, Eugene 2/21-2/24  
2018 Write winning grant proposals, Corvallis 2/9  
2018 Willamette Valley Bird Symposium, Corvallis 1/27  
2018 AOL 48th annual convention, Eugene 1/19  
2017 Forestry Activities Advisory Committee Meeting, Salem 12/14  
2017 Fall Planning Meeting FNR Extension, Silverton 10/11-10/12  
2017 IUFRO 125th IUFRO Anniversary Congress, Freiburg Germany, 9/18-9/22  
2017 Faculty Success Program, Online training 8/1-11/30  
2017 One-day a week training with Student Logging Crew, College Forests 1/1-8/30  
2017 Summer Planning Meeting FNR Extension, Redmond 8/2-8/4  
2017 FPA new riparian rules workshop by Oregon Department of Forestry, Corvallis 5/22  
2017 Partnership for Forestry education annual meeting, Silverton 5/10  
2017 OSAF Annual Meeting, Tigard 4/27  
2017 Oregon Logging Conference, Eugene 2/23-2/25  
2017 Benton County OSWA Annual meeting, Corvallis 1/28  
2017 AOL 47th annual convention, Eugene 1/20  
2017 WR COFE, Eugene 1/19  
2016 Swiss Needle Cast Annual Meeting, Corvallis 11/30  
2016 Extension Annual Conference, Corvallis 11/15-11/16  
2016 Basic Forest Practices Workshop offered by AOL, Lebanon 11/11  
2016 Fall Planning Meeting FNR Extension, Corvallis 10/13

2016 Scaling for Non Scalers offered by WFCA, Springfield 10/12  
 2016 Write winning grant proposals, Corvallis 9/29  
 2016 Fast Growing Plantations in Chile, Dr. Guillermo Trincado, Corvallis 9/21  
 2016 OSU Roads Tour Central Oregon, Bend 9/12-9/13  
 2016 MWM Mini College, Drought in the Valley, Corvallis 8/26  
 2016 MWM Mini College, Ponds on Woodlands, Log to Lumber to Living, Corvallis 8/25  
 2016 Summer Planning Meeting FNR Extension, Oregon City 7/19-7/20

*Professional Organization Membership*

**2006-present** Council on Forest Engineering (COFE)  
**2019-present** Association of natural Resource Extension Professionals (ANREP)

*Editor and reviewer*

**2021-present** Associate Editor, Journal BOSQUE (Latin America)

*Proposal review panels*

None

*Proposal peer reviewer*

**2017** Conicyt, Comisión Nacional de Investigación Científica y Tecnológica, Chile

*Guest associate editor*

**2017-present** Forest Biomass Production and Transport Planning special issue for *Forests*

*Manuscript reviewer (4.2 per year, 2017-2021)*

**Table 7. Summary of peer-reviews**

Journal Name	Pre 2017	2017	2018	2019	2020	2021	Total
Forest Science	1		1				2
International Journal of Forest Engineering	2		1	1	2		6
Forest Ecology and Management				1			1
Canadian journal of Forest Research				1			1
Biomass and bioenergy			1				1
BioResources		2	1				3

Southern Forest: A journal of Forest Science	1						1
Journal of Agromedicine			1				1
Forests		3	2			1	6
Journal of Environmental Management			1				1
Washington State University (PNW pub)				1			1
New Zealand Journal of Forestry Science						1	1
<b>Total</b>	<b>4</b>	<b>5</b>	<b>8</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>25</b>

*Book proposal reviewer*

None

#### D. SERVICE

##### 1. University Service

###### *University*

**2018** Pizza with Professors, Women and Minorities in engineering programs. Invited by undergraduate students to have a conversation about being a woman in the engineering field.

###### *College*

**2020** Committee member: Search committee for OSU FNR Extension, Associate Program Leader for Forest and Natural Resources Extension.

**2017-2018** Spanish translation review. Oregon Forest Pest Detectors. OSU FNR Extension.

###### *Department*

**2021-2022** Committee member: Search committee for FERM Department, Student Logging Crew Manager

**2019-2021** FERM Promotion and Tenure Committee Member



**2019-2020** Committee member: Search committee for OSU FNR Extension, Fire Extension Specialist

**2018** Oregon Logging Conference, running FERM booth with cable anchoring demonstrations.

**2017-2019** Oregon Logging Conference, running FERM booth.

**2017** Committee member: Search committee for OSU, FERM LeMatta Timber Harvesting and Operations Faculty

## 2. Service to the Profession

*Symposium/Session Organizer*

**2020-present** COFE-FORMEC Conference planning committee member

**2018-present** NW Logging Safety Summit planning committee

**2018** Pacific Logging Congress, planning committee, presentation session organizer and leader.

**2017-Present** Western Regional Council on Forest Engineering, planning committee.

## 3. Service to the Public (professional)

**2018** Spanish translation review. Glossary of Forestry Services: with Motivation for Understanding. Pacific Northwest Agricultural Safety and Health.

**2017-present** Committee member: Jerry Sedlack memorial scholarship. WR COFE.

## E. AWARDS

### 1. National and international awards

**2020** Short Publication Gold Award. The OSU Woodland Stick. Association of Natural Resources Extension Professionals. Team effort: Lauren Grand, Alicia Christiansen, and Francisca Belart

### 2. State and regional awards

**2020** Search for Excellence Award, for outstanding leadership in educational programming. OSU Extension Association. PNW739: Selling Logs from your Property: A Curriculum package for facilitators and educators in the Western United States. Team effort: Lauren Grand, Alicia Christiansen, Francisca Belart, Tamara Cushing, Kevin Zobrist, Chris Schnepf, Kelsey Ketcheson.

3. *University and community awards*  
None