

**LUMCON 2013 Summer Program
Wetland Vegetation
8 to 26 July**

Course Objective: The objective is for students to learn ecology and taxonomy of wetland vegetation with an emphasis on Louisiana wetlands.

Credit: This course is offered as a 3-hour or 4-hour credit version; the versions differ in that the 3-hour credit version requires a 40-plant collection whereas the 4-hour credit version requires an 80-plant collection. All other assignments are the same.

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Final Grade: There is no opportunity for extra credit. The Final Grade is based on a total possible score of 100 points for the 3-hour credit version and 150 points for the 4-hour credit version as follows:

	3 credits	4 credits
Lecture Test 1:	40 points	40 points
Final Lecture Test:	40 points	40 points
Plant ID Test 1:	50 points	50 points
Final Plant ID Test:	50 points	50 points
Plant Collection:	100 points	200 points
Miscellaneous small tasks:	20 points	20 points
Total	300 points	400 points

Grades of “A,” “B,” and “C” are assigned for satisfactory work. A grade of “A” indicates distinguished mastery of the course material; a grade of “B” good mastery; a grade of “C” acceptable mastery. A grade of “D” indicates minimally acceptable achievement for university credit but does not allow that credit to be applied toward some degrees. A grade of “F” is failing. A 10-percentage point scale is used (A = 100-90, B = 89-80, etc.).

	3 credits	4 credits
A:	270-300 points	360-400 points
B:	240-269 points	320-359 points
C:	210-239 points	280-319 points
D:	180-209 points	240-279 points
F:	<180 points	<240 points

Tests: There will be two tests. Approximately 70% will be from material covered in lectures; 30% from reading assignments.

Academic Honesty: Any form of plagiarism or cheating on exams or papers or complicity in such acts is punishable by the maximum penalty of expulsion from the class.

LUMCON Wetland Plants Class/RNR 4020, 8-26 July 2013 **(field trips may be rescheduled because of weather or boat availability)**

week	Monday	Tuesday	Wednesday	Thursday	Friday
July 8 to 12	<ol style="list-style-type: none"> 1. Course overview 2. Creating a personal herbarium (Walter and Keil 1996. Chapters 3, 4, and 6) 3. Plant anatomy and ID 4. Short field trip (on foot) 5. Plant ID lab 6. Freshwater Marshes (Sasser et al 2009). 	<ol style="list-style-type: none"> 1. Fieldtrip to fresh floating marshes (Mandalay Refuge) 2. Wetland definitions (Mitsch and Gosselink 2007: Chapter 2) 3. Plant ID and pressing 	<ol style="list-style-type: none"> 1. Wetland Vegetation field methods (Causton 19) 2. short field trip; compare streamside, inland, and spoil with ocular cover estimates 3. Plant adaptations to flooding (Batzer and Sharitz 2006: Chapter 4) 4. Delta Lobe Cycle (Gosselink et al. 1998) 5. Field methods lab. Species area curve, FQI, Wetland Status 	<ol style="list-style-type: none"> 1. Fieldtrip to intermediate and fresh marshes (Clovelly) 2. Plant Adaptations to Salinity (Batzer and Sharitz Chapter 4) 	<ol style="list-style-type: none"> 1. Louisiana coastal wetlands (Visser et al 2012) 1. Plant ID and pressing

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<p>July 15 to 19</p>	<ol style="list-style-type: none"> 2. Fieldtrip to Intermediate marsh. (North Lake Boudreaux) 2. Wetland plant ecology (Batzer and Sharitz 2006 Chapter 6) 3. Plant ID and pressing 	<ol style="list-style-type: none"> 1. Deltaic wetlands (Gosselink et al. 1996). 2. Plant ID and pressing 3. review 	<ol style="list-style-type: none"> 1. study session 2. plant id test 1 3. lecture test 1 4. Disturbance and succession in wetlands: Brown (1943), Nyman and Chabreck (1995), Morton and Barras (2011) 1. Barrier Islands: Courtemanche et al. 1999. 	<ol style="list-style-type: none"> 1. Field Trip to Trinity Island 2. Plant ID and pressing Wetland 	<ol style="list-style-type: none"> 1. Nutrient salinity interactions: Bradley and Morris (1992), Merino et al. (2010), Fox and Kinney (2012) 2. Marsh vertical accretion: Nyman et al. (2006), Craft (2012), Chmura and Hong (2004), DeLaune et al. (2013), Reed (1989) Neubauer et al. (2008) 3. Soil Strength: Pestron (1969), van Eerd (1985), McGinnis (1997) 4. Short field trip (on foot) to examine marsh soil 5. Plant ID and pressing
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<p>July 22-26</p>	<ol style="list-style-type: none"> 1. Functions and Values (Nyman 2011) 2. Zonation of wetland vegetation and wildlife: Palmisano (1972) 3. Edge effects: Batlze et al. (1993), Bush Thom et al., O'Connell and Nyman (2011), Thullen et al. (2005) 4. Wetland vegetation and wetland fish: Deegan et al. 1991, Kanouse et al. (2006) 5. Wetland vegetation and wildlife: Paulus et al. 1982, Wilsey et al. 1991, Kross et al. 2010, Slocum and Mendelsson 2008, McFalls et al. (2010) 6. Plant ID and pressing 	<ol style="list-style-type: none"> 1. Managing Wetland Vegetation: Nyman and Chabreck 2009. 2. Chenier Plain 3. Restoring wetland vegetation on the Atlantic coast of the U.S.: Warren et al. (2002) 4. Restoring wetland vegetation in Louisiana: Lane et al. (2006), Kearney et al. (2011), Nyman (in review). 	<ol style="list-style-type: none"> 1. Field Trip to Atchafalaya Delta 2. Plant ID and pressing 	<ol style="list-style-type: none"> 1. Plant ID and pressing 2. Wetland vegetation and greenhouse 3. Effects of wetland vegetation on greenhouse gases: Grosse et al. 1996 4. Effects of wetland landscapes on greenhouse gases; Hargreaves et al. (2001) 5. Effects of greenhouse gasses on wetland vegetation: Erickson et al. (2007), Langley et al. (2013) 6. Plant ID and pressing 	<ol style="list-style-type: none"> 1. Plant ID and pressing 2. Study session 3. Plant id test 2 4. Lecture test 2
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Readings

- Batzer, D. P. and R.R. Sharitz (eds.) 2006. Freshwater and Estuarine Wetlands. Chapter 4 Abiotic constraints for wetland plants and animals. Pages 82 to 114.
- Batzer, D. P. and R.R. Sharitz (eds.) 2006. Freshwater and Estuarine Wetlands. Chapter 6 Development of Wetland Plant Communities. Pages 177 to 209.
- Bradley, P.M., and J.T. Morris. 1992. Effect of salinity on the critical nitrogen concentration of *Spartina alterniflora* Loisel. *Aquatic Botany* 43:149-161.
- Brown, C.A. 1943. Vegetation and lake level correlations at Catahoula Lake, Louisiana. *Geographical Review* 33:435-445.
- Bush Thom, C.S., M.K.G. La Peyre, and J.A. Nyman. 2004. Evaluation of nekton use and habitat characteristics of restored Louisiana marsh. *Ecological Engineering* 23:63-75. DOI: 10.1016/j.ecoleng.2004.06.012
- Chmura, G.L., and G.A. Hung. 2004. Controls on salt marsh accretion: a test in salt marshes of eastern Canada. *Estuaries* 27:70-81.
- Craft, C.B. 2012. Tidal freshwater forest accretion does not keep pace with sea level rise. *Global Change Biology* 18:3615-3623.
- Erickson, J.E., J.P. Megonigal, G. Peresta, and B.G. Drake. 2007. Salinity and sea level mediate elevated CO₂ effects on C₃-C₄ plant interactions and tissue nitrogen in a Chesapeake Bay tidal wetland. *Global Change Biology* 13:202-215. DOI: 10.1111/j.1365-2486.2006.01285.x
- Fox, L. I. Valiela, and E.L. Kinney. 2012. Vegetation cover and elevation in long-term experimental nutrient-enrichment plots in Great Sippewissett Salt Marsh, Cape Cod, Massachusetts: implications for eutrophication and sea level rise. *Estuaries and Coasts* 35:445-458. DOI 10.1007/s12237-012-9479-x.
- Grosse, W., K. Jovy, and H. Tiebel. 1996. Influence of plants on redox potential and methane production in water-saturated soil. *Hydrobiologia* 340:93-99. DOI: 10.1007/BF00012739.
- Hargreaves, K.J., D. Fowler, C.E.R. Pitcairn, and M. Aurela. 2001. Annual methane emission from Finnish mires estimated from eddy covariance campaign measurements. *Theoretical and Applied Climatology* 70:203-213.
- Kanouse, S., M.K. La Peyre, and J.A. Nyman. 2006. Nekton use of *Ruppia maritima* and non-vegetated bottom habitat types within brackish marsh ponds. *Marine Ecology Progress Series* 327:61-69. DOI: 10.3354/meps327061
- Kearney, M. S., J. C. Alexis Riter, and R. E. Turner. 2011. Freshwater river diversions for marsh restoration in Louisiana: twenty-six years of changing vegetative cover and marsh area. *Geophysical Research Letters* 38, L16405. doi:10.1029/2011GL047847.
- Kross, J., R.M. Kaminski, K.J. Reinecke, E.J. Penny, and A.T. Pearse. 2010. Most-soil seed abundance in managed wetlands in the Mississippi Alluvial Valley. *Journal of Wildlife Management* 72:707-714.
- Langley, J.A., T.J. Mozdzer, K.A. Shepard, S.B. Hagerty, and J.P. Megonigal. 2013. Tidal marsh plant responses to elevated CO₂, nitrogen fertilization, and sea level rise. *Global Change Biology* 19:1495-1503.
- McFalls, T.B, P.A. Keddy, D. Campbell, and G. Shaffer. 2010. Hurricanes, floods, levees, and nutria: vegetation responses to interacting disturbance and fertility regimes with implications for coastal wetland restoration. *Journal of Coastal Research* 26:901-911.
- Merino, J., D. Huval, and A.J. Nyman. 2010. Implication of nutrient and salinity interaction on the productivity of *Spartina patens*. *Wetlands Ecology and Management* 18:111-117. doi: 10.1007/s11273-008-9124-4.

- Mitsch, W. J., and J. G. Gosselink 2007. Wetlands 4th edition Chapter 2 Wetland Definitions pages 25-41.
- Morton, R.A., and J.A. Barras. 2011. Hurricane impacts on coastal wetlands: a half-century record of storm-generated features from southern Louisiana. *Journal of Coastal Research* 27:6A:S:27-43. DOI: 10.2112/JCOASTRES-D-10-00185.1 Cerulean and R.T. Engstrom (eds.). Proceedings 19th Tall Timbers Fire Ecology Conference- Fire in wetlands: a management perspective. Tall Timbers Research, Inc. Tallahassee, Florida.
- Neubauer, S.C. 2008. Contribution of mineral and organic components to tidal freshwater marsh accretion. *Estuarine, Coastal and Shelf Science*. 78:78-88. 10.1016/j.ecss.2007.11.011
- Nyman, J.A. 2011. Ecological functions of wetlands. pages 115-128 In B. La Page (editor) *Wetlands: Integrating Multidisciplinary Concepts*. Springer Science. ISBN 978-94-007-0550-0
- Nyman, J.A., and R.H. Chabreck. 1995. Fire in coastal marshes: history and recent concerns. In R.T. Engstrom (ed.) pages 135-141 In S.I. O'Connell, J.L., and J.A. Nyman. 2011. Effects of marsh pond terracing on coastal wintering waterbirds before and after Hurricane Rita. *Environmental Management* 48:975-984. DOI 10.1007/s00267-011-9741-1
- Pestrong, R. 1969. The shear strength of tidal marsh sediments. *Journal of Sedimentary Petrology* 39:322-326.
- Reed, D. J. 1989. Patterns of sediment deposition in subsiding coastal salt marshes, Terrebonne Bay, Louisiana: the role of winter storms. *Estuaries*. 12:222-227.
- Sasser, C. E., J. G. Gosselink, G. O. Holm, and J. M. Visser. 2009. Chapter 15: Tidal freshwater wetlands of the Mississippi River Deltas. Pp. 167-178 in A. Barendregt, D. F. Whigham and A. H. Baldwin (eds.) *Tidal Freshwater Wetlands*, Backhuys Publishers, Leiden, The Netherlands
- Slocum, M, and I. A. Mendelssohn. 2008. Use of experimental disturbance to assess resilience along a known stress gradient. *Ecological Indicators* 8:181-190. doi:10.1016/j.ecolind.2007.01.011.
- Thullen, J.S., J.J. Sartoris, and S.M. Nelson. 2005. Managing vegetation in surface-flow wastewater-treatment wetlands for optimal treatment performance. *Ecological Engineering* 25:583-593.
- van Eerd MM. 1985. The influence of vegetation on erosion and accretion in salt marshes of the Oosterschelde, The Netherlands. *Vegetatio* 62:367-373.
- Visser, J. M., J. W. Day, Jr., L. L. Battaglia, G. P. Shaffer, and M. W. Hester. 2012. Chapter 5. Mississippi River Delta Wetlands. Pp. 63-74-in D. Batzer and A. Baldwin (eds.) *Wetland Habitats of North America: Ecology and Conservation Concerns*. University of California Press.
- Walter and Keil 1996. *Vascular Plant Taxonomy*. Chapter 3
- Wilsey, B. J., R. H. Chabreck, and R. G. Linscombe. 1991. Variation in nutria diets in selected fresh-water forested wetlands of Louisiana. *Wetlands* 11:263-278