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**Current Position:** Associate Professor, Department of Biological Sciences, Clemson University, <http://people.clemson.edu/~rblob/>

**Education:**

Ph.D. 1998: University of Chicago (Evolutionary Biology)

B.A. 1992: University of Pennsylvania (Biology, Individualized Studies – Paleobiology)

**Professional Experience:**

2007-present: Associate Professor, Department of Biological Sciences, Clemson University

• Courses taught include Vertebrate Biology, Comparative Vertebrate Morphology, Animal Biomechanics, Vertebrate Paleobiology; Tropical Biodiversity

2002-2007: Assistant Professor, Department of Biological Sciences, Clemson University

1999-2001: NIH Postdoctoral Fellow, Field Museum of Natural History (Zoology);

1998-1999: Senior Assistant Collections Manager, Field Museum of Natural History (Fossil Mammals)

**Research Interests:**

Evolutionary morphology and biomechanics of the vertebrate musculoskeletal system, with a primary focus on locomotion in reptiles, amphibians, and fishes. Other areas of interest include the evolution of bone mechanical properties, evolution of aquatic/terrestrial habitat transitions, fish and reptile feeding, ontogeny of musculoskeletal function, and biomechanical modeling of functional capabilities in fossil taxa.

**Awards and Honors:**

2009: DVM Program Officer Elect

2007: Mentorship Award, National Scholars Program, Clemson University

2006: Teacher of the Year (under ten years experience), Clemson University, College of Agriculture, Forestry, and Life Sciences

2004: Outstanding Young Researcher, Sigma Xi Clemson Chapter

**Sponsored Research:**

“Collaborative Research: Migration, Natural Selection, and Divergence of Waterfall Climbing Stream Fish of the Hawaiian Islands” National Science Foundation, (Integrative Organismal Systems), PI, \$276,026, (\$194,522), (2008).

“Symposium: Going with the Flow- Ecomorphological Variation across Aquatic Flow Regimes (SICB, San Antonio, 2008)”, National Science Foundation (Integrative Organismal Systems), co-PI, \$4457, (\$4457)

“Evolution of Tetrapod Limb Bone Design: Testing the Relationship Between Limb bone Loads and Locomotion,” National Science Foundation (Integrative Organismal Biology), PI, \$284,813, (\$202,992), (2005-2008).

**Publications:**

33 refereed journal publications, 4 book chapters, and 1 edited book since 1996, with journals including Journal of Experimental Biology, Journal of Zoology, Journal of Morphology; Zoology, Biological Journal of the Linnean Society, Paleobiology, Copeia, Journal of Herpetology, Journal of Vertebrate Paleontology

Maie, T., Schoenfuss, H. L., **Blob, R. W.** *In press.* Jaw lever analysis of Hawaiian gobioid stream fishes: a simulation study of morphological diversity and functional performance. *Journal of Morphology.*

Maie, T., Pruette, M. E., Schoenfuss, H. L., **Blob, R. W.** *In press.* Feeding kinematics and performance of Hawaiian stream gobies, *Awaous guamensis* and *Lentipes concolor*: linkage of functional morphology and ecology. *Journal of Morphology.*

Gosnell, J. S., G. Rivera, and **R. W. Blob.** *In press.* A phylogenetic analysis of sexual size dimorphism in turtles. *Herpetologica,*

- Blob, R. W.**, Rivera, G. 2008. Going with the flow: ecomorphological variation across aquatic flow regimes: an introduction to the symposium. *Integrative and Comparative Biology* 48: 699-701.
- Blob, R. W.**, W. C. Bridges, T. Maie, R. A. Cediél, M. M. Bertolas, M. B. Ptacek, M. L. Julius, and H. L. Schoenfuss. 2008. Morphological selection in an extreme flow environment: body shape and waterfall-climbing success in the Hawaiian stream fish *Sicyopterus stimpsoni*. *Integrative and Comparative Biology* 48: 734-749.
- Butcher, M. T., Espinoza, N. R., Cirilo, S. R., **Blob, R. W.** 2008. *In vivo* strains in the femur of river cooter turtles (*Pseudemys concinna*) during terrestrial locomotion: test of force-platform models of loading mechanics. *Journal of Experimental Biology* 211: 2397-2407.
- Butcher, M. T., and **R. W. Blob**. 2008. Mechanics of limb bone loading during terrestrial locomotion in river cooter turtles (*Pseudemys concinna*). *Journal of Experimental Biology*. 211:1187-1202.
- Blob, R. W.**, A. R. V. Rivera, and M. W. Westneat. 2008. Hindlimb function in turtle locomotion: limb movements and muscular activation across taxa, environment, and ontogeny. In J. Wyneken, V. Bels, and M. H. Godfrey (eds.), *Biology of Turtles: from Structures to Strategies of Life*, CRC Press, pp. 139-144.
- Shah, S. R., J. D. DesJardins, and **R. W. Blob**. 2008. Antler stiffness in caribou (*Rangifer tarandus*): testing variation in bone material properties between males and females. *Zoology (Jena)* 111:476-482.
- Cediél, R. A., **R. W. Blob**, G. D. Schrank, R. Plourde, and H. L. Schoenfuss. 2008. Muscle fiber type distribution in climbing Hawaiian gobioid fishes: ontogeny and correlations with locomotor performance. *Zoology (Jena)* 111:114-122.
- Blob, R. W.**, and C. Badgley. 2007. Numerical methods for bonebed analysis. Invited submission to R. Rogers, D. Eberth, and A. Fiorillo (eds.), *Bonebeds: Genesis, Analysis, and Paleocological Significance*, University of Chicago Press, pp. 333-396.
- Blob, R. W.**, K. M. Wright, M. Becker, T. Maie, T. J. Iverson, M. L. Julius, and H. L. Schoenfuss. 2007. Ontogenetic change in novel functions: waterfall climbing in adult Hawaiian gobiid fishes. *Journal of Zoology* 273:200-209.
- Maie, T., H. L. Schoenfuss, and **R. W. Blob**. 2007. Ontogenetic scaling of body proportions in waterfall-climbing gobiid fishes from Hawai'i and Dominica: implications for locomotor function. *Copeia* 2007:756-765.

- Schoenfuss, H. L., and **R. W. Blob**. 2007. The importance of functional morphology for fishery conservation and management: applications to Hawaiian amphidromous fishes. *Bishop Museum Bulletin in Cultural and Environmental Studies* 3:125-141.
- Rivera, G., A. R. V. Rivera, E. E. Dougherty, **R. W. Blob**. 2006. Aquatic turning performance of painted turtles (*Chrysemys picta*) and functional consequences of a rigid body design. *Journal of Experimental Biology* 209:4203-4213.
- Blob, R. W.**, and J. M. Snelgrove. 2006. Antler stiffness in moose (*Alces alces*): correlated evolution of bone function and material properties? *Journal of Morphology* 267:1075-1086.
- Blob, R. W.**, R. Rai, R., M. L. Julius, and H. L. Schoenfuss. 2006. Functional diversity in extreme environments: effects of locomotor style and substrate texture on the waterfall climbing performance of Hawaiian gobiid fishes. *Journal of Zoology* 268:315-324.
- Blob, R. W.** 2006. Scaling of the hindlimb skeleton in cynognathian cynodonts: implications for ontogeny and thermoregulation (Chapter 13). *In* M. T. Carrano, T. J. Gaudin, R. W. Blob, and J. R. Wible (eds.), *Amniote Paleobiology: Perspectives on the Evolution of Mammals, Birds, and Reptiles*, University of Chicago Press, pp. 410-431.
- Gaudin, T. J., Carrano, M. T., **Blob, R. W.**, Wible, J. R. 2006. Introduction (Chapter 1). *In* M. T. Carrano, T. J. Gaudin, R. W. Blob, and J. R. Wible (eds.), *Amniote Paleobiology: Perspectives on the Evolution of Mammals, Birds, and Reptiles*, University of Chicago Press, pp. 1-17.
- Julius, M. L., **R. W. Blob**, and H. L. Schoenfuss. 2005. The survival of *Sicyopterus stimpsoni*, an endemic Hawaiian gobiid fish, relies on the hydrological cycles of streams: evidence from changes in algal composition of diet through growth stages. *Aquatic Ecology* 39:473-484.
- Reilly, S. M., J. S. Willey, A. R. Biknevicius, and **R. W. Blob**. 2005. Locomotor dynamics in a semi-erect posture: integrating movements, motor patterns, ground reaction forces and bone strains of hindlimb locomotion in the alligator. *Journal of Experimental Biology* 208:993-1009.
- Willey, J. S., and **R. W. Blob**. 2004. Tail kinematics of juvenile common snapping turtles during aquatic walking. *Journal of Herpetology* 38:360-369.
- Schoenfuss, H. L., M. L. Julius, and **R. W. Blob**. 2004. Colonization of a recent, volcanically formed freshwater habitat: an example of primary succession. *Ichthyological Explorations of Freshwaters* 15:83-90.

- Reilly, S. M., and **R. W. Blob**. 2003. Motor control of locomotor hindlimb posture in the American alligator (*Alligator mississippiensis*). *Journal of Experimental Biology* 206:4327-4340.
- Schoenfuss, H. L., and **R. W. Blob**. 2003. Kinematics of waterfall climbing in Hawaiian freshwater fishes (Gobiidae): vertical propulsion at the aquatic-terrestrial interface. *Journal of Zoology* 261:191-205.
- Westneat, M. W., O. Betz, **R. W. Blob**, K. Fezzaa, W. J. Cooper, and W.-K. Lee. 2003. Insect respiration by tracheal pumping visualized with synchrotron phase-enhanced x-ray imaging. *Science* 299: 558-560.
- Blob, R. W.**, and M. LaBarbera. 2001. Correlates of variation in deer antler stiffness: age, mineral content, intra-antler location, habitat, and phylogeny. *Biological Journal of the Linnean Society* 74:113-120.
- Pace, C. M., **R. W. Blob**, and M. W. Westneat. 2001. Comparative kinematics of the forelimb during swimming in red-eared slider (*Trachemys scripta*) and spiny softshell (*Apalone spinifera*) turtles. *Journal of Experimental Biology* 202:3261-3271.
- Gillis, G. B., and **R. W. Blob**. 2001. How muscles accommodate movement in different physical environments: aquatic versus terrestrial locomotion. *Comparative Biochemistry and Physiology A* 131:61-75.
- Blob, R. W.**, and A. A. Biewener. 2001. Mechanics of limb bone loading during terrestrial locomotion in the green iguana (*Iguana iguana*) and American alligator (*Alligator mississippiensis*). *Journal of Experimental Biology* 204:1099-1122.
- Blob, R. W.** 2001. Evolution of hindlimb posture in non-mammalian therapsids: biomechanical tests of paleontological hypotheses. *Paleobiology* 27:14-38.
- Blob, R. W.**, M. T. Carrano, R. R. Rogers, C. A. Forster, and N. R. Espinoza. 2001. A new fossil frog from the Upper Cretaceous Judith River Formation of Montana. *Journal of Vertebrate Paleontology* 21:190-194.
- Blob, R. W.** 2000. Interspecific scaling of the hind limb skeleton in lizards, crocodylians, felids and canids: does limb bone shape correlate with limb posture? *Journal of Zoology* 250:507-531.
- Blob, R. W.**, and A. A. Biewener. 1999. *In vivo* locomotor strain in the hind limb bones of *Alligator mississippiensis* and *Iguana iguana*: implications for the evolution of limb bone safety factor and non-sprawling limb posture. *Journal of Experimental Biology* 202:1023-1046.

**Blob, R. W.** 1998. Evaluation of vent position from lizard skeletons for estimation of snout-vent length and body mass. *Copeia* 1998:792-801.

**Blob, R. W.** 1997. Relative hydrodynamic dispersal potentials of soft-shelled turtle elements: implications for interpreting skeletal sorting in assemblages of non-mammalian terrestrial vertebrates. *Palaios* 12:151-164.

**Blob, R. W.,** and A. R. Fiorillo. 1996. The significance of vertebrate microfossil size and shape distributions for faunal abundance reconstructions: a Late Cretaceous example. *Paleobiology* 22:422-435.

### **Memberships:**

American Society of Ichthyologists and Herpetologists, Herpetological Association of Africa, Herpetologists' League, International Society of Vertebrate Morphology, Sigma Xi, Society for Experimental Biology, Society for Integrative and Comparative Biology, Society for the Study of Amphibians and Reptiles, Society of Systematic Biologists, Society of Vertebrate Paleontology

### **SICB Activities:**

2008 & 2009: Judge, DVM Davis Award committee and DCB Best Student Presentation committee

2008: Co-organizer (with G. Rivera), "Going with the Flow" Symposium for San Antonio annual SICB meeting

2003: Chair, DVM Davis Award committee

2002: DVM Davis Award judge

2001: DVM nominating committee

### **Soc. Vert. Paleontology Activities:**

2003-present: Predoctoral Fellowship Application Review Committee