



# THE MODULE HANDBOOK

## FACULTY OF BIOLOGY

### Biology of Vertebrate Pest

<b>Module code</b>	BIO 41109
<b>Module level</b>	3 <sup>rd</sup> year of Undergraduate Program in Biology
<b>Abbreviation, if applicable</b>	-
<b>Sub-heading, if applicable</b>	-
<b>Courses included in the module, if applicable</b>	-
<b>Semester/term</b>	Odd
<b>Module coordinator(s)</b>	Drs. Bambang Agus Surtpto, S.U., M.Sc.
<b>Lecture(s)</b>	1. Drs. Bambang Agus Surtpto, S.U., M.Sc. 2. Soenarwan Heri, S.Si., M. Kes.
<b>Language</b>	Indonesia
<b>Classification within the Curriculum</b>	Elective course
<b>Teaching format/class hours per week during the semester</b>	This course is organized into one class and planned to have 14 teaching weeks and 2 weeks of examination.
<b>Workload</b>	Estimated working hour: 10,5 hours/week.
<b>Credit points</b>	2-1 credits
<b>Requirements</b>	Ecology (30302) and Animal Systematics (BIO 31101)
<b>Learning goals/competencies</b>	<p><b>1. Learning achievement</b></p> <ol style="list-style-type: none"><li>Understand the concept of a group of animals vertebrate pests in the broad sense and the magnitude of the level of economic losses, environmental and health causes.</li><li>Understand the biological properties of various types of fish, amphibians, reptiles, birds, mammal pests and how the resulting damage and loss as well as control techniques .</li><li>Identify potential emergence of vertebrate pests in a region.</li></ol> <p><b>2. Learning materials</b></p> <ol style="list-style-type: none"><li>Understand the concept of a group of animals vertebrate pests in the broad sense and the magnitude of the level of economic losses, environmental and health causes.</li><li>Understand the biological properties of various types of fish, amphibians, reptiles, birds, mammal</li></ol>



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	<p>pests and how the resulting damage and loss as well as control techniques .</p> <p>c. identify potential emergence of vertebrate pests in a region.</p>
<b>Content</b>	<p>This optional course is intended for upper level students who have already started looking at the possibility of a plan for thesis research topics or want to explore the branch of biology that the object is a type of vertebrate pests that cause problems for humans. Vertebrate animal groups pest, besides the kinds of vertebrate pest native also include other types of exotic/alien/nonindigenous and invasive or nuisance nature of adverse economic, environmental and human health. Pest Vertebrate Biology course is directed to provide scientific support for efforts to solve the problems of pests that are very harmful and cause public unrest. The concept of vertebrate animal pests in the broad sense and population dynamics and analysis of the level of magnitude of economic losses, health and the environment thereof; biological properties of various examples of vertebrate animal species are pests (ranging from groups of fish, amphibians, reptiles, birds and mammal), the resulting losses and techniques for population control; and the tendency of increase in intensity, magnitude and speed of the harm caused by vertebrate pests globally.</p>
<b>Study/exam achievements</b>	<p><b>1. Theory:</b> 70 %</p> <ul style="list-style-type: none"><li>a. Midterm: 20 %</li><li>b. Final examination: 25 %</li><li>c. Assignment: 15 %</li><li>d. Quiz: 10 %</li><li>e. Project report: 10 %</li></ul> <p><b>2. Laboratory work:</b> 30 %</p>
<b>Forms of media</b>	White board, notebook, specimen, LCD
<b>Literature</b>	<ol style="list-style-type: none"><li>1. Anonimous, 2010. Invasive Alien Species. 2010. International Year of Biodiversity, The Convention on Biological Diversity, Montreal.</li><li>2. Barluengga, M. and A. Meyer, 2010. Phylogeography, colonization and population history of the Midas cichlid species complex (<i>Amphilophus</i> spp.) in the Nicaraguan crater lakes. BMC Evolutionary Biology 2010, 10:326</li><li>3. Barras, S.C. and Richard A. Dolbeer, 2000. Reporting Bias in Bird Strikes at John F. Kennedy International Airport, New York, 1979-1998. U. S. Department of Agriculture, Wildlife Services, National Wildlife Research Center, Sandusky, USA.</li><li>4. Begon, M. &amp; M. Mortimer, 1998. Population Ecology. Blackwell Scintific Publication, Cambridge. 220 hal.</li></ol>



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7. Fritz, C.L., 2002. Vertebrates of public health significance in California. California Department of Public Health, Sacramento.
8. Hone, J. 1994. Analysis of Vertebrate Pest Control. Cambridge University Press, Cambridge. 258 hal.
9. Hulme, P.E., 2009. Trade, transport and trouble: managing invasive species pathways in era of globalization. *Journal of Applied Ecology* 2009. 46:10-18.
10. Kern, Jr, W.H. and P. G. Koehler, 1991. Non-Chemical Rodent Control Fact Sheet ENY-243 (MG218), a series of the Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.
11. Markula, A., Steve Csurhes and Martin Hannan-Jones, 2010. Pest animal risk assessment Cane toad: *Bufo marinus*. Biosecurity Queensland Department of Employment, Economic Development and Innovation.
12. Meyerson, L.A. and H.A. Mooney, 2007. Invasive alien species in era of globalization. *Front Ecol. Environ* 2007; 5(4): 199-208.
13. Mooney, H.A. and E. E. Cleland, 2001. The evolutionary impact of invasive species *PNAS* May 8, 2001 vol. 98 no. 10: 5446–5451.
14. Pfeffer, M. and G. Dobler, 2010. Emergence of zoonotic arboviruses by animal trade and migration. *Parasites @ Vectors* 2010, 3:35 hal.
15. Sakai, Ann.K., Fred W. Allendorf, Jodie S. Holt, David M. Lodge, Jane Molofsky, Kimberly A. With, Syndallas, Baughman, Robert J. Cabin, Joel E. Cohen, Norman C. Ellstrand, David E. McCauley, Pamela O'Neil, Ingrid, M. Parker, John N. Thompson, Stephen G. Weller, 2001. The population of invasive species. *Annu. Rev. Ecol. Syst.* 2001. 32:305–32
16. Sharp, T. and Glen Saunders, 2004. Trapping of Pest Birds. NSW Department of Primary Industries.
17. Shine, R., Ambariyanto, P.S. Harlow, and Mumpuni. 1998. Reticulated pythons in Sumatra: biology, harvesting and sustainability. *Biological Conservation* 87 (1999):349-357.
18. Singleton, G.R., P.R. Brown and J. Jacob, 2004. Ecologically-based rodent management: its effectiveness in cropping systems in South-East Asia Sustainable Ecosystems, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Canberra.



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19. Singleton, G.R., Sudarmaji, J. Jacob, C.J. Krebs, 2005. Integrated management to reduce rodent damage to lowland rice crops in Indonesia Agriculture. *Ecosystems and Environment* 107 (2005) 75–82
  20. Skonhoft, A. Nils Chr. Stenseth, Herwig Leirs, Harry P. Andreassen, and Loth S.A. Mulungu, 2003. *The Bioeconomics of Controlling African Rodent Pest Species*. Department of Economics, Norwegian University of Science and Technology. Trondheim, Norway.
  21. Smith, M., Steven Lapidge, Brendan Cowled and Linton Staples, 2005. *The Design and Development of Pigout® - A Target-specific Feral Pig Bait*. *Proceeding of 13<sup>th</sup> Australian Vertebrate Pest Conference* pages: 129-134.
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