

Just-in-Time Technology that Supports Cougar Research Across the Curriculum

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Project CAT

- Question:
 - How is the cougar changing as viewed through the eyes of the cougar?
- Idea:
 - Base the school curriculum on a community issue
 - Develop integrated curricula, use technology tools to solve community problems, and carry out authentic research



Why Project CAT?

- Trendwest resort coming
- Hunting source of recreation and tourism
- Potential increasing human/cougar interactions
- Needed integrating context
 - Science, math, social studies, language, the arts
- WDFW wants to do a cougar study

Partnerships

- Cle Elum/Roslyn School District with
 - Washington Department of Fish and Wildlife
 - Cougar research
 - University of Washington
 - NatureMapping
 - Grad student research projects
 - Central Washington University
 - Pre-service teacher interns
 - Integrated curricula
 - Grad student research projects

Connection with CWU

- PT³ grant
- Goals
 - Increase technology in the classroom
 - Develop project-based integrated curricula
 - Provide year-long internships for pre-service teachers
 - Form Professional Learning Communities
- Focus on integrated science and math using just-in-time technology tools
- Used year-long internship model
 - Faculty mentors in science and mathematics

Learning Goals

- Students should be able to:
 - understand and apply fundamental biological concepts
 - effectively use technology
 - solve problems
 - collaborate with peers
 - develop an authentic understanding of the processes of scientific inquiry and mathematical modeling
- Thoughts from the Project CAT coordinator

Projects: Collaring Cougars

- Where do cougars live?
 - Students track, collar, and take biological samples and measurements

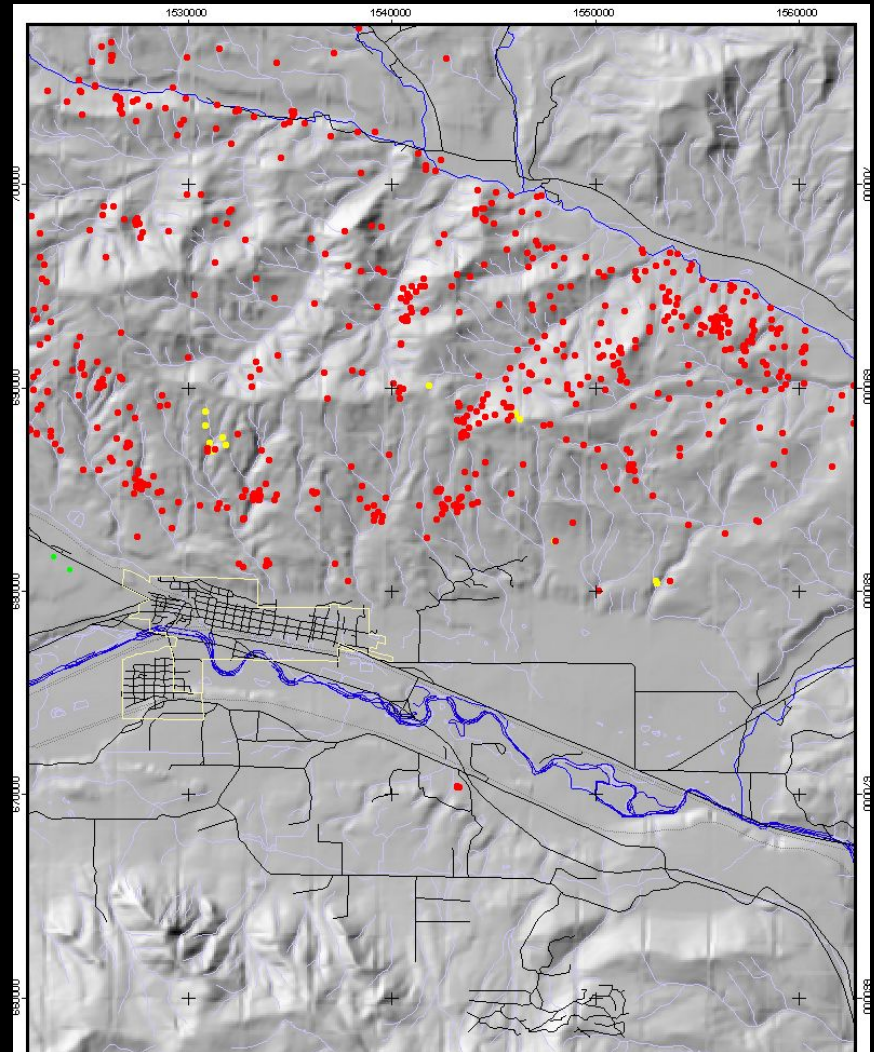


Val's Collar Data

Date	Time	Latitude		Longitude		
2/14/2002	16:15:36	Lat:	N 47.19694	Long:	W 120.8652	
2/14/2002	20:15:36	Lat:	N 47.19836	Long:	W 120.8516	
2/15/2002	1:15:56	Lat:	N 47.19865	Long:	W 120.8517	
2/15/2002	5:15:36	Lat:	N 47.20405	Long:	W 120.8718	
2/15/2002	17:17:36	Lat:	N 47.22048	Long:	W 120.8787	
2/16/2002	6:16:36	Lat:	N 47.22119	Long:	W 120.8796	
2/16/2002	14:16:36	Lat:	N 47.22489	Long:	W 120.8969	
2/16/2002	22:17:32	Lat:	N 47.22133	Long:	W 120.941	
2/17/2002	0:16:32	Lat:	N 47.21941	Long:	W 120.941	
2/17/2002	4:16:08	Lat:	N 47.21785	Long:	W 120.9376	
2/17/2002	8:15:36	Lat:	N 47.217	Long:	W 120.94	
2/17/2002	12:15:36	Lat:	N 47.21586	Long:	W 120.9397	
2/17/2002	16:16:36	Lat:	N 47.21671	Long:	W 120.9368	
2/17/2002	20:15:40	Lat:	N 47.20676	Long:	W 120.9335	
2/18/2002	1:15:36	Lat:	N 47.20683	Long:	W 120.9331	

Val's Range

- Collar data was mapped using GIS
 - Yellow dots: first three days
 - Red dots: collar data every four hours



What Students Learn

- Science

- Physiology
- Winter survival skills
- Tracking skills
- Mapping skills

- Math

- Conversions
- Statistics
- Modeling

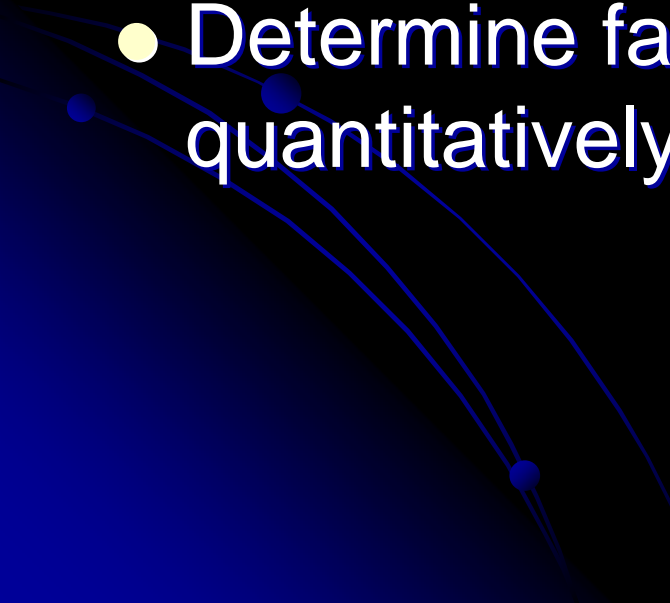
- Technology

- Collar technology
- GIS/Arcview
- Tracking technology

Project: Cougar Conservation

- Investigate problem affecting whole community
 - Integrate Project CAT into biology using genetics bottleneck
- Collaborative inquiry
 - Small groups research authentic biological problem
- Development and public presentation of diverse cougar conservation plans
 - Evaluation of global conservation plans, construction of local plans based on research findings
- Outcomes
 - Technology tools enable research and presentation
 - Improved student engagement, time on task, motivation

Projects: Prey Health

- Do cougars kill healthy or unhealthy prey?
 - 8th grade students
 - Deer and elk femurs from butcher, road kill, hunters, cougars
 - Determine fat content qualitatively and quantitatively
- 

Femur Study Data

	Sex	Age From Butcher	Group	Age From Epiphysis	Marrow Score	% Fat in Marrow	Ave. % Fat in Marrow
Femur I	F	2.5	1	1-2.5	4	41	38
			2	2.5-4.5	2	43	
			3	2.5	3	30	
Femur II	F	2	1	2.5	2	27	28.5
			2	2.5	4	86*	
			3	2	2	30	
Femur III	NA	NA	1	NA	3	28	40
			2	2.5-4.5	2	48	
			3	2.5-4.5	2	45	
Femur IV	F	4.5	1	2.5-4.5	2	42	44
			2	2.5-4	3	38	
			3	4-Feb	3	51	
Femur V	M	1-2.5	1	1-2.5	2	55.8	68.4
			2	2.5-4.5	4	81	
			3	1-2.5	2	NA	
Femur VI	NA	NA	1	NA	3	44	66
			2	NA	2	12*	
			3	3.5	3	88	

Notes: NA = Not Available, * = suspect data excluded from average

What Students Learn

- Science

- Accurate measurement
- Experimental design
- Nutrition

- Math

- Percentages
- Averages

- Technology

- Web
- 

Just-in-Time Technology

- Collar technology
- GIS/ArcView
- Cybertrackers
- World Wide Web
- Digital video
- Genetics
- Student teaching observations (CTL-ATP)



What We Found

● Successes

- Integrated curricula in math and science
- Enhanced technology use
- Model for evaluating effective teaching
- Excellent working partnerships

● Lessons Learned

- Communication
- Planning time provided by interns
 - One from each content area
- HS students need some direction
- Pre-service intern, classroom teacher, and teacher educator make an awesome team to enhance student learning

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